BPT Syllabus

2005 - 2006

BPT DEGREE COURSE

ACADEMIC YEAR 2005-2006 CLOCK HOURS

Clock Hours for Each subject :-	
Psychology	50 hrs
Sociology	50 hrs
Anatomy	200 hrs
Physiology	100 hrs
Applied Physiology	30 hrs
Basic Nursing & First Aid	40 hrs
General Medicine, General Surgery, Paediatrics, ENT, Opthalmology, etc.,	135 hrs
Biomechanics & Applied Anatomy	80 hrs
Exercise Therapy	270 hrs
Massage	80 hrs
Microbiology & Pathology	50 hrs
Biochemistry	10 hrs
Pharmacology	15 hrs
Statistics and Research Methodology	10 hrs
Electrotherapy (LF & HF)	350 hrs
Clinical Cardio Respiratory Diseases for Physiotherapists	55 hrs
PT in Cardio – respiratory Diseases	120 hrs
Community Medicine	55 hrs
Basics of Physics Including Radiology	10 hrs
Basics of Accupancture	5 hrs
Basics of Yoga	10 hrs
Sports Physiotherapy	20 hrs
Clinical Neurology for Physiotherapists	55 hrs
PT in Neurological Conditions	120 hrs
Clinical Orthopaedics for Physiotherapists	55 hrs
PT in Orthopeadic Conditions	120 hrs
Rehabilitation Medicine including Geriatric Rehabilitation	120 hrs
Administration,Supervision & Ethics	60 hrs
Physical Education	45 hrs
Visits & Special Lectures	75 hrs
	2340 hrs

PSYCHOLOGY AND SOCIOLOGY

Elementary General And Health Psychology

Part A – General psychology
Examination at the end of: I Year — Instruction hours: 50

Part B – Health Psychology
Not for University Examination — Instruction hours: 50

COURSE DESCRIPTION

This course will enable the student to understand specific psychological factors and effects in physical illness and thus help them to have a holistic approach in their dealings with patients during admission, rehabilitation and discharge.

COURSE OBJECTIVES

The objective of this course is that after ninety hours of lectures, demonstrations, practicals and clinics the students will be able to recognise and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical – surgical patients / conditions. They should also understand the elementary principles of behaviors for applying it in the therapeutic environment.

In addition, the student will be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation) the following objectives of the course.

1. Psychosocial assessment of patients in various developmental stages.
2. Explain the concept of stress and its relationship to health, sickness and one's profession.
3. Identify ego defence mechanisms and learn counseling techniques to help those in need.
4. Help them to understand the reason of non-compliance among patients and improve compliance behaviour.

COURSE OUTLINE

The course will be divided into Parts A & B. Part A will be a pre-clinical subject devoted to the elementary principles of behaviour and will be examined separately at the end of the first semester. Part B will be taught as an applied subject after the student has

been exposed to clinical work. There will be a separate examination in Part B for the B.O.T. course students only.

PART A – GENERAL PSYCHOLOGY

A. DEFINITON OF PSYCHOLOGY

1. Definition of psychology, basic information in relation to following schools methods and branches.

a. Schools	Structuralism, functionalism, behaviourism psychoanalysis, gestalt Psychology.
b. Methods:	Introspection, observation, inventory and experimental method.
c. Branches:	General, child, social, abnormal, industrial, clinical, counseling, educational.

B. HEREDITY AND ENVIRONMENT

Twins, Relative importance of heredity and environment, their role in relation to physical characteristics, intelligence and personality, nature – nature controversy.

C. DEVELOPMENT AND GROWTH BEHAVIOUR

Infancy, childhood, adolescence, adulthood, middle age, old age.

D. INTELLIGENCE

Definitions-IQ, Mental Age, List of various intelligence testes- WAIS, WISC, Bhatia's performance test, Raven's Progressive Matrices test.

E. MOTIVATION

Definitions: motive, drive, incentive and reinforcement, Basic information about primary needs: hunger, thirst, sleep, elimination activity, air, avoidance of pain, attitude to sex.

F. EMOTIONS

Definitions, Differentiate from feelings, physiological changes of emotion. Role of RAS, hypothalamus, cerebral cortex, sympathetic nervous system, adrenal gland, heredity and emotion, Nature and control of anger, fear and anxiety.

G. PERSONALITY

1. Definitions, List the components: Physical characteristics character abilities, temperament interest and attitudes

2. Discuss briefly the role heredity, nervous system, physical characteristics, abilities, family and culture on personal development.

3. Basic concepts of Freud; Unconscious, conscious, id, ego and superego List and define the oral, anal and phallic genital latency stages of personality development. List and define the eight stages as proposed by Erickson, four concepts of learning as proposed by Dollard and Miller; drive, cue, response and reinforcement.

4. Personality assessment; interview, standardised non-standardised, Exhaustive and stress interviews, List and define inventories BAI, CPI and MMPI. Projective tests: Rorschach, TAT and sentence completion test.

H. LEARNING

Definition, List the laws of learning as proposed by Thorndike. Types of learning: Briefly describe classical conditioning, operant conditioning, insight, observation and Trial and Error type. List the effective ways to learn: Massed Vs, Spaced, Wole Vs, Part, Recitation Vs, Reading, Serial Vs, Free recall, knowledge of results, Associations, Organisations, Mnemonic methods. Incidental Vs. Intermational learning, role of language.

I. THINKING

Definitions, concepts, creativity, steps in creative thinking, list the traits of creative people, delusions.

J. FRUSTRATION

Definition, sources, solution. Conflict; Approach – approach, avoidance – avoidance, and approach avoidance, solution.

K. SENSATION, ATTENTION AND PERCEPTION

1. List the senses: Vision, hearing, Olfactory, Gustatory and cutaneous sensation, movement, equilibrium and viscera sense. Define attention and list factors that determine attention: nature of stimulus intensity, colour, change, extensity, repetition, movement size curiosity, primary motives.

2. Define perception and list the principles of perception: figure ground, constancy, similarity, proximity, closure, continuity, values and interests, past experience context, needs, moods, religion, sex and age, perceived benefits, and socioeconomic status.

3. Define illusion and hallucination.

4. List visual, auditory, cutaneous, gustatory and olfactory hallucination.

L. DEMOCRATIC AND AUTHORITARIAN LEADERSHIP

Qualities of leadership: Physical factors, intelligence, self-confidence, sociability, will and dominance. Define attitude, change of attitude by: Additional information, changes in group, affiliation, enforced modification by law and procedures that affect personality Psychotherapy, Counseling and religious conversion.

M. DEFENCE MECHANISMS OF THE EGO

Denial, rationalization, projection, reaction formation, Identification, repression, emotional insulation, undoing, introjection, acting out, depersonalization.

PART B- HEAI TH PSYCHOLOGY

A. PSYCHOLOGICAL REACTIONS OF PATIENT

Psychological reactions of a patient during admission and treatment; anxiety, shock, denial, suspicion, questioning, loneliness, regression, shame, guilt, rejection, fear, withdrawal, depression, egocentricity, concern about small matters, narrowed interests, emotional over reactions, perpetual changes, confusion, disorientation, hallucinations, delusions, illusions, anger, hostility loss of hope.

B. REACTIONS TO LOSS

Reactions to loss, death and bereavement: shock and disbelief, development of awareness, restitution resolution. Stage of acceptance as proposed by Kubler –Ross.

C. STRESS

Physiological and psychological changes, Relation to health and sickness: Psychosomatics, professional stress, burnout.

D. COMMUNICATIONS

1. Types – verbal, non – verbal, elements in communication, developing effective communication, specific communication techniques.

2. Counselling. Definition. Aim. differentiate from guidance. principles in counselling and personality qualities of counsellors.

E. COMPLIANCE

Nature, factors, contributing to no compliance, improving compliance.

F. EMOTIONAL NEEDS

Emotional needs and psychological factors in relation to unconscious patients, handicapped patients, bed-ridden patients, chronic pain, spinal cord injury, paralysis, cerebral palsy, burns, amputations, disfigurement, head injury, degenerative disorders, Parkinsonism, leprosy, incontinence and mental illness.

G. GERIATRIC PSYCHOLOGY

Specific psychological reactions and needs of geriatric patients.

H. PAEDIATRIC PSYCHOLOGY

Specific psychological reactions and needs of paediatric patients.

I. BEHAVIOUR MODIFICATION

Application of various conditioning and learning principles to modify patient behaviour.

J. SUBSTANCE ABUSE

Psychological aspects of substance abuse: smoking, alcoholism and drug addiction.

K. PERSONALITY STYLES

Different personality styles of patients.

EVALUATION

Reference Reading:

1. CLIFORD T. MORGAN – introduction to psychology
2. MORGAN & KING introduction to psychology
3. HILGARD & ATKINSON - introduction to psychology

SOCIOLOGY:

Examination at the end of: I Year — Instruction hours: 50

COURSE DESCRIPTION

This course will introduce to the students the basic sociological concepts, principles and social process. Social Institutions (In relation to the Individual, family and community) and the various social factors affecting the family in rural and urban communities India will be studied.

COURSE OBJECTIVES

The objectives of this course is that after 50 hours of lectures demonstrations, Practical and clinics the student will be able to demonstrate and understanding of the role of socio-cultural factors as determinants of health and behaviour in health and sickness. They will be able to relate this to therapeutic situations in the practice of physiotherapy and occupational therapy.

In addition the students will be able to fulfill with 75% accuracy (as measured by written, oral & practical internal evaluation) the following objectives of the course.

A. Understand the role of family and community in the development of human behaviour.
B. Develop a holistic outlook toward the structure of the society and community resources.
C. Identify the subtle influence of culture in the development of human personality, the role of beliefs and value as determinants of individual and group behaviour.
D. Understand the social and economic aspect of community that influence the health of the people.
E. Learn to asses the social problem and participate in social planning.
F. Identify social institution and resources.
G. Understand the significance of social interaction in the process of rehabilitation.
H. Appreciate the role of therapist as a member of society, and the interdependence of individuals and society.

COURSE OUTLINE

A. INTRODUCTION

Definitions of sociology, Sociology as a science of society, uses of the study of sociology, application of knowledge of sociology in physiotherapy and occupational therapy.

B. SOCIOLOGY AND HEALTH

Social factors affecting health status, Social consciousness and perception of illness. Social consciousness and meaning of illness, Decision making in taking treatment. Institutions of health, their role in the improvement of the health of the people.

C. SOCIALIZATION

Meaning of socialization, influence of social factor on personality, socialization in hospitals, socialization in the rehabilitation of patients.

D. SOCIAL GROUPS

Concept of social groups, influence of formal and informal groups on health and sickness, the role of primary groups and secondary groups in the hospital and rehabilitation settings.

E. FAMILY

Concept of community, role of rural and urban communities in public health, role of community in determining beliefs, practices and home remedies in treatment.

F. CULTURE

Components of culture, impact of culture on human behaviour, Cultural meaning of sickness, Response of sickness & choice of treatment (role of culture as social consciousness to moulding the perception of reality), Culture induced symptoms and disease, Sub-culture of medical workers.

G. CASTE SYSTEM

Components of culture, impact of culture on human behaviour, Cultural meaning of sickness, Response of sickness and choice of treatment (role of culture as social consciousness to moulding the perception of reality), Culture induced symptoms and disease, Sub-culture of medical workers.

H. SOCIAL CHANGE

Meaning of social change, Factors of social change, human adoption and social change. Social change and stress. Social change and deviance. Social change and

health programmes, the role of social planning in the improvement of health and in rehabilitation.

I. SOCIAL CONTROL

Meaning of social control, role of norms, folkways, customs, morals, religion law and other means of social control in the regulation on human behaviour, Social deviance and disease.

J. SOCIAL PROBLEMS OF THE DISABLED

Consequences of the following social problems in relation to sickness and disability; remedies to prevent these problems:

Population explosion

Poverty and unemployment

Beggary

Juvenile delinquency

Prostitution

Alcoholism

Problems of women in employment

K. SOCIAL SECURITY

Social security and social legislation in relation to the disabled.

L. SOCIAL WORKER

1. SACHDEVA, D.R. AND BHUSHAN, V An introduction to Sociology – Allahabad; Kitab Mahal Limited, 1974.
2. MADAN, G.R. Indian Social Problems, Vol. I Chennai Applied Publications, 1973.

ANATOMY

Examination at the end of: I Year | Instruction hrs: 200

COURSE DESCRIPTION

The study of Anatomy will include identification of all gross anatomical structures. Particular emphasis will be placed on description of bones, joints, muscles, the brain, Cardio pulmonary and nervous systems, as these are related to the application of physiotherapy and occupational therapy in patients.

COURSE OBJECTIVES

The objectives of this course is that after 200 hours of lectures, demonstrations, and practical, the student will be able to demonstrate knowledge in human anatomy as needed for the study and practice of physiotherapy and occupational therapy.

In addition, the student will be able to fulfill with 75% accuracy. (as measured written & oral internal evaluation) the following objectives of the course.

COURSE OUTLINE

A. INTRODUCTION

1. Define Anatomy and mention its subdivisions.
2. Name regions, cavities and systems of the body.
3. Define anatomical positions and anatomical terms.

B. CELL

1. Define a cell.
2. Mention the shape, size and parts of a cell.
3. Name and give functions of organs, Names of cell bodies.
4. Define chromosomes, genes.
5. Review mitosis and meiosis. Mention the main events, but stages not necessary.

1. Classify tissues.
2. Classify and mention the microscopic structure, types of tissues such as epithelial, connective, muscular and nervous tissue. Gives examples for each type of tissue.

D. CARDIO VASCULAR SYSTEM

1. a. Comprehend the external and internal features of heart and their implications.
   b. Mention position of the heart.
   c. Identify the name the chamber of the heart, surface and border of the heart.
   d. Identify the venae cavae, pulmonary trunk and aorta.
   e. Mention the internal features of the chambers of the heart.

2. a. State the basic features of the blood supply & nerve supply of the heart.
   b. State the basic arrangement of the pericardium.
   c. Identify the coronary artery and coronary sinus.
   d. Name the parts of the conductive system of heart.

3. a. Mention the position and general distribution of major arteries and major veins, and name their main branches.
   b. Name the type of arteries and veins, give examples and indicate a basic Microscopic structure of type of blood vessels.

E. LYMPHATIC SYSTEM

1. Comprehend the general and regional arrangements of the lymphatic system.
2. Name the lymphatic organ and mention their location.
3. Illustrate the basic structural features of lymphatic vessels, lymph nodes, thymus, spleen and tonsils.
4. Assign functional role to the lymphatic system.
5. State the position and immediate relations of spleen.

F. RESPIRATORY SYSTEM

1. a. List the parts of the respiratory system.
   b. Comprehend the functional anatomy of the parts of the respiratory system.
   c. Mention the basic features of innervation of bronchi and lungs.

2. a. State the position, extent, and gross and microscopic structure of the parietal Pleura.
   b. Comprehend the arrangement of pleura. Mention the parts, and position of the Parietal pleura
   c. Name the recesses of pleura.

d. Identify the trachea and bronchi.
e. Identify the right lung and left lung.
f. Name the components of the hilum of lung.
g. Name the bronchopulmonary segments.
h. Illustrate the main features of the microscopic structure of lung.
i. Identify the borders and surfaces of the lung on the specimen.

G. DIGESTIVE SYSTEM (n. b. no details are required)

1. a List the parts of the digestive system
   b. Mention the boundaries and features of the mouth.
   c. Classify teeth.
   d. Mention position, extent, subdivision, communications, internal features and Muscles of pharynx.
   e. Name the tonsils and define fauces.
   f. Identify internal features of the mouth and pharynx of specimen.

2. a .State the position, course and extent of oesophagus.
   b. Identify oesophagus of the specimen.
   c. State the basic nerve supply.

3. a. Mention the position and gross structure of the stomach.
   b. Identify the stomach and its borders, the surfaces and subdivisions.
   c. Enumerate the immediate relations of the stomach.
   d. State the basic nerve supply of the stomach.

4. a. Name the subdivision of the intestine and mention their positions.
   b. Mention the difference between small and large intestine.

5. a. Name the arteries arising from the abdominal aorta. Name the organs supplied by these branches.
   b. Awareness of the name and position of the principal autonomic visceral nerve plexus in the abdomen and pelvis, and the organs supplied by them.

6. Mention the position and gross features of the liver and biliary system.

7 Name the position and subdivision of the pancreas.

8. a. Name the major salivary gland.
   b. Indicate their positions.
   c. Mention the site of the opening of their ducts.

H. GENITO – URINARY SYSTEM

1. a. Comprehend the basic functional implication and the basic structure of the Kidney and ureter.

b. Mention the position, size and shape of kidney.
c. Name the immediate relations of the kidney.
d. Indicate the cortex, medulla, pyramids, sinus, calyces, and pelvis of ureter in a macro section of the kidney.
e. Illustrate the structure of a nephron.
f. Identify the ureter and indicate the position of the ureter.

2. a. State the anatomy of the bladder and urethra.
b. Mention the position, shape and size and surface of the bladder.
c. Indicate the immediate relations of the bladder.
d. Mention the basic innervation of the bladder.
e. Name and identify the subdivision the male urethra.
f. Mention the position, extent and immediate relations of the male urethra.
g. Locate and identify the female urethra.
h. Mention the position, extent and immediate relations of the female urethra.
i. Name the sphincters of the urethra.

3. a. List and locate the parts of the male reproductive system. State the anatomy and Functional considerations of the testis, male accessory organs of reproduction And external organs.
b. Name the constituent structures of the spermatic cord.
c. Mention the position of the inguinal canal.
d. Name the component structures and parts of the penis.

4. a. List and locate the parts of female reproductive system. State the anatomy and Functional considerations of ovary, uterine tubes, uterus, vagina and female external genitalia.
b. Mention the basic features of parts of the female external genitalia.
c. Enumerate the factors responsible for the maintenance of the position of the uterus and anatomy of its prolapses.
d. Mention the position, extent and gross structure of the female breast.

5. Name the common, internal, and external iliac arteries.

I. NERVOUS SYSTEM

1

a. Define the subdivisions of the nervous system. Define central, peripheral and autonomic nervous systems and name their subdivisions.
Comprehend the position and form of the spinal cord, its structure and function in terms of neuronal connections
b. Indicate the position and extent of the spinal cord.
c. Illustrate the principal features shown in a transverse section of the spinal cord.
d. Specify the basic features of a mono and multisynaptic spinal reflex pathway.

illustrate the white and gray matter, and anterior, lateral and posterior columns of the spinal cord

Mention the origin, termination and position of important ascending and descending tracts, site of crossing of fibers of these tracts and function of each tract.

State the main consequences of spinal cord transection and hemi section and explain the rationale of cordotomy.

Indicate the blood supply and meninges of spinal cord.

Name the subdivision of the brain. Identify and mention the external features of parts of the brain.

Mention the internal structure and basic features of parts of the brain – stem and name the nuclei and fibre tract with special emphasis on cranial nerve nuclei

Identify and mention parts of the cerebellum.

Mention the external features and internal structures of the cerebellum and name its various afferent and efferent tracts and their termination

Mention the features of the gross component of the cerebrum.

Mention & Identify the locations of gyri, sulci, and cortical areas.

State and identify association, commissural and projection fibres.

Define and identify component of forebrain, including cerebral cortex, insulae, olfactory bulb, olfactory tract, uncus, fornix, basal ganglia, thalamus, hypothalamus, internal capsule, corpus callosum etc.

Predict the result of damage to internal capsule.

Outline sensory and motor pathways and be able to trace these pathways.

Name sensory and motor nerve endings with function.

Define pyramidal motor system and name its tracts

Define upper and lower motor neurons.

Name the parts and tracts of the extra pyramidal system and indicate the functions.

Outline the basic structure of sensory organs: - Nose, tongue, eye, ear and skin.

Briefly outline the nature and basis of muscle tone.

Mention the anatomical pathway involved in the production and maintenance of muscle tone.

State the formation, circulation and drainage of CSF.

Locate & identify the ventricles.

Identify and name the meninges and space around and locate the cistern.

Define lumbar puncture and cisternal puncture.

State the features of the meninges.

Recognise the difference between extra dural, sub dural and Subarachnoid haemorrage..

Outline the arrangement of major blood vessels around the brain and spinal cord.

Mention the arteries forming the Circle of Wills.

Name the branches of major arteries supplying the brain and spinal cord and mention the parts of brain they supply.
Predict the result of blockage or rupture of central deep branches.
Predict the result of occlusion of cerebral arteries.
Predict the result of occlusion of vertebral or basilar arteries.
Identify and mention the connection of dural venous sinuses.
Name and identify the parts of the limbic system. Mention their function in emotion and behavior.

Mention the position and structure of the autonomic nervous system.
Mention the site of origin and termination of the preganglionic and postganglionic sympathetic and parasympathetic fibers.
Name and locate the sympathetic and parasympathetic ganglia.
Summarise the functional difference between the sympathetic and parasympathetic system.

Enumerate the cranial nerves in serial order.
Mention the nuclei of origin & termination and indicate the site of attachment to brain /brain stem.
Explain the general distribution of the cranial nerves and the course of the VII nerve.
Predict the result of injury to cranial nerves.

) Anatomy of spinal cord – review.
) Name the group of spinal nerves.
) Explain the formation and branches of the spinal nerves and distribution of anterior and posterior rami.
) Locate & name the plexuses of nerves.
) Indicate the course and distribution of branches of the plexuses & nerves.

ENDOCRINE SYSTEM

1. List the endocrine organs and mention their position.
2. Mention the hormone produced by each endocrine organ.

. INTRODUCTION TO BONES (Osteology)

) Define skeleton.
) Mention the subdivisions of the skeleton. Name the bones in each subdivision. Know the number of bone in each subdivision and total number of bones.
) Classify the bones and give examples.

Define ossification. Explain the types of ossification and give examples. Define ossification centre. Explain the growth of long bone in length and width.

When regional anatomy is taught:
Identify, name and correctly orientate the bone.
Identify surface, border and all other surface features.
Mark and indicate the muscular and ligamentous attachments on the bone

INTRODUCTION TO JOINTS (Arthrology)

Define a joint or articulation.
Classify the joints and give examples for each type. Define each type of joint
Mention the basic features of a synovial joint.
Define the axis, & movements possible in a synovial joint.
Define range of movement and limiting factor.
Indicate the blood supply and nerve supply in general.
Define stability of a joint.
Demonstrate common movements.

When regional anatomy is taught:-
Mention the type, the articular surface, ligament, movement, axis of movement. Chief muscles producing the movement, limiting factors and nerve supply and blood supply of all individual joints.
Mention the factors for stability.
Articulate the bones correctly.
Indicate applied anatomy for all joints

INTRODUCTION TO MUSCLES (SKELETAL MUSCLE) (Myology)

Define a skeletal muscle.
Define facine, tendon aponeurosis.
Classify the skeletal muscles by shape etc, and give examples.
Define origin, insertion, muscle work (contraction), types of muscle work, range of muscle work, group action – protagonist, antagonist, synergist and fixator; shunt and spurt muscle, type of levers with examples.

When the regional anatomy is taught:

Mention the position, origin, insertion, nerve supply and action of the skeletal muscles. (For the skeletal muscles of soft palate, pharynx and larynx, position, action, nerve supply of group of muscles.

ndicate group of muscles by position and action, group action and nerve supply of roup of muscles.
ndicate segment innervation of muscles.
redict the result of paralysis of individual and group of muscles.

UPPER EXTREMITY

Pectoral region:

Outline the features of the pectoral region.
Name, identify and correctly orientate the sternum, clavicle, scapula and humerus.
Outline the main features of the bones of shoulder girdle.
Identify the parts, borders and surfaces of sternum mention its other features.
Identify the ends, surfaces, curvatures and other features of clavicle.
Identify the borders, angles, surface, processe, fossa and other features of scapula.
Identify the ends, head, greater and lesser tuberosities and anatomical and surgical necks of humerus; also the capitellum, trochlea and radial, coronoid and olecranon fossa and epicondyles.
Locate and identify the muscles of pectoral region. Mention their origin, insertion, nerve supply and action.

Scapular region:

omprehend the main features of the muscles in the scapular region.
to the layer, arrangement, of the muscles of the back.
ame and identify the muscles of the scapular region. Mention their origin, insertion, nerve supply and action.
emonstrate the bony land mark of scapula, humerus and clavicle.

Axilla:

) Mention, identify the boundaries and contents of axilla. Name the branches of axillary artery. Name and identify the cords and branches of brachial plexus and mention their root value.
) Illustrate the formation of brachial plexus.

Shoulder girdle:

) Comprehend and apply the function, the main features of joints of the shoulder girdle.
b) Name the joints of shoulder girdle. Identify the articular surfaces and name the ligaments and movements of sternoclavicular and acromioclavicular joints.
Mention the type of the joints.

monstrate and name the movement of scapula. Mention the chief muscles
ducing these movements.
relate movement of scapula.
sign functional role of the articular disc and sternoclavicular joint and
romioclavicular ligament.

oulder joint.

ntion the type, articular surface and ligaments of the shoulder joint.
fine and demonstrate the movements of shoulder joint.
me and identify the chief muscles producing these movements. Analyse these
vements and mention limiting factors.
ntion the blood supply and nerve supply of this joint.
alyse the associate movement of scapula and movement of the shoulder joint.
ntion the limiting factors and the factors for its stability. Indicate applied
atomy.

pper arm:

me and identify the muscles at the front and back of the upper arm.
me and identify the ends, borders, surfaces and features of the humerus. Identify
head anatomical neck, tuberosities, surgical neck, bicipital groove, condyle,
pitellum, trochlea, epicondyles, radial, coronoid and olecranon fossa.
ntion the origin, insertion, nerve supply and action of muscles of the front and
ck of upper arm.
dicate the course, relation and distribution of radial and musculo- cutaneous nerves.

bow joint:
ntion the type, articular surface and ligaments of elbow joint.
fine and demonstrate the movement possible and name the chief muscles
oducing this movement.
ntion the factors for stability and limiting factors.
dicate the applied anatomy.
ntion the applied anatomy.
plain the carrying angle.

rearm, wrist and hand:
ntion the bones of forearms, Identify the ends, borders, surface and features of
dius and ulna.
ntify the head, neck, tuberosity and styloid process of radius. Identify the coronoid
ocess, olecranon process, trochlear notch, tuberosity, head and styloid process of
na. Also the radial notch of ulna and ulnar notch of radius.

e and identify the carpal bones, metacarpal bones and phalanges in an articulated

ify the muscles of front and back of the forearm.
ion the position, insertion, nerve supply and action of these muscles.
ate the course, relations and distribution of median, ulnar and radial nerves.
ion the type, articular surface and ligaments of radioulnar joints. Define the ment of supination and pronation. Mention the axis and muscles producing movements. Analyse these movements and apply its functional role in routine o day actions.
ion the position and distribution of ulnar and radial arteries and ulnar, median adial nerves.
e and locate the carpal bones. Mention the type, articular surface and ligaments ist joint.
e and demonstrate the movements and mention the muscles producing them.
ion the blood supply and nerve supply.
ion the visible tendons around the wrist and their synovial sheaths.
et the results of paralysis of muscles of the forearm.
ion the functional implications of prehension in the structure of head.
ate the arrangements of tendons of the digits, retinaculae, fibrous flexor sheaths, synovial sheaths.
uate the hinge type of interphalangeal joints, ellipsoid type of carpophalangeal joints and saddle type of carpometacarpal joint.
e and identify the small muscles of the hand. Mention their position, origin, tion, nerve supply and action.
ion the types of bones forming and ligaments of the joints of the hand. Define movements and the muscles producing these movements. Predict the results of lysis of the small muscles of hand.
nonstrate the types of grip.

ves of upper limb:

prehend and apply the knowledge of the position and distribution of blood els and lymph nodes.
tion the root value of the nerves.
tify the nerves and mentions the positions course, relations and distribution of es of upper limb.
ict the result of injury to these nerves.

od vessels of upper limb:

prehend and apply the knowledge of the position and distribution of blood els and lymph nodes.
e the main arteries and veins.
ate their position and name the main branches of tributaries.
e and locate the lymph nodes.

11. Cutaneous Nerves of upper limb:

a) Name the cutaneous nerves and illustrate the area of their distribution.
b) Illustrate the dermatome.

LOWER EXTREMITY

Name, identification and orientation of hip bone, femur, tibia, fibula and patella.

Identify the component and features of hip bones. Identify the ends, borders, surfaces, head, neck trochanters, condyles and epicondyles of femur and the features of the tibia and fibula.

Identify and mention the origin, insertion, nerve supply and action of the muscles in the front of thigh.

ntion the boundaries and contents of femoral triangle and subsartorial canal.

icate the position, course and distribution of femoral nerve.

icate the course and main branches of femoral artery and mention the blood supply of neck of femur.

icate the position of femoral vein.

ial side of thigh:

Name and identify the muscles of the medial side of thigh. Mention their origin, insertion, nerve supply and action.

dicate the course, relations and distribution of obturator nerve.

ck of thigh:

ntify and mention the position, origin, insertion, nerve supply and action of the mstring muscles.

dicate the position, course, relation and distribution of sciatic nerve.

teal region:

a Identify and mention the position, origin, insertion, nerve supply and action of the muscles.

b Name and mention the position and course of the nerves found there and name the arteries there.

5. Hip joint:

a. Mention the type, articular surface and ligaments.

b Define the movement and name the chief muscles producing the movements.

c. Mention the blood supply, nerve supply, factor for stability and limiting factors

d Indicate applied anatomy.

6. Knee joint:

a. Mention the type, articular surfaces and ligaments.

b. Define the movement and name the chief muscles for the movements.

c. Analyse the movements

d. Know the blood supply and nerve supply.

e. Indicate applied anatomy

f Define locking and unlocking of the joint.

7 Popliteal fossa:

a Indicate the boundaries and contents.

b Mention the position and branches of tibial and common peroneal nerves.

8 Front of leg and dorsum of foot:

a. Name and identify the tarsal bones, metatarsal bones and phalanges in an articulated foot.

b. Name and identify the muscles.

c. Mention the positions, origin, insertion, nerve supply and action of the muscles.

d. Position and distribution of deep peroneal nerve.

e. Indicate the position and attachment of extensor retinaculae.

f. Mention and identify the features of the tibia and fibula.

9. Lateral Side of leg:

a. Name and identify the muscles.

b. Mention the position, origin, insertion, nerve supply and action of muscles.

c. State the position, course and distribution of superficial peroneal nerve.

d. State the position and attachment of peroneal retinacula.

10. Back of leg and sole of foot:

a. Name and identify the features of the bones of the foot.

b. Name and identify the muscles of back of leg.

c. Mention the position, arrangement, origin, insertion, nerve supply and action of the muscles.

d. State the position course and distribution of tibial artery.

e. State the position and distribution of posterior tibial artery.

f. Mention the position, and attachment of flexor retinaculum.

g. Mention the arrangement, origin, insertion, nerve supply and action of muscles of the foot.

h. Indicate the type of formation, and factors for the maintenance of the arch of foot.

i. Mention the type, articulate surface, ligaments, movements chief muscles for the movement. Axis of movements and applied anatomy of tibiofibular joints, ankle joints, subtalar – joints, M.T. joints and I.T. joints.

j. Palpate and identify the tendons around the ankle and dorsum of foot.

11. Nerves:

a. Indicate the position, formation and branches of lumbar and sacral plexuses.

b. Mention the root value of the nerves.

c Mention the position, course, relation and distribution of the nerves.

d. Predict the result of injury to the nerves.

e. Illustrate cutaneous innervation of dermatomes.

12. Blood vessels:

a. Indicate the position of arteries and their main branches.

b. Indicate the position of veins and their main tributaries.

c. Indicate the position of lymph nodes.

P. TRUNK – THORAX – ABDOMEN

TRUNK:

1. State the basic osteology of vertebral column.

2. Identify the parts of a typical vertebra. Identify and state the main features of typical vertebra of each group of vertebrae. Identify a typical vertebrae.

3. State the form, structure and movements of joints of vertebral column. Mention the movements and the muscles production them.

4. Identify the intervertebral disc and mentions its parts.

5. State the formation and ligaments of the intervertebral joints.

6. Name and identify the curvatures of the vertebral column and indicate deformities.

7. State the contents of vertebral canal.

THORAX:

1

a. State the main features of the bones and joints of thoracic cage. Mention the boundaries.

b. State the parts and features of sternum.

c. Defines true, false and floating ribs. Mentions the parts of features of typical rib. Know the main features of a typical rib.

d. Mention the type and formation of the joint between rib and vertebra, between costal cartilage and sternum, and between costal cartilages.

e. Mention the type and formation of joint between parts of sternum. Indicate the importance of sternal angle.

f. Analyse pump handle and bucket handle movement of ribs.

g. Palpate bony land marks such as jugular notch, sternal angle, xiphisternum and spine of thoracic vertebrae.

2 a. Define intercostal space and list the contents.

Mention the course and branches of typical intercostals nerve. Name the muscles of thorax. Mention the origin insertion, nerve supply and action of intercostal muscles and diaphragm.

b. Name the structures passing through the diaphragm and mention the orifices in the Diaphragm.

3. a Define the boundaries, and subdivision of the mediastinum and list the contents. Identify the contents.

b. State the feature of thoracic parts of sympathetic trunk.

ABDOMEN

1

a Mention the main features of lumbar vertebra, sacrum and coccyx.

b. Mention the formation and subdivision of bonypelvis. List the features of the female bony pelvis and their role.

c. Mention the type, articular surface, ligaments and movements of the joints of pelvis.

2.

a. Define abdominal cavity.

b. List the layers of anterior abdominal wall. Name and mention the origin, insertion, nerve supply and action of the muscles, and the features of these muscles.

c. Explain the formation of rectus sheath and list its contents.

d. Define inguinal canal and know its position, extent, formation and contents. Indicate

its clinical importance. Define inguinal hernia.

e. Name and identify the muscles of posterior abdominal wall. Give their origin, insertion, and action. Lists the organ on the posterior abdominal wall. Name the blood vessels on the posterior wall.

f. Mention the position and formation of lumbar plexus. Name its branches.

g. State the anatomy of lumbar region. Understand the disposition of muscles of the layers. Mention the arrangement of lumbar fascia identify the muscles in lumbar region. Understand the lumbar routs to abdomen. Identify and mention the attachment and action of the large muscles of back. (at least the ones ending capitis).

h. Distinguish abdominal cavity and peritoneal cavity.
i. Mention the features of lumbar part of sympathetic trunk and other sympathetic ganglia.
j. Mention the branches and distribution of the abdominal aorta and iliac arteries.
k. State the inferior vena cava and iliac veins and mention their tributaries.

Q. PELVIS:

1. State the main features of subdivision, boundaries, walls and floor of pelvis.

2. Mention the features of the pubic symphysis and sacroiliac joints.

3. Distinguish and mention and major difference between the male and female pelvis.

4. Identify the muscles of the pelvic floor and mention their attachments, actions and nerve supply.

5. Mention the structure of the urogenital diaphragm.

R. HEAD AND NECK

Musculo skeletal and neurovascular features. Identify the anterior and posterior triangles of neck. Name the subdivisions. List the contents.

1

a. State the main features of the skull and the facial skeleton.

b. Identify the large skull bones and their parts.

c. Identify the cranial fossae and hypophyseal fossa.

d. Identify the internal and external auditory meatuses, foramen magnum and stylomastoid foramen and name the main structure passing through them.

e. Identify and name the main muscles of the face. Mention their nerve supply and action.

f. Predict the result of paralysis to the facial muscles and sequel of injury to the facial nerve. (VII nerve).

g. Map the cutaneous distribution of the three divisions of the trigeminal (Vth) nerve on the face.

2.

a Identify the general feature of a typical cervical vertebra, atlas, axis and seventh cervical vertebra.

b. Identify the erector spinae, sternomastoid and scalene muscles, glenohyoid. Mention their attachments, actions and nerve supply.

c. Identify the phrenic, accessory and vague nerves. Mention their distribution.

d. Identify and state the position, distribution and root value of the nerves of cervical and brachial plexuses.

e Demonstrate the action of sternomastoid

f. Mention the type, articular surfaces, Ligaments, movements, and muscles producing these movements, at the atlanto occipital and atlanto axial joints. Demonstrates these movements and the movements of the cervical part of vertebral column.

3.

a. Identify the subclavian, vertebral and carotid arteries. Mention the position and extent of these arteries.

b. Identify the components of the Circle of Willis. Mention the distribution of internal and external carotid and vertebral arteries. Predict the sequelae of occlusion of these arteries.

d. Identify the internal jugular and subclavian veins. Mentions their position, formation and termination.

4

a. State the basic organization of the autonomic nervous system.

b. State the sites of craniosacral and thoracolumbar outflows.

c. Define the mode of the distribution of pre and post – ganglionic neurons in sympathetic fibers and mention their distribution.

d. Distinguish between sympathetic and para sympathetic system in relation to their function.

S. EYE:

1. State the position of the lacrimal apparatus, the functional, implications of structure of the eye and the lacrimal apparatus.
2. Name and illustrate the coats, their subdivisions, the refractive media, the chambers of the eye and the optic nerve
3. Mention the structure of retina and optic pathway.
4. Has a basic understanding of the light and accommodation reflex. (omitting the pathway).
5. Mention the distribution of the three divisions of trigeminal (v) nerve.
6. Name and state the nerve supply and simple actions of the extra ocular muscles.
7. Predict the result of lesions of 3rd, 4th and 6th cranial nerves.

T. NOSE:

1. Name the bony component of the nose.
2. Mention the parts and boundaries of the nose.
3. State the main features of the nasal cavity.
4. Name and identify the para nasal air, sinuses and locates their openings.

. TEMPEROMANDIBULAR JOINT

State the type, articular surface, ligaments, possible movements, muscles performing the movements and nerve supply of the temporomandibular joint.
Palpate and identify the joint and its articular surfaces.
Identify and name the muscles of mastication. Mention their actions and nerve supply.

MOUTH:

State the main features of the mouth cavity tongue, Palpate salivary glands, teeth and gums.

2. Mention the sensory and motor innervation of the tongue.
3. Identify the salivary glands.
4. Demonstrate movements of the tongue and palate.
5. Test and produce the swallowing (gag) reflex.
6. Predict the sequelae of lesions of the VII and XII cranial nerves.

W. PHARYNX:

1. State the position and extent of the pharynx.
2. State the three subdivisions and the features of each subdivision.
3. Name the muscles of pharynx and their action.
4. Mention the sensory and motor innervation of the pharynx.

X. LARYNX AND TRACHEA:

1. Identify the hyoid and state its parts.
2. Identify the larynx and name the laryngeal cartilages.
3. State the boundaries of laryngeal inlet and glottis.
4. Identify the vocal and vestibular folds.
5. State the movements of the laryngeal cartilages. Name the laryngeal muscles and mentions their attachments, action and nerve supply
6. Define the position, extent and gross structure of the trachea.
7. State the mechanics of phonation and speech, production of sound voice and speech.

Y. EAR:

1. State the basic structural plan of the organs of hearing and equilibrium.
2. Mention the three subdivisions of the ear.
3. Mention the nerve endings for hearing and equilibrium.

Z. CRANIAL NERVES:

1. Enumerate the cranial nerves in serial order.
2. Relate interprets the number to the name.
3. Indicate the nuclei of origin of termination.
4. Mention the attachments of the brain and the cranial exit.
5. State the sensory and motor distribution.
6. State the position and course of VII nerve.
7. Predict the sequel of lesion.

EVALUATION

30 5-7

PHYSIOLOGY

Examination at the end of: 1st Year

Instruction hours: 100

COURSE DESCRIPTION

This course, which runs concurrently with the anatomy course, helps the student to understand the basis of normal human physiology with special emphasis on the functioning of the cardiovascular, musculoskeletal and nervous system.

COURSE OBJECTIVES

This objective of this course is that after 100 hours of lecturers, demonstrations Lab practicals the student will be able to demonstrate an understanding of elementary human physiology.

The student will be able to fulfil with75% accuracy (as measured by written and oral internal evaluation) the following objectives of the course.

COURSE OUTLINE

A.CELL INTRODUCTION

Outline of basic concept of cell structure, function of components; transport across membranes.

B. SKIN

Structure; functions; blood flow; temperature regulation.

C. BLOOD

1. Outline of components; and their functions; RBC, WBC, platelets, Blood groups.
2. Significance of RBC and WBC counts, ESR and other related tests.
3. Clotting mechanisms;
4. Blood volume and its regulation.

D. CIRCULATION

1. Structure and properties of cardiac muscle; Cardiac cycle.
2. ECG; Heart sounds Cardiac output.
3. Factors regulating the action of the heart.
4. Blood pressure; its maintenance and regulation.
5. Cerebral circulation; Renal circulation; Pulmonary circulation.
6. Effects of exercise; effects of postural changes.
7. Lymph; factors affecting its flow

E. RESPIRATION

1. Defence mechanism in the Respiratory tree; mucociliary transport. Mechanics of Respiration.
2. Transport of blood gases, Acid-base balance.
3. Lung function tests (including lung volumes). Artificial ventilation.
4. Nervous and chemical regulation of respiration.
5. Hypoxia – types and causes.
6. Effects of exercise on respiration.

F. DIGESTION

1. Digestion in the mouth, stomach and intestine.
2. Bile: Pancreatic secretion.
3. Mechanism of control of secretions and motility.
4. Diet and Nutrition.

G. EXCRETION

1. Structure of the nephron.
2. Formation of urine.
3. Micturation.

H. ENDOCRINES

1. General metabolism, Carbohydrates, protein and fat metabolism.
2. Outline of the various hormones and their actions with special emphasis on Thyroxine and Parathyroid hormone.

I. REPRODUCTION

1. Male reproductory system.
2. Female reproductory system.
3. Outline of pregnancy; functions of placenta; Parturition; lactation. contraceptive measures.
4. Physiology of foetus; factors that affect foetal growth.

J. NERVOUS SYSTEM

1. Structure of neurones.
2. Properties of neurones; (excitation and conduction).
3. Synapse and synaptic transmission; Reflexes and properties of reflexes;
4. Sensory endings.
5. Spinal cord; Pathways in the spinal cord.
6. Brain stem; Thalmus; Basal ganglia; Cerebellum; Cerebral cortex.
7. Control of posture and control of voluntary motor activity.

K. SPECIAL SENSES

1. Vision.
2. Audition, Olfaction, Gustation; Vestibular apparatus.

L. MUSCLE

1. Structure of muscle tissue; Gross structure and microscopic structure. Arrangement of myofibrils. Myoneural junction.
2. Chemical processes involved in muscle contraction.
3. Physiology of muscle contraction, Single muscle twitch, Quantal Summation, Wave Summation, Tetany, Effects of temperature changes. All or none law, Fatigue, Isotonic, isometric and isokinetic contraction.
4. Exercise metabolism, Oxygen debt, Respiratory quotient.
5. Development of endurance, Factors affecting endurance and muscle strength, Factors affecting general and cardio respiratory endurance. Acrobic and anaerobic work, Efficiency of muscular activity, aerobic versus anaerobic (e.g., speed, work load, fatigue, diet, obesity).
6. Age and exercise. Age changes in muscle function. Age changes in CVS, Age changes in pulmonary function, Age and physical work capacity Age and nervous system.
7. Environment and exercise. Adaption to heat and cold, Exercise in heat and in cold. Human limitation in heat, Acclimatization to heat, Exercise at high altitudes.

PRACTICAL DEMONSTRATIONS

A. Determination of RBC and WBC count.
B. Examination of different types of WBC in stained blood smear.
C. Circulation in the web of the frog's feet.
D. Ischaemic pain.
E & F. Muscle contraction in frog: simple muscle curve, tetany, wave summation, quanial summation, fatigue.
G. Lung Volume.
H. Effect of exercise on ventilation.
I. Physical fitness.

J. Determination of BP; effect of exercise on BP
K. Examination of sensory and motor systems;
   Examination of superficial and deep reflexes.
M. Tests of vision (acuity and colour perception) and hearing (Rhine's test and Weber's test).

EVALUATION

APPLIED PHYSIOLOGY

I YEAR

COURSE DESCRIPTION

INSTRUCTION HOURS: 30

This course supplements the knowledge of physiology and enables the student to have a better understanding of how abnormal physiology affects human function and dysfunction.

COURSE OBJECTIVES

The objectives of this course is that after 30 hours of lectures, demonstrations, practicals and clinics the student will be able to demonstrate an understanding of the effect of abnormal physiology on function and dysfunction of the human body.

In addition, the student will be able to fulfill with 75% accuracy (as measured written and oral informal evaluation) the following objectives of the course.

COURSE OUTLINE

A. The Heart and Circulation

1. Structure and properties of heart muscle
2. The action of the heart.
3. Determinants of cardiac performance.
4. Normal E.C.G.
5. Maintenance of blood pressure
6. Cardiac arrest and heart failure.
7. Outline of lymphatic circulation & pulmonary circulation.
8. Cardiovascular compensation for postural and gravitational changes.
9. Hypertension.
10. Oedema.
11. Central and peripheral venous pressures

B. Nervous System and Muscles

1. Outline of structure and function of the central nervous system
2. Outline of the autonomic nervous system.
3. Types of nerves cells, electrical phenomena in nerve cells
4. Properties of mixed nerves.
5. Reflex action, reciprocal innervation.
6. Degeneration and re-generation of nerves
7. Control of posture.
8. Outline of voluntary movement
9. Cutaneous, deep and superficial sensation.
10. Synaptic transmission.
11. Neuro muscular transmission.
12. Properties of muscles, contractile responses, types of contraction, electrical phenomena and tonic reflexes.

C. **Respiration**

1. Mechanics of respiration
2. Breath sounds.
3. Properties of gasses.
4. Exchange of gasses.
5. Gas tension in air at sea level, tracheal air, cellular air, mixed air, plasma, arterial blood and mixed venous blood.
6. Lung volumes.
7. Magnitude of dead space
8. Control of bronchial smooth muscle.
9. Lung compliance.
10. Nervous control of respiration.
11. Chemical control of respiration.
12. Voluntary control of respiration.
13. Oxygen and carbon dioxide transport.
14. Acid base reactions in blood
15. Effects of exercise on respiration
16. Artificial respiration.

EVALUATION

BASIC NURSING AND FIRST AID

YEAR

INSTRUCTION HOURS: 40

NTRODUCTORY CLASS

What is nursing? Nursing Principles. Inter personal relationship. Bandaging. asic burns, Bandaging extremities, Triangular Bandages and their application.

URSING POSITION

Environment safety, Bed making. Prone, lateral, dorsal, dorsal, recumbent, wlers's positions, comfort measures, Aids to rest and sleep.

FTING AND TRANSPORTING PATIENTS

Lifting patients up in the bed, transferring from bed to wheel chair, transferring m bed to stretcher.

OVIDING FOR PATIENTS ELEVATION

Giving and taking bed pan, urinal, observation of stools / urine, observation of tum, understand use and care of catheters, enema giving.

THODS OF GIVING NOURISHMENT

Feeding, Tube feeding, Drips, Transfusion.

RE OF RUBBER GOODS

Observation, reporting and recording Temperature, Respiration and Pulse, Simple ptic Technique, Sterilization and Disinfection.

SURGICAL DRESSING

Parental Administration of Medicine,

Course, Orientation I (Orientation/Physiotherapy)

INSTRUCTION STAFF

I. Patterns of Health Care Delivery

a) National trends and resource
b) Local trends and resources
c) Overview of Health Science Professions (Paramedicals)

II. Components of Physiotherapy Profession.

a) History of Medical Therapeutics
b) History of Physiotherapy, International, National Local
c) Professional and governmental licensing accreditation and education standards.

III. Role of Physiotherapy in meeting health care needs of India

a) Needs versus Demands
b) Physiotherapist as "Educator"
c) Common problems and solutions.

FIRST AID

Syllabus as for Certificate of Red Cross Society of St. John's Ambulance Brigade.

40

8.7

GENERAL MEDICINE / GENERAL SURGERY / PAEDIATRICS

Examination at the end of: IInd Year

Instruction hours: 135

GENERAL MEDICINE

A. INFECTIONS

Outline the mode of spread and appropriate prevention measure of the following communicable diseases.

Bacteria -- Tetanus.

Viral Herpes simplex, zoster, varicella, Measles, German measles, Hepatitis B, AIDS.

Protozoal -- Filaria.

B. HAEMATOLOGY

1. Define and briefly describe clinical aspect of iron deficiency, B 12 and folic acid deficiency anemias.
2. List types of bleeding diathesis.
3. Describe the clinical features of Haemophilia.

C. RESPIRATORY TRACT

1. Bronchitis – Define, list etiological factors and describe symptoms.
2. Pneumonia – List types of pneumonia (lobar, broncho, aspiration pneumonia).
3. List etiologic agents and briefly outline symptoms and complications of pneumonia.
4. Asthma -- Define, describe briefly the etiological factors and clinical features during acute exacerbation.
5. Chronic obstructive airway diseases -- Define emphysema and chronic bronchitis, briefly describe the pathology, symptoms of diseases and clinical course.
6. Tuberculosis – Describe the etiology, pathology and clinical features of postural drainage.
7. Bronchiectasis -- Define and describe briefly the pathology, and clinical symptoms of bronchiectasis, bronchopulmonary segments and postural drainage.
8. Emphysema – Define and briefly describe etiological factors.
9. Chest wall deformities – Describe funnel chest, Pigeon chest barrel chest, kyphoscoliosis of thoracic spine.

10. Briefly outline functional disability of occupational, lung diseases, List pneumoconiosis.

D. CARDIO-VASCULAR SYSTEM

1. Cardiac failure- Define. List and symptoms.
2. Rheumatic fever – Define and briefly describe etiology and gross pathology of rheumatic heart disease.
3. Infective endocarditis - Define and outline etiology, symptoms and complications.
4. Ischaemic heart disease – Outline pathology of IHD, define angina pectoris and Myocardial infarction. Describe clinical features and broadly outline medical and surgical treatment.
5. Hypertension – Define and outline the clinical features, complications and goals of therapy.
6. Outline pathogenesis and clinical features of: Pulmonary embolism, Deep vein thrombosis, pulmonary infarct.
7. Congenital heart disease – List ASD, VSD, Fallot's tetralogy and PDA and a briefly outline the pathologic anatomy.

E. BONE, JOINT AND CONNECTIVE TISSUE DISORDERS

1. Brief introduction to concept of autoimmune disease.
2. Define: Systemic lupus erythematous, Polymyositis, Dermatomyositis, polyarthritis Nodosa, Sclerodema.
3. Rheumatoid arthritis – Describe etiology, clinical features and complications, drug therapy and non pharmacological therapy.
4. Osteoarthritis – Describe etiology, clinical features and complications and review nonsteroidal anti-inflammatory drugs and steroids.

F. RENAL DISEASES

1. Define and briefly outline acute and chronic renal failure.
2. Urinary tract infection. Pathogenesis. Outline common clinical conditions complicated by UTI.

G. METABOLIC DISEASES

1. Diabetes: define and outline etiology. List types of diabetes and complications and briefly outline use of insulin, diet and oral hypoglycaemic agents in management of diabetes.
2. Obesity – Define and outline management.

H. GERIATRICS

1. List diseases commonly encountered in the elderly population and their role in causing disability; Hypertension, Ischaemic Heart disease, Cerebrovascular accident, Benign prostatic Hyperplasia, Cataracts and other causes of failing vision.

GENERAL & PLASTIC SURGERY

1. Describe abdominal surgical incisions.

2. Outline the post operative complications in: Nephrectomy, Appendicectomy, Herniorraphy Mastectomy, Thyroidectomy, Colostomy, Adrenalectomy, Cystectomy, Hysterectomy, Prostatectomy, Cholecystectomy, and Ileostomy.

3. Classify burns by depth and surface area, outline the causes, medical management and precautions in the acute stage.

4. List the potential deformities due to burns, methods of prevention and precautions. Mention cosmetic and functional treatment measures.

5. Outline the plastic surgery procedures and management in rehabilitation of burns, including splinting methods for common deformities and prevention of burns contractures.

PAEDIATRICS

1. Describe growth and development of a child from birth to 12 years: including physical, social, adaptive development.

2. List the maternal and neonatal factors contributing to high risk pregnancy. The neonate: inherited diseases; maternal infections – viral and bacterial; maternal diseases incidental to pregnancy, such as gestational diabetes, pregnancy induced hypertension; chronic maternal diseases such as heart diseases, renal failure, tuber-culosis, diabetes, epilepsy; bleeding in the mother at any trimester.

3. Briefly describe community programmes: International (WHO) national and local, for prevention of poliomyelitis, blindness, deafness, mental retardation and hypothyroidism, Outline the immunization schedule for children.

4. Cerebral Palsy: Define and briefly outline etiology Prenatal – perinatal and postnatal causes; briefly mention pathogenesis, types of cerebral palsy (Classifications), findings on examination; General examination, examination of C.N.S. Musculoskeletal system, respiratory system, Gastro-intestinal tract and nutritional status.

Briefly outline associated defects; Mental retardation, microcephaly, blindness, hearing and speech impairment, squint and convulsion. Briefly outline treatment.

Outline prevention: Appropriate management of high risk pregnancies, prevention of neonatal and postnatal infections metabolic problems.

5. Muscular dystrophy: Outline various forms, modes of inheritance and clinical manifestation; physical findings in relation to disabilities progression of various forms and prognosis. Describe treatment jobs.

6. Spinabifida, meningomyelocele: Outline development; clinical features, lower limbs, bladder and bowel control; complications – U.T.I. and hydrocephalus; medical treatment and surgical treatment.

7. Still's disease: Classification, pathology in brief, physical findings, course and prognosis. Outline treatment, prevention and correction of deformity.

8. Acute C. N. S. infections: Classify (Bacterial and viral) and outline the acute illness. CNS sequelae leading to mental retardation, blindness, deafness, speech defect, motor paralysis, bladder and bowel problems seizure disorder and specific problems such as subdural effusion, hydrocephalus pressure sores, feeding difficulties.

9. Normal diet of newborn and child: List dietary calorie, fat, protein, mineral and vitamin requirement in a normal child and in a child with malnutrition. Classify and outline etiology, findings and treatment of Rickets: Vitamin D deficiency and resistant rickets.

10. Lung infections|: Outline the clinical findings, complications and medical treatment of bronchiectasis, lung abscess and Bronchial asthma.

11. The following X-ray demonstrations, Opthalmology, E.N.T. and Obstetrics & Gynaecology are not for University examinations.

OPTHALMOLOGY

Lecture-demonstrations only

Briefly outline the following:

1. Eye lesion in leprosy, including causes, treatment and complications of lagopthalmous.
2. Field defects arising from lesions in the visual pathway, their clinical symptoms and methods of testing.
3. Effect of paralysis of the ocular muscles and treatment.

4. Causes, clinical features and treatment of disorders of ocular movement occurring in diseases such as myasthenia gravis, progressive supra nuclear palsy and lower motor neuron diseases.
5. Causes, clinical features, treatment and prognosis in visual failure arising from cataract, inflammatory disorders, vitamin A deficiency, glaucoma and trachoma. Emphasis on preventable causes and prophylactic measures\.
6. Define blindness, and visual disability evaluation. Investigative procedures used for testing visual failure, including basic screening procedures for visual acuity suitable for community health surveys.

E.N.T

Lecture demonstrations only

1. Outline the anatomy and physiology of hearing and the use of audiometry in assessment of hearing.
2. Briefly classify causes of hearing loss. Outline conservative and surgical intervention, including types and availability of hearing aids.
3. Briefly outline the functions of the vestibular apparatus.
4. Briefly outline common ENT infections and diseases which affect hearing, breathing and speech; and their management.

OBSTETRICS & GYNAECOLOGY

Lecture demonstrations only

1. Review the anatomy of the female pelvis and embryonic and foetal development.
2. Outline the physiological skeletal changes during pregnancy, delivery and post-partum period.

EVALUATION

BIOMECHANICS & APPLIED ANATOMY

Examination at the end of: IInd Year

Instruction hours: 80

COURSE DESCRIPTION

This course supplements the knowledge of anatomy and enables the student to have a better understanding of the principles of biomechanics and their applications in musculoskeletal function and dysfunction.

COURSE OBJECTIVES

The objective of this course is that after 80 hours of lectures, demonstrations, practicals and clinics the student will be able to demonstrate an understanding of the principles of Biomechanics and Kinesiology and their application in health and disease.

In addition, the student will be able, to fullfil with 75% accuracy (as measured by written. Oral & practical internal evaluation) the following objectives of the course.

COURSE OUTLINE

A. MECHANICS

1. Describe types of motion, planes of motion, direction of motion and quantity of motion.
2. Define forces, force vectors, components of forces.
3. Describe gravity, segmental centres of gravity, center of gravity, line of gravity of the human body, stability and center of gravity, relocation of the centre of gravity.
4. Describe the Reaction forces. Newton's Law of Reaction.
5. Describe equilibrium – Law of inertia and Establishing equilibrium of an object.
6. Describe objects in motion: Law of Acceleration joint distraction in a linear force system and Force of friction.
7. Describe concurrent Force Systems: Composition of forces; Muscle Action Lines. Total muscle force vector, Divergent muscle pulls, and Anatomic pulleys.
8. Describe parallel force Systems: First class levers second class levers – Third class levers - Torque – Mechanical Advantage.
9. Define moment arm: Moment Arm of a muscle force. Moment arm of gravity and Anatomic pulleys.

10. Describe equilibrium of a lever.

DESCRIBE THE FOLLOWING:

1. Three types of motion.
2. The plane in which a given joint motion occurs, and the axis around which the motion occurs.
3. The location of the centre of gravity of a solid object, the location of the centre of gravity of a segmental object the location of the centre of the gravity of the human body.
4. The action line of single muscle.
5. The name, point of application direction, and magnitude of any interforce, given its reaction force.
6. A linear force system, a concurrent force system, a parallel force system.
7. The relationship between torque, moment arm and rotatory force component.
8. The methods of determining torque for the same given set of forces.
9. How anatomic pulleys may change action line, moment arm and torque passing through them.
10. In general terms, the point in the joint range of motion at which a muscle acting over the joint is biomechanically most efficient.
11. How external forces can be manipulated to maximize torque.
12. Friction, its relationship to contacting surfaces and to the applied forces.

DETERMINE THE FOLLOWING:

1. The identity (name) of diagrammed forces on an object.
2. The new centre of gravity of an object when segments are rearranged, give the original centres of gravity.
3. The resultant vector in a linear force system, a concurrent off system, and a parallel force system.
4. If a given object is in linear and rotational equilibrium.
5. The magnitude and direction of acceleration of an object not in equilibrium.
6. Which forces are joint distraction force and which are joint compressing forces what are the equilibrium force for each?

7. The magnitude and direction of friction in a given problem.
8. The class of term in a given problem.

COMPARE THE FOLLOWING:

1. Mechanical advantage in a second and third class level.
2. Work done by muscle in a second and third class level.
3. Stability of an object in tow given situations in which location of the centre of gravity and the base of support of the object.

DRAW THE FOLLOWING

1. The action line of muscle.
2. The rotary force component, the translatory force component, and the moment arm for a given force on a lever.

B. JOINT STRUCTURE AND FUNCTION

1. Describe the basic principles of joint design and a human joint.
2. Describe the tissue present in human joints: including dense fibrous tissue, bone, cartilage and connective tissue.
3. Classify joints – synarthrosis, Amphiarthrosis, Diarthrosis, sub classification of synovial joints.
4. Describe joint function, kinematic chains, range of motion.
5. Describe the general effects of injury and diseases.

RECALL THE FOLLOWING

1. The elementary principles of joint design.
2. The three main classifications of joints.
3. The five features common to all diarthodial joints.
4. Types of materials used in human joint construction.
5. Properties of connective tissue.

IDENTIFY THE FOLLOWING

1. The axis of motion for any given motion at a specific joint (knee, hip, metacarpophalangeal).
2. The plane of motion for any given motion at a specific joint, shoulder, interphalangeal, Wrist.
3. The degree of freedom at any given joint.
4. The distinguishing features of a diarthrodial joint.
5. The structures that contribute to joint stability.

COMPARE THE FOLLOWING

1. A synarthrosis with a amphiarthrosis on the basis of methods, materials and function.
2. A synarthrosis with a diarthrosis on the basis of methods, materials and function.
3. Closed kinematic chain with an open kinematic chain.
4. Dense fibrous tissue with bone.
5. Hyaline cartilage with fibrocartilage.

C. MUSCLE STRUCTURE AND FUNCTION

1. Describe Mobility and stability functions of muscles.
2. Describe elements of muscle structure – Composition of a muscle fibre, the motor unit, types of muscle fibers, muscle fiber size, arrangement and number, Muscle tension, length – tension relationship.
3. Describe types of muscle contraction, speed and angular Velocity. Applied load, Voluntary control, Torque and Isokinetic exercise.
4. Summarise factors affecting muscle tension.
5. Classify muscles – spurt and shunt muscles, Tonic and phasic muscles.
6. Factors affecting muscle function: Type of joint and location of muscle attachment, number of joints, passive insufficiency, Sensory receptors.

DESCRIBE THE FOLLOWING:

1. Ordering of the myofibrils in a sarcomere.
2. An alpha motor neuron.
3. The connective tissue in a muscle.
4. How tension develops in muscle.
5. Isokinetic exercise.

DEFINE THE FOLLOWING:

1. Active and passive insufficiency.
2. Active and passive tension.
3. Concentric, eccentric and isometric contractions.
4. Reserve action.
5. Agonists, antagonists and synergists.

RECALL THE FOLLOWING:

1. Factors affecting muscle tension.
2. Characteristics of different fibre types.
3. Characteristics of motor units.
4. Factors affecting angular velocity.

DIFFERENTIATE THE FOLLOWING:

1. A spurt from a shunt muscle.

A phase from a tonic muscle.
3. Agonist from an antagonist.
4. Active from passive insufficiency.
5. Concentric from eccentric contraction.

COMPARE THE FOLLOWING:

1. Tension, development in eccentric versus concentric contractions.
2. The angular velocity of isometric versus concentric and isokinetic contractions.
3. Isokinetic exercise with concentric exercise.

D. THE VERTEBRAL COLUMN

1. Articulations, Ligaments and muscles, typical vertebra, intervertebral disc.
2. Describe factors affecting stability and mobility.
3. Regional structure and function of cervical, dorsal, lumbar and sacral vertebrae.
4. Describe the muscles of the vertebral column – Flexors, Extensors, Rotators and Lateral flexors.
5. Describe the effects of injury and developmental deficits.

DESCRIBE THE FOLLOWING:

1. The curves of the vertebral column using appropriate terminology.
2. The articulations of the vertebral column.
3. The major ligaments of the vertebral column.
4. The structural components of typical and atypical vertebrae.
5. The intervertebral disc.
6. Regional characteristics of vertebral structure.
7. Motions of the vertebral column.
8. Lumbar – pelvic rhythm.
9. Rotation of the vertebrae in each region.
10. Movements of the ribs during rotation.

IDENTIFY THE FOLLOWING:

1. Structure that provide stability for the column.
2. Muscles of the vertebral column and the specific functions of each.
3. Ligaments that limit specific motions (i.e. flexion, extension, lateral flexion, rotation).
4. Forces acting on the vertebral column during specific motions.

EXPLAIN THE FOLLOWING:

1. Structure that provide stability for the column.
2. Muscles of the vertebral column and the specific functions of each.

3. Ligaments that limit specific motions (i.e. flexion. extension, lateral flexion, rotation).
4. Forces acting on the vertebral column during specific motions.

EXPLAIN THE FOLLOWING:

1. The relationship between the intervertebral and facet joints during motions of the vertebral column.
2. The role of the intervertebral disc in stability and mobility.
3. The effects of forces acting on the structural components during motion and at rest.

ANALYSE THE FOLLOWING:

1. The effects of disease process, injury, or other defects in the vertebrae.
2. The effects of an increased lumbosacral angle on the pelvis and lumbar vertebral column.

F. THE SHOULDER COMPLEX

1. Describe the structural components of the shoulder complex including the articulating surfaces, capsular attachments and ligaments and movements of the following joints:

   i) Sternoclavicular ii) Acromioclavicular

   iii) Scapulothoracic iv) Glenohumeral

2. Describe the function of the shoulder complex including dynamic stability of the glenohumeral joint, musculohumeral Rhythm and Scapulothoracic and glenohumeral contributions.

3. Describe the muscles of elevation (Deltoid, Supraspinatus, and Infraspinatus, Teres minor Subscapularis, Upper Trapezius, lower Trapezius, Serratus anterior, and Middle Trapezius & Rhomboids).

4. Describe the muscles of depression Lattissimus dorsi Pectoralis, Teres Major, Rhomboids).

DESCRIBE THE FOLLOWING:

1. The articular surfaces of the joints of the complex.

2. The function of the ligaments of each joint.

3. Accessory joint structures and the function of each.

4. Motions and ranges available at each joint and movement articular surfaces within the joint.

5. The normal mechanism of dynamic stability of the glenohumeral joint, utilizing principles of biomechanics.

6. The normal mechanism of glenohumeral stability in the dependent arm.

7. Scapulohumeral rhythm, including contributions of each joints.

8. The extent of dependent of independent function of each joint in scapulohumeral rhythm.

9. How restriction in the range of elevation of the arm may occur.

10. One muscular force couple at a given joint and its function.

11. The effect of given muscular deficit may have on shoulder complex function.

COMPARE THE FOLLOWING:

1. The advantages and disadvantages of coracoacromial arch.

2. The structural stability of the three joints, including the tendency toward degenerative changes and derangement.

Draw the action lines of muscles of the shoulder complex and the moment arm for each, and resolve each into components.

G. THE ELBOW COMPLEX

1. Describe the structure of the Humeroulnar and Humeroradial joints including articulating surfaces, joint capsule, Ligaments & Muscles.

2. Describe the function of the Humeroulnar and Humeroradial joints including the Axis of motion, Range of motion, Muscle action.

3. Describe the structure of the superior and inferior Radioulnar joints.

4. Describe the function of the superior and inferior Radioulnar joints.

5. Describe the mobility and stability of the Elbow complex and its relationship to Hand and Wrist.

6. Describe the effects of injury and the resistance to longitudinal compression forces, to distraction forces & to Medial lateral forces.

DESCRIBE THE FOLLOWING:

1. All of the articulating surfaces associated with each of the following joints – humeroulnar, humeroradial superior and inferior radioulnar.

2. The ligaments associated with all the joints of the elbow complex.

IDENTIFY THE FOLLOWING:

1. Axes of motion for supination and pronation and flexion and extension.

2. The degrees of freedom associated with each of the joints of the elbow complex.

3. Factors limiting the range of motion in flexion and extension.

4. Factors that create the carrying angle.

5. Factors limiting motion in supination and pronation.

COMPARE THE FOLLOWING:

1. The translatory and rotatory component of the brachioradial is and brachial is at all points in the range of motion.

2. The moment arms of the flexors at any point in the range of motion.

3. Muscle activity of the extensions in a closed kinematic chain with activity in an open kinematic chain.

4. The role of pronator teres with the role of pronator quadratus.

5. The role of biceps with that of brahcialis.

6. The resistance of elbow joint to longitudinal tensite forces with its resistance to compressive forces.

7. The features of a classic tennis elbow with the features of cubical tunnel syndrome.

8. The role of and structure of the annular ligament with the role and structure of the articular disc.

H. THE WRIST AND HAND COMPLEX

1. Describe the wrist complex including Radio carpal joint Midcarpal joint and the ligaments of the wrist complex.

2. Describe the function of the radio carpal and midcarpal joints including the movements and muscles involved.

3. Describe the Hand compelx including. Structure of fingers (Carpometacarpal, Metacarpophalangeal and interphalangeal joints of fingers, ligaments Range of motion).

4. Describe the finger musculature including Extrinsic & MCP, PIP and DIP joint function and intrinsic finger muscles.

5. Describe the structure of the Carpometacarpal, MCP and IP joints of thumb.

6. Describe the structure including the Extrinsic & Intrinsic thumb muscles.

7. Describe Prehension, Power, Cylindrical, Spherical & Hook grips.

8. Describe Precision handling, Pad to pad. Tip to tip and Pad to side prehension and Functional position of wrist and hand.

DESCRIBE THE FOLLOWING:

1. The articular surfaces of the joint of the wrist and hand complexes.

2. The ligaments of the joints of the wrist and hand, including the function of each.

3. Accessory joint structures found in the wrist and hand complex, including the function of each.

4. Types of movements and types of motion of the radio carpal joint, the midcarpal joint, and the total wrist complex.

5. The sequence of joint activity occurring from full wrist flexion to extension including the role of the scaphoid, the sequence of joint activity in radial and ulnar deviation from neutral.

6. The role of the wrist musculature in producing wrist motion.

7. Motions and ranges available to joints of the hand complex.

8. The gliding mechanisms of the extrinsic finger flexors.

9. The structure of the extensor mechanism, including the muscles and ligaments that compose it.

10. How M.C.P. extension occurs, including the muscles that produce and control it.

11. How flexion and extension of the PIP joint occur, including the muscular and ligamentous forces that produce and control these motions.

12. Hoe flexion and extension of DIP joints occur, including the muscular and ligamentous forces that produce and control these motions.

13. The role of the wrist in optimizing length – tension in the extrinsic hand muscles.

14. The activity of reposition, including the muscles that perform it.

15. The functional position of the wrist and hand.

DIFFERNETIATE BETWEEN

1. The role of the interossei and lumbrical muscles at the MCP and IP joints.

2. The muscles used in cylindrical grip to those active in spherical grip, hook grip, and lateral, prehension.

3. The muscles that are active in pad – to – pad, tip – to – tip and pad to side prehension.

COMPARE THE FOLLOWING

1. The activity of muscles of the thumb (in opposition of the thumb to the index finger) with the activity of those active in opposition to the little finger.
2. The characteristics of power grip with those of precision handling.
3. The most easily disrupted form of precision handling that may be used some on without any active hand musculature; what are the pre-requisties; for each?

I. THE HIP COMPLEX

1. Describe the general features of the hip joint including the articulating surfaces on the pelvis & the femur; Angulations; Angle of indication, Angle of Torsion; Internal architecture of femur and pelvis capsule. Ligaments & Muscles (Flexors, Extensors – one joint extensors, two joint extensors, Adductors, medial Rotators and Lateral Rotators).

2. Describe the function of hip – Rotation between pelvis, lumbar spine and hip; Pelvic motion – Anterior posterior pelvic tilting, Lumbar pelvic rhythm, lateral pelvic tilting, and Pelvic rotation.

3. Summarise the pelvic motions in the static erect posture.
4. Describe Femoral motion.
5. Describe Hip stability in Erect Bilateral stance, sagital plane equilibrium and unilateral stance.
6. Describe reduction of Forces with weight shifting and using a cane and deviations from normal in muscular weakness & Bony abnormalities.

DESCRIBE THE FOLLOWING:

1. The articulating surfaces of the pelvis and femur.
2. The structure and function of the trabecular systems of the pelvis and femur.
3. The structure and function of the ligaments of the hip joint.
4. The angle of inclination and the angle of torsion.
5. The plane and axes of the following pelvic motions and the accompanying motions at the lumbar spine and hip joints, pelvic rotation and anterior posterior and lateral tilting of the pelvis.
6. The muscle activity that produces tilting and rotation of the pelvis.
7. Motions of the femur on the pelvis including planes and axes of motion.
8. The structure and function of all the muscles associated with the hip joints.
9. The forces that act on the head of femur.
10. The position of greatest stability at the hip.

EXPLAIN THE FOLLOWING:

1. How sagital and frontal plane equilibrium are maintained in erect bilateral stance.
2. How frontal plane equilibrium is achieved in unilateral stance.
3. How force acting on the femoral head may be reduced.
4. How the functions of the two joint muscles at the hip are affected by changes in the position of the knee and hip.

5. The functional and structural relationship among the hip, knee, pelvis and lumbar spine.

COMPARE THE FOLLOWING:

1. Forces acting on the femoral head in erect bilateral stance with the forces acting on the head in erect unilateral stance.
2. Coxa vaiga with coax with coxa vara on the basis of hip stability and mobility.
3. The motions that occurs at the hip, pelvis and lumbar spine during forward trunk bending with the motions that occur during anterior and posterior tilting on the pelvis in the erect standing position.
4. Anterversion with retroversion on the basis of hip stability and mobility.
5. The structure and function of the following muscles – Flexors and extensors – abductors and adductors, lateral and medial rotators.

J. THE KNEE COMPLEX

1. Describe the structure of the Tibiofemoral joint Articulating surfaces on femur and tibia, the menisci, Joint capsule and bursae, Ligaments and other supporting structures, Anterior – posterior and Medio – Lateral stability; Muscle structure; Knee flexors & extensors: Axes of knee complex: Mechanical axis, Anatomic axis and axis of motion.
2. Describe the function of the Tibiofemoral joint: Range of motion. Flexion and extension, Rotation, Abduction and Adduction locking and unlocking; Functions of Menisci and Muscle function.
3. Describe the structure of the patellofemoral joint.
4. Describe the function of the patellofemoral joint.
5. Describe the effects of injury and disease in the tibiofemoral and patellofemoral joints.

DESCRIBE THE FOLLOWING:

1. The articulating surfaces of tibiofemoral and patellofermal joints.
2. The joint capsule.

3. The anatomic and mechanical axes of knee.

4. Motion of the femoral concyles during flexon and extension in a closed kinematic chain.

5. Motion of the tibio in flexion & extension in an open kinematic chain.

DRAW:

1. The Q angle when given an illustration of the lower extremity.

2. Moment arm of the quadriceps at the following degree of knee flexion: 90 deg., 30 deg.. 10deg.

3. The action lines of vastus laterals and the vastus medialis oblique.

LOCATE:

1. The origins and insertion of all the muscles at the knee.

2. The bursae surrounding the knee.

3. The attachments of the ligaments of the medial and lateral compartments.

IDENTIFY:

1. Structure that contribute to the medial stability of the knee including dynamic and static stabilizers.

2. Structures that contribute to the lateral stability of the knee including dynamic and static stabilizers.

3. Structures that contribute to the posterior stability of the knee including dynamic and static stabilizers.

4. Structures that contribute to the anterior stability of the knee including dynamic and static stabilizers.

5. Structures that contribute to the rotary stability of knee.

6. The normal forces that are acting on the knee.

COMPARE:

1. The knee and the elbow joint on the basis of similarities / dissimilarities in structure and function.

2. The lateral with the medial meniscus on the basis of structure and function.

3. The forces on the patellofemoral joint in full flexion with full extension.

4. The action of quadriceps in an open kinematic chain with that in a closed kinematic chain.

5. The effectiveness on the hamstrings as knee flexors in each of the following hip positions: - hyperextension, ten degrees of flexion and full flexion (open kinematic chain).

EXPLAIN:

1. The function of the menisci.

2. How a tear of the medial collateral ligament may affect joint function.

3. The functions of the suprapatellar, gastronomes, infrapatellar and prepatellor bursae.

4. Why the semiflexed position of the knee is the least painful position.

5. Why the knee may be more susceptible to injury than the hip joint.

K. TYPE ANKLE – FOOT COMPLEX:

Describe the structure, ligaments, axis and function of the following: Ankle joint, tibiofibular joints, Transverse Tarsal joint, Tarsometatarsal joint, Plantar arches, Metatarasophalangeal joints, interphalangeal joints.

Define the terminology unique to the ankle foot complex, including inversion exarsion, pronation – supination, dorciflexion – plantar flexion, flexion – extension and adduction and abduction.

DESCRIBE

1. The compound articulations of the ankle, subtalar, talocalcanenavicualr, transverse tarsal and tars metatarsal joints.

2. The role of the tibiofibular joints and supporting ligaments.

3. The degrees of freedom and range of motion available at the joint of the ankle and the foot.

4. The significant ligaments that supports the ankle, subtalar, amd transverse tarsal joints.

5. The triplanar nature of ankle joint motion.

6. The articualr movements that occur in the weight – bearing subtalar joint during inversion – eversion.

7. The relationship between tibial rotation and subtalar / talocal caneonvicular inversion – eversion.

8. The relationship between hind foot inversion eversion and motiligy – stability of the transverse tarsal joint.

9. The function of the tarsometatarsal joints, including when motion at these joints is called upon.

10. Supination – pronatin of the forefoot at the tarsometatarssal joints.

11. Distribution of weight within the foot.

12. The structure and function of the plantar arches including the primary supporting structure.

13. When muscles supplement arch support, including those muscles that specifically contribute.

14. The effects of tow extension on the planar arches.

15. The general function of the extrinsic muscles of ankle & foot.

16. The general function of the intrinsic muscle of foot.

L. POSTURE:

1. Describe the effects of gravity and indicate the location of the gravity line in the sagital plane in optimal posture

2. Analyse posture with respect to the optimal alignment of joints in the antero – posterior and lateral views.

DESCRIBE:

1. The position of hip, knee and ankle joints in optimal erect posture.

2. The position of body's gravity line in optimal erect posture, using appropriate points of reference.

3. The effects of gravitational moments of body segments in optimal erect posture.

4. The gravitational moments acting around the vertebral column, pelvis, hip, knee and ankle in optimal erect posture.

5. Muscles and ligamentous structures that counter balance gravitational moments in optimal erect posture.

6. The following postural deviations: pesplanus, halluxvalgus, pes cavus, idiopathic scoliosis, kyphosis and lordosis.

7. The effects of the above postural deviations on body structures i.e., ligaments, joints and muscles.

DETERMINE:

1. How changes in the location of the body's gravity line will effect gravitational moments acting around specified joints axes.

2. How changes in the alignments of body segments will affect either the magnitude or the deviation of the gravitational moments.

3. How changes in alignments will affect supporting structures such as ligaments, joints capsules, muscles and joints surfaces.

M. GAIT

DEFINE:

1. The stance, swing and double support phases of gait.

2. The subdivisions of the stance and swing phases of gait.

3. The time and distance parameters of gait.

DESCRIBE:

1. Joint motion at the hip, knee and ankle for one extremity during a gait cycle.

2. The location of line of gravity in relation to the hip, knee, and ankle during the stance phases of gait.

3. The gravitational moments of force acting at the hip, knee and ankle during the stance phase.

EXPLAIN:

1. Muscle activity at the hip, knee and ankle throughout the gait cycle, including why and when a particular muscle is active and type of contraction required.
2. The role each of the determinants of gait.
3. The muscle activity that occurs in the upper extremity and trunk.

COMPARE:

1. Motion of upper extremities and trunk with motion of pelvis and lower extremities.
2. The traditional gait terminology with the new terminology.
3. Normal gait with a gait in which there is a weakness of the hip extensors and abductors.
4. Normal gait with a gait in which there is unequal leg lengths.

EVALUATION

EXERCISE THERAPY AND MASSAGE

EXERCISE THERAPY

Examination at the end of: IInd Year

Instruction hours 270.

COURSE DESCRIPTION

In this course the student will learn the principles, technique and effects of exercise as a therapeutic modality in the restoration of physical function.

COURSE OBJECTIVES

The objective of this course is that after 270 hours of lectures, demonstrations, practicals and clinic the student will be able to list the indications and contractions of various types of exercises, demonstrate the different techniques, and describe their effects.

In addition, the student will be able to fulfill with 75% accuracy (as measured by written, Oral & practical internal evaluation) the following objectives of the course.

A. MECHANICS

Define the following terms and describe the principles involved with suitable examples.

1. Force: Composition of force, Parallelogram of forces.
2. Equilibrium: Stable, unstable, neutral.
3. Gravity: Centre of gravity, Line of gravity.
4. Levers: 1st order, 2nd order, 3rd order, their examples in the human body and their practical applications in physiotherapy forces applied to the body levers.
5. Pulleys: Fixed, Movable.
6. Springs: Series; Parallel.
7. Tension
8. Elasticity: Hook's law.
9. Axis: Sagittal, Frontal Transverse, vertical.
10. Planes: Sagittal, Frontal, Horizontal.
11. Definitions of: Speed, Velocity, Work, Energy, Power, Acceleration, Momentum, Friction and inertia.

B. MUSCLE ACTION

Explain the following:

1. Muscle work Isotonic (concentric, eccentric), isometric (static).
2. Group action : Agonists (prime movers), Antagonists, synergists, Fixators.
3. Angle of muscle pull, Mechanical efficiency of the muscles.

C. PELVIC TILT

Describe the following:

1. Normal pelvic tile: Alternation from normal, Anterior tilt (forward), posterior tilt (backward), Lateral tilt.
2. Muscles responsible for alteration and pelvic rotation.
3. Identification of normal pelvic tilt, pelvic rotation and altered tilt and their corrective measures.

D. STARTING POSITION

Describe the following starting positions, their muscle work, effects and uses. Specify the importance and derived positions for each one.

Standing, Kneeling, Sitting, Lying, Hanging.

E. MOVEMENT

Explain the following terms, with suitable examples:

1. Anatomic movements: Flexion, Extension, Abduction, Inversion, Eversion, Supination, Pronation, Internal rotation, External rotation, Gross flexion, Gross extension, Trunk side flexion.
2. Surface Anatomy of the individual joint.
3. Rhythm of movement.
4. Timing of movement.
5. Duration of movement.
6. Classification of movement: Active, Passive.
7. Effects of exercise: Physiological effects, Therapeutic effects.
8. List the indication and contra – indications of the following and demonstrate the technique for each:

Active movement: Voluntary (free, active, assisted-resisted, resisted), involuntary (associated reflex, Peristaltic/Visceral, cardiac).

Passive movement: Relaxed passive movement, mobilization (forced P.M. manipulation, serial manipulations), passive stretching

F. PASSIVE STRETCHING

Demonstrate passive stretching of following muscles / muscle groups and describe the indications, contra – indications physiological effects, advantages and disadvantages of each. Upper limb: pectorialis major, biceps brachii, triceps brachii, long flexors of the fingers.

Lower limb: rectus femoris, illiotibial band (tensor fascialata) gastrocnemius, soleus, hamstring, hip adductor, illopsoas.

Neck: Sternocleidomastoid.

G. ACTIVE MOVEMENT

1. Describe the types, techniques, indication and contra indications, physiological effects, advantages and disadvantages and demonstrate three progressive resisted exercises in progression for the following muscle group : Shoulder abductor, shoulder forward flexor, Triceps Brachii, Hip abductor, Hip flexor, Quadriceps – femoris, Abdominal muscles, Back extensor.

2. Describe the home programme for strengthening neck muscles and back extensor.

H. PROGRESSIVE RESISTED EXERCISE

1. Describe the following exercises, their advantages and disadvantages and demonstrate the techniques of the following types of PRE: Fractional system, MacQueen's set system, MacQueen's power system.

2. Demonstrate the skill to grade upper and lower limb, neck and trunk muscles.

I. MUSCLE GRADING

1. Describe the types of muscle grading, key to muscle grading, techniques of muscle testing – easy test hard test and functional test (ADL).

2. Demonstrate the skill to grade upper and lower limb, neck and trunk muscles.

J. RE – EDUCATION OF MUSCLE

1. Describe the following in re – education of muscle: The term re-education of muscle, Technique, Spatial summation, temporal summation.

2. Demonstrate the various re-education techniques and facilitating method on various groups of muscles.

3. Demonstrate the progressive exercises in strengthening using various applications: (according to their muscle power) Grade 1 – Grade 5.

K. JOINT MOBILITY

Describe the following:

1. Joint ranges (outer range, middle range, inner range), individual joint structures, joint movements (anatomic, accessory), Causes of joint range limitations, prevention of Joint stiffness positioning (physiological resting position).

2. Passive range of movement, methods of relaxation, active exercises, Manual mobilization techniques.

3. Pain relieving modalities: Moist heat, Infra red, Ultra sound S.W.D., Micro wave. Diathermy.

4. Forced passive movements: Small amplitudes, Large amplitudes.

5. Muscle strengthening techniques (PNF) Hold – relax, slow reversal, Rhythmic stabilization, repeated contractions.

6. Accessory movements: Posterior glide, Anterior glide, superior and inferior glide, Traction and approximation.

7. Indications and contra – Indications for mobilization of individual joints and demonstrate practically the various mobilization techniques for individual joint and teaching home programme.

L. GONIOMETRY

1. Describe the following: Normal range of various joints. Description of goniometer. Range of measuring system (180 foot trunk and head). Techniques of goniometry.

2. Demonstrate measuring of individual joint range using goniometer.

MASSAGE

Examination at the end of : IInd Year Instruction hours 80

COURSE DESCRIPTION:

In the course the student will learn the principles, techniques and effects of massage as a therapeutic modality in the restoration of physical function.

COURSE OBJECTIVES:

The objective of this course is that after 80 hours of lectures demonstrations, practicals and clinics, the student will be able to list the indications and contra – indications of various types of massage manipulations, demonstrate the different techniques, and describe their effects.

In addition, the student will be able to fullfil with75% accuracy (as measured by written, Oral & Practical, internal evaluation) the following objectives of the course.

COURSE OUTLINE

A. Describe briefly:

1. History of massage.
2. Mechanical points to be considered.
3. Points to be considered while giving massage.
   a. Manipulations
   b. The time of day for treatment.
   c. The comfort and support of the patient (draping, bolstering, & positioning).
   d. Position of operator (therapists stance).
   e. Using body weight.
   f. Contact and continuity
   g. Techniques, indications, and contra – indications.
4. Physiological effects of massage on various systems of body. Effects on: Excretory system, Circulatory system Muscular system. Nervous system & Metabolism system.

B. Define and describe the various manipulation techniques used in massage.

1. Stroking manipulations: Effleurage, Stroking.
2. Pressure manipulations: Kneading: Squeezing, Stationary, Circular Ironing (reinforced kneading) Finger Kneading, Petrissage (picking up, wringing, rolling). Frictions.
3. Percussion manipulations Tapotement, Hacking, Clapping, Beating & Pounding.
4. Shaking-manipulations Vibration Shaking.

C. Define and describe the techniques, effects & uses and contra indications of the following manipulations :

1. Massage for upper limb:

a. Scapular region.
b. Shoulder joint.
c. Upper arm.
d. Elbow joint.
e. Forearm
f. Wrist joint
g. Hand.

2. Massage for lower limb:

a. Thigh
b. Knee joint
c. Leg
d. Foot (including ankle joints and toes).

3. Massage for back:

1. Neck and upper back
2. Middle and lower back
3. Gluteal region.

4. Massage for the face:

EVALUATION

REFERENCES : Manual of massage and measurements – Edith M. Prosser.

WOOD & BECKER : Beards Massage.
MARGARETT HOLLIS : Massage for Therapist.
AUDREY GITA GOLDBER : Massage for the Beauty Therapist.

MICROBIOLOGY / PATHOLOGY

MICROBIOLOGY

Examination at the end of II Year — Instruction hours:25

L – Lecture
LD – Lecture demonstration

A. Introduction and history of Microbiology (L)
B. General lectures on Micro – organisms (LD)

1. Classification, 2.Shape and arrangement, special characteristics – spores, capsules, enzymes, motility, reproduction.

C. Disinfection and antiseptics.
D. Sterilization and asepsis (LD).
E. Antibacterial agents – fundamental aspect, susceptibility tests.
F. Infection - Source of infection (LD).
- Portals of entry
- Spread of infection
G. Non – specific immunity (L)
H. Immunity – natural and acquired (L)
I. Allergy and hypersensitivity (L)
J. Outline of common pathogenic bacteria and diseases produced by them. Treatment and prevention.

1. Respiratory tract infection.
2. Meningitis.
3. Enteric infection.
4. Anaerobic infection.
5. Urinary tract infection.
6. Leprosy, tuberculosis and miscellaneous infections.
7. Wound infection.
8. Sexually transmitted diseases.
9. Hospital acquired infection.

K. Pathogenic Yeasts and fungi (LD)
L. Virology – Viral infection with special mention about Hepatitis, Poliomyelitis & Rabies. (LD)

EVALUATION

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PATHOLOGY

Examination at the end of IInd Year — Instruction hours: 25

A. Introduction, Concept of disease, classifications of lesions.
B. Bacterial, Viral and Parasitic infection – a general outline.
C. Inflammation and repair, Degeneration, necrosis and gangrens.
D. Hemorrhage, Shock, embolism, thrombosis.
E. Tuberculosis, Leprosy, typhoid.
F. Deficiency diseases.
G. Tumours, Aetiology & spread, common tumours.
H. Blood, anaemia, Heart and blood Vessels, common congenital anomalies, Rheumatic and Coronary heart diseases.
I. Respiratory System, Pneumonias, Bronchioctasis Emphysema, Chronic bronchitis, Asthma.
J. Bone and joints, Autoimmune disease, septic arthritis Osteomyelitis.
K. Skin, Leprosy.
L. Urinary system.
M. Central nervous systems, CNS infections vascular disorders.
N. Rheumatoid Arthirits.
O. Selrodema and Psoriasis.
P. Diseases of muscle including poliomyelitis myopathies.
Q. Volvkann's Ischaemic.

ELEMENTS OF BIOCHEMISTRY & PHARMACOLOGY

BIOCHEMISTRY

NOT FOR UNIVERSITY EXAMINATION (II YEAR) INSTRUCTION HOURS: 10

COURSE OUTLINE

a. Introduction to Bio – chemistry as on allied science to medicine, Blood and Urine investigations of normal & abnormal urine samples.
b. Carbohydrates – Structure and general nature - Biological importance - classifications, polyaccharides & their physio – logical importance.
c. Lipids – Structure and general nature - Classification, Bio – Logical membranes and membrane transport.
d. Proteins – structure and functional aspect of hemoglobin, myoglobin. collagen and cellular proteins (their names only).
e. Enzymes – specificity and factors affecting enzyme activity intra cellular and extracellular enzymes, isoenzymes – clinical significance of alkaline phosphates, acid phosphatase and cholinesterase, creatine phosphokinase (CPK).
f. Metabolic pathways related to Carbohydrate and lipid metabolism, their names and significance only. Disorders of carbohydrate metabolism, hyper and hypoglycemia – glycosuria diabetes mellitus - types – biochemical changes.
g. Metabolic pathways – related to protein metabolism - their names and significance only – amino aciduria, alkalptonuria, nuclear acid metabolism – Gout.
h. Vitamins – fat soluble and water soluble – their source, requirement, special requirements, - biochemical functions & deficiency state.
i. Minerals and trace elements & their role in growth and development – Disorders of calcium, phosphorus metabolism muscular dystrophies.
j. Fundamentals of nutrition & dietetics.

PHARMACOLOGY

NOT FOR UNIVERSITY EXAMINATION (II YEAR) INSTRUCTION HOURS: 15

COURSE OUTLINE

Introduction to Pharmacology – Terminology – Agonist Antagonist Pharmacokinetics, Pharmacodynamics, Pharmacotherapeutics, Toxicology Drug – Receptor interaction – Association – Dissociation constants, Routes of administration – Absorption - Distribution – Termination of actions.

Autonomic Pharmacology – neurotransmitters, acetylcholine, sites of action. – epinephrine, nor epinephrine – cholinergic blockers of muscarinic and nicotinic function - Belladonna alkaloids, synthetic substitutes, adrenergic blockers, both alpha and beta blockers and blockade.

Cardiovascular Pharmacology – Congestive Cardiac failure – glycosides – angina and anti anginal agents – antihypertensives – diuretics – beta blockers, calcium channel blockers, ACE – inhibitors, - peripheral vascular disease and vasodilators – cardiac anti arrhythmic agents.

Blood disorder – anemia, iron deficiency anemia, iron substitute as therapeutic tool – Megaloblastic anemia – cyanocobalamine – Shock – plasma substitutes, plasma expanders, vasoconstrictors – coagulants and anticoagulanyts – heparin and coumarins.

Neuropharmacology – Sedatives and Hypnotics, barbiturates and their antagonists – narcotics and narcotic analgesics – opioids and dangers of addiction – prevention Role of superficial and Topical remedies in induction of analgesia – Demonstrate preparation of a Liniment.

Behavioral Pharmacology and Psychopharmacology – Anxiety states, Antianxiety drugs – Benzodiazephins – Diazepam congeners – Mood disorders and depressed states – antidepressants Lithium – Psychodysletics and their dangers in misuse among student population.

Movement Disorders – Parkinsonism – characteristics of disease, tremor, rigidity – chemotherapy, Epilepsies – types – drug management of disease – Spastic disease – drug treatment of acute muscle spasms – gastro intestinal pharmacology, hyperqzcidity, antidiarrhoels, purgatives.

Inflammatory diseases – anti-inflammatory agents – Analgesics – Nonsterodial anti-inflammatory agents- Aspirin, paracetamol, indomethacin, diclofenac, piroxicam.

mefenamoic acid, steroidal agents, glucocorticoids, prednisolone, dexamethasone, betamethasone, beclomethasone.
Endocrine disorders – thyroid – hypo and hyperthyroidism, diabetes and insulin – oral hypoglycemic agents, gonadal hormones oral contraceptives role in arthritic conditions of glucocortiocoids – dangers of prolonged use of steroidal agents

Chemotherapy bacterial infections drugs against microorganism sulphonamides, antibiotics, floxacins – Parasitic infestations malaria, amebae, filariasis – flagellates – Respiratory Pharmacology use of broncho dilator – airway clearance – Cancers – antimitotics, antimetabolities, irradiation radioactive materials cancers.

STATISTICS AND RESEARCH METHODOLOGY

NOT FOR UNIVERSITY EXAMINATION (II YEAR) INSTRUCTION HOURS: 10

A. Research methods and methodology

B. Research Process

C. Research Design

D. Collection of data

E. Sampling Methods

F. Data Analysis, Interpretation and presentation

G. Central tendency and dispersion

H. Correlation and regression

I. Testing Hypothesis

Syllabus for II Year B.P.T - Statistics and Research Methodology

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ELECTROTHERAPY (LMF & HF)

Electrotherapy I (Low & Medium Frequency)

Electrotherapy II (High Frequency & Actinotherapy)

Examination at the end of III Year

Instruction hours : 350

COURSE DESCRIPTION:

In this course the student will learn the principles, technique, and effects of electrotherapy as a therapeutic modality in the restoration of physical function.

COURSE OBJECTIVES:

The objective of this course is that after 350 hours of lectures, demonstration, practicals and clinics the student will be able to list the indications and contra-indications of various types of electrotherapy, demonstrate the different techniques, and describe their effects.

In addition, the student will be able to fulfill with75% accuracy (as measured by written, oral & practical internal evaluation) the following objectives of the course.

LOW AND MEDIUM FREQUENCY

INTRODUCTORY PHYSICS

Describe the following:

A. Electricity:

1. Definition and types.
2. Therapeutic uses.
3. Basic physics.
4. Working.
5. Importance of currents in treatment.

B. Static Electricity:

1. Production of electric charge.
2. Characteristics of a charges body.
3. Characteristics of line soft forces.
4. Potential energy and factors on which it depends.
5. Potential difference and E.M.F.

C. Current Electricity:

1. Units of Electricity: Farad, Volt, Ampere, Coloumb, Watt.
2. Resistance: In series & in parallel.
3. Ohm's law and its application to DC and AC currents.
4. Potentiometer: Construction and working.
5. Fuse: Construction, working and application.
6. Transmission of electrical energy through solids, liquids, gases and vacuum.
7. Direct current:
   - Definition
   - Physiological and chemical effects.
   - Therapeutic and polar effects.
   - Dangers of DC: Shock, safety precautions and management.
8. Burns: Electrical & Chemical; Prevention & management.
9. Condensers: Definitions, Principles, Types: Construction and working, capacity and uses.
10. Alternating current.
    - Faradism.
    - Surged Faradism.
    - Physiological effects.
    - Therapeutic uses.

D. Magnetism:

1. Definition
2. Properties of magnets.
3. Electro – magnetic induction.
4. Transmission by contact.
5. Magnetic field and magnetic forces.
6. Magnetic effects of an electric field.

E. Moving coil milliameter: Construction, working and uses.

F. Voltmeter:

G. Transformer:

1. Definition
2. Types
3. Principle
4. Construction
5. Eddy Current
6. Working uses

H. Chokes:

1. Principle
2. Construction and working
3. Uses

I. Electric values of thermionic valves:

1. Types: Diode, Triode, Double anode diode.
2. Principles of Thermionic valves
3. Construction and working of different values.
4. Uses.

J. Metal oxide rectifier:

1. Definition
2. Construction
3. Working
4. Uses

K. Ionisation:

1. Theory
2. Effects of various ions
3. Techniques of medical ionization and surgical ionization.

MODALITIES:

A. Interrupted galvanic current:

1. Types of Frequencies – Low and High.
2. Types of duration – Short and long.

B. Effects of interrupted galvanic current on innervated and denervated muscles.

C. Characteristics of stimulating current:

1. Type
2. Duration
3. Shape
4. Frequency

D. Threshold of Stimulating:

1. Rheobase
2. Chronaxie
3. Masking

E. Physiological effects of IG current, Chemical and therapeutic effects.

F. Electrodiagnostic tests as follows:

1. Strength duration curves:
   A. Definition
   B. Type of Current required
   C. Shape
   D. Frequency
   E. Procedure
2. F.G. Test
3. Fatigue test
4. Outline of EMG

G. Characteristics of normal and denervated muscle.

H. Peripheral nerve lesions: Neuropraxia, Axonotmesis, Neurotomesis, Describe clinical symptoms and signs, aims in treatment. Methods and selection of currents in different types of lesions.

I. Selection of current: Differentiate between the type of current, duration, shape & frequency of current used in stimulating nerve and muscle.

J. T.E.N.S.

1. Define TENS.
2. What is the principle involved.
3. Working of TENS (in brief)
   Frequency, output etc.
   Placement of electrodes.
4. Types
5. Basic physiology:
   Theories of pain:
   Specificity theory.
   Pattern theory.
   Gate control theory.

   Cutaneous innervation.
6. Basic Anatomy
7. Indications & Contra – indications.

K. INTERFERNTIAL THERAPY (M.F.)

1. Define interferential current.
2. Discuss Production of medium frequency currents.

3. Physiological and contra – indications.
4. Dangers.
5. Techniques of treatment.
6. Therapeutic uses.

HIGH FREQUENCY

INTODUCTORY PHYSICS

A. Define electricity: Discuss its properties, briefly describe the types of electricity – static, current.

B. Magnetism: Discuss Briefly:

1. Nature – molecular theory
2. Properties
3. Magnetic effect of an electric current.

C. Define electromagnetic induction. Discuss:

1. Principles, construction & types if transformers.
2. Choke coil.

D. Condensers. Define and discuss:

1. Principles
2. Measurement
3. Factors
4. Construction
5. Field between condensers
6. Charging and discharging
7. Discharging through inductance & capacitive resistance.

E. Values Describe:

1. Types
2. Construction
3. Function (Illustrate with aid of diagram)

F. Rectifiers: Discuss briefly:

G. Fuse and gird – explain with diagram the working and use of these two.

H. Discuss the various devices used in regulating intensity of current.

I. Define oscillation. What is "capacitance" and "inductance"?
Give an example of an oscillating system:

1. What is the frequency of oscillating?
2. What do you mean by damping of oscillation?
3. How does transfer of energy between 2 circuits take place?

J. Radiation energy end its properties (discuss in brief).

K. Electro magnetic waves and its properties (discuss in brief).

L. Physiological and therapeutic effects of HF currents(discuss in brief).

ACTINOTHERAPY

Describe the following:

BASIC PHYSICS

1. Define heat and temperature (in brief)
2. Physical Effects of heat (in brief)
3. Transmission of heat (in brief)
4. Sources of therapeutic heating and its physiological effects.
5. Radiation energy and its properties.
6. Electromagnetic spectrum – production and it properties.
7. Laws governing radiation.
8. Skin
   A. Structure
   B. Depth of penetration
9. Discuss in brief piezo – electric effect.

MODALITIES:

A. SHORT WAVE DIATHERMY

Describe the following:

a. Properties of H.F. currents.

1. Sustained and Unsustained.
2. Damped and undamped.
3. Impedance.
4. Define nodes and Antinodes. Explain. with examples, the fields, set up, etc.
5. Define wavelength.

b. Types of high frequency currents (in brief).

c. Production Of H.F. currents:

1. Principles
2. Construction of apparatus with diagram.
3. Tuning of machine.
4. Regulation of current.

d. Methods

1. Condenser field.
2. Cable method.
3. Effects of above methods.

e. Physiological and therapeutic effects of S.W.D.

f. Techniques of Application:

1. Testing machine.
2. Preparation of patient.
3. Types of electrodes.
4. Position and size to electrodes.
5. Leads
6. Applications of current.
7. Dosage.

g. Specific requirement – application of

1. Condenser field method.
   a. Spacing – need & type.
   b. Position.
   c. Application.
   d. Size of electrodes.
2. Cable method – types of applications.

h. Dangers and precautions

i. Continuous and Pulsed diathermy : Compare Indications and contra – indications, Advantages and disadvantages. Working.

B. MICROWAVE DIATHERMY

1. Production – explain with diagram.
2. Explain how the magnetron works.

3. Application of M.W.D.
4. Physiological effects.
5. Therapeutic effects.
6. Indications and Contraindications
7. Techniques of application – dosage (in detail)
8. Dangers

C. ULTRASONIC THERAPY

1. What is U.S. therapy?
2. Explain with the aid of diagram the production of U.S.
3. Properties of U.S.
   - Reflection
   - Transmission
   - Absorption (in detail)
4. Properties of ultrasonic field: Depth of penetration in relation to (a) intensity and (b) frequency.
5. Effect on tissues:
   - Thermal
   - Mechanical
   - Chemical and biological
6. Coupling media
7. Pulsed U.S.
8. Uses of U.S.
9. Techniques of application:
   - Methods
   - Direct contact
   - Water bath
   - Water bag
   - Dosage in acute and chronic conditions
   - Indications & contra – indications.

D. INFRA RED RAYS

1. I.R. rays – wave length
2. Types of generators and its working.
3. Physiological effects.
4. Therapeutic effects and uses.
5. Techniques of irradiation:
   - Choice of apparatus.
   - Preparation of patient.
   - Arrangement of lamp.
   - Application of treatment.
   - Duration and frequency.

6. Dangers – briefly discuss.
7. Indications & contra – Indications.
8. Therapeutic and Physiological effects.

E. ULTRA VIOLET RADIATION

a. Physics:
   - Electric arc
   - Process of ionization
   - Transmission of current through gages.

b. Types of lamps
c. Construction of lamps.
   a. High pressure mercury vapour lamps.
   b. Kromayer lamp.
d. Tridymite formation.
e. Cooling
f. Spectrum – mercury vapour lamps (in brief)
g. Fluorescent tube for U.V. production.
h. PUVA apparatus.
i. Care of lamps.
j. Physiological and Therapeutic effects in detail.
k. Photosensitization – in brief.
l. Indication, contra – indications and dangers.
m. Technique of application:
   a. Test dose
   b. Local treatment
   c. General irradication
   d. Treatment

n. Conditions (common) in which above treatment given.
o. Sensitisers (in brief)
p. Filters
q. Comparison between infrared radiation & ultraviolet radiation
r. Miscellaneous:
   A. Erythema – Development, Appearance, Duration.
   B. Wavelength
   C. Penetration
   D. Pigmentation
   E. Tolerance
s. Practical on the following conditions.
   a. Acne – shoulder and chest.
   b. Acne – Back and chest.
   c. Psoriasis
   d. Allopecia arietta and totalis.
   e. Ulcer – non infected, infected.

f. Pressure – sore.
g. Rickets.
h. General body bath.

F. LASER (H.F)

Define Laser and briefly outline its working, properties, types, therapeutic indications, contra – indications, efficiency, and precautions.

CYROTHERAPY

1. Physical principles
2. Physiological effects and uses
   - Circulatory response and uses.
   - Normal response and uses.
3. Techniques of application:
   - Preparation.
   - Application
   - Modifications
4. Methods of application:
   - Ice pack
   - Ice tower
   - Immersion
   - Ice cube
5. Indications& Contra – Indications to treatment.

EMG BIOFEED BACK

1. Cathode - ray – Oscilloscope
2. Taub's Theory of "Learned Nonuse" mechanism.
3. Definition of EMG biofeed back.
4. Priniciples of EMG Biofeed back.
   i. Objective documentation of covert residual function.
   ii. Process of shaping
   iii. Process of motivation
5. Sensory theory
6. Motor theory
7. Role of Biofeed back in control of Movement.
8. Biofeed back devices.
   i. EMG(or) Myoelectric Biofeedback
   ii. Biomonitor (or) Myotimer.
   iii. Bioconvertor.
   iv. Pressure transducer.
   v. Motion feedback Goniometer

9. Methodology
    i. Preparation
    ii. Prevention of artifacts.
    iii. General information.
10. Applications of Biofeedback.
11. Indications for Biofeedback.

EVALUATION

CLINICAL CARDIO – RESPIRATORY DISEASES FOR PHYSIOTHERAPISTS

Examination at the end of : III Year

Instruction hours: 55

COURSE DESCRIPTION

Following the basic science and clinical science, this course introduces the student to the cardio-thoracic conditions which commonly cause disability. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by cardio – thoracic pathology on the functioning of the individual.

COURSE OBJECTIVES

The objective of this course is that after 55 hours of lectures and demonstrations. in addition to clinics, the student will be able to demonstrate an understanding of cardio-thoracic conditions causing disability and their management.

In addition, the student will be able to fulfill with 75% accuracy (as measured by written, oral and practical, internal evaluations) the following objectives of the course.

COURSE OUTLINE

A. ANATOMY AND PHYSIOLOGY

1. Describe in detail the anatomy of the lungs, bronchi and bronchopulmonary segments.

2. List the relationship of the bony thorax and lungs to each other and to the abdominal contents.

3. Briefly describe the variations in the bony cage in the following conditions

   a. Cervical rib
   b. Rickets – rickety rosary
   c. Pigeon chest
   d. Funnel chest
   e. Scoliosis
   f. Kyphosis

4. Describe the movement of the thorax Bucket handle, pump hand.

5. List the muscles of respiration involved in inspiration and expiration (including accessory muscles that are involved).

6. Describe in brief the anatomy of the heart and its blood supply Briefly outline the electrical activity of the myocardium and normal ECG.

7. Describe the physiological control of respiration and highlight the function of the medullary, pontine respiratory centers and peripheral chemoreceptors.

8. Describe the mechanism of maintenance of blood pressure.

9. Describe in detail the cough reflex.

10. List the mechanical factors involved in breathing. Describe briefly factors, affecting lung compliance and airway resistance.

11. List the factors affecting diffusion of oxygen and carbon dioxide in the lungs. Explain Ventilation, perfusion and their interrelationship.

12. Outline the energy expenditure of various common activity of daily living.

13. Pulmonary function assessment : Briefly describe the pulmonary function tests and their use, briefly outline the value of blood gas analysis.

14. Briefly outline the principles of cardio vascular stress testing.

B. CARDIAC SURGERY

1. List the cardiac conditions, requiring closed heart surgery and briefly describe the following :

   Acquired heart diseases (Mitral stenosis and Aortic stenosis), Congenital heart diseases (patent ductus arteriosus, Coarctation of aorta).

2. List the cardiac conditions, requiring open heart surgery and briefly describe the following:

   Congenital (Artial septal defect, ventricular septal defect, pulmonary stenosis, Tetralogy of Fallot, Transposition of great vessels and A.V malformation), Acquired (Mitral stenosis, Mitral regurgitation, aortic stenosis and regurgitation, coronary disease).

C. THORACIC SURGERY

1. Describe very briefly the clinical features and management of the following Fracture rib, Flail chest, Stove – in chest, Pneumothorax, Haemothorax, Haemopneumothorax, Lung contusion and laceration, Injury to Heart, Great vessels and Bronchus.

2. List the causes of empyema and its treatment. Describe briefly Intercostal drainage, Rib resection, Decortication and window operation.
3. List the manifestation of pulmonary Tuberculosis and briefly describe tuberculosis, Bronchiectasis sicca. Bronchostenosis, Massive heamoptysis, Empyema and Destroyed lung.

4. Outline briefly the clinical features and management of the following suppurative lesions of the lung : Bronchiectasis lung abscess, Bronchopneumonia and Aspergillosis.

5. Outline briefly the clinical features and management of carcinoma lung.

6. Outline the extent, use and complication of the following surgical incision : Anterolateral thoracotomy, Posterolateral thoracotomy and Median sternotomy.

7. Describe the post operative management of patients with Segmentectomy. Lobectomy, Pneumonectomy, and Tracheostomy.

8. Outline briefly the principles of various ventilator and their use.

9. Describe in detail the preoperative assessment and management of a patient posted for thoracotomy.

10. Describe in detail the following post operative procedures : management of endotracheal / endonasal tubes, tracheal suction, weaning the patient from the ventilator extubation technique and post extubation care.

11. Describe the principles of Cardio-pulmonary resuscitation : Cardiac massage, artificial respiration defribrillators and their use.

D. MISCELLANEOUS

1. Briefly outline the management of a patient after a myocardial infarction.

2. Briefly outline the management of a patient with chronic obstructive airway disease.

EVALUATION

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PHYSIOTHERAPY IN CARDIO RESPIRATORY ~~CONDITIONS~~ Diseases

Examination at the end of : III Year

Instruction hours : 120

COURSE DESCRIPTON

This course serves to integrate the knowledge gained by the students in clinical Cardio-respiratory conditions with the skills gained in exercise therapy, electrotherapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to Cardio-respiratory pathology.

COURSE OBJECTIVES

The objective of this course is that after 120 hours of lectures and demonstrations, practicals and clinics, the student will be able to identify disability due to Cardio-respiratory dysfunction, set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situation to restore Cardio-respiratory function.

In addition, the student will be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluations) the following objectives of the course.

COURSE OUTLINE

A. ANATOMY: Review the regional anatomy of thorax; upper respiratory tract – trachea and bronchial tree; lungs and broncho-pulmonary segments; muscles of respiration; heart and great vessels: Movements of the chest wall and surface anatomy of lung and heart.

B. PHYSIOLOGY: Review the mechanics of respiration inspiration and expiration, lung volumes, respiratory muscles, compliance of lung and chest wall, work of breathing, dead space gas exchange on lung and pulmonary circulation.

C. GENERAL OVERVIEW: ASSESSMENT – Describe physical assessment in cardio respiratory dysfunction: inspection: Posture (recumbent, erect): breathing pattern (rate, rhythm, use of accessory muscles): Chest movement (Symmetry, intercostals and diaphragmatic components) Chest deformity (Barrel chest, Pigeon chest) : spinal deformity (scoliosis, kyphosis kyphoscoliosis) Sputum, (colour, type, volume, consistency) Cough (types productive / non-productive, presence of a normal cough reflex). Palpation: Tactile and vocal fremitus, mobility of thoracic spine and rib cage. Percussion: dullness and hyperresonance. Auscultation: Normal and abnormal breath sounds.

III Year

D. GENERAL OVERVIEW : PHYSICAL TREATMENT

1. Describe indication, goals and procedure of breathing exercises, Describe diaphragmatic breathing, localized basal expansion, apical expansion, specific segmental exercise raising the resting respiratory level.
2. Describe chest mobilization exercises.
3. Describe relaxation positions for the breathless patient – high side lying forward lean sitting, relaxed sitting, forward lean standing, relaxed standing.
4. Describe controlled breathing during walking and during functional activity.
5. Describe exercise for the breathless patient: exercise tolerance testing and exercise programme.
6. Describe the technique of huffing and coughing, forced expiratory technique, vibratory chest shaking and percussion.
7. Describe technique of Postural drainage, including indications, general precautions and Contra-indications, preparation drainage of individual bronchopulmonary segments, modified postural drainage and continuing postural drainage as a home programme.
8. Outline the history of mechanical respiration, Define the following terms a. Respirator b. Lung ventilator c. Resuscitators d. Bird ventilator e. IPPB f. PEEP g. CPAP h. SIMV i. PEEP. Classify ventilators by third cycling control (volume cycling, pressure cycling, pressure cycling, time cycling and mixed cycling). Describe the principles of operation of commonly used ventilators and outline the use of the following types: i. Bear ii. Bennett iii. Emerson IV. Bird.
9. Outline the principles of Aerosol Therapy. Describe the physical properties of aerosol and their deposition in he alveoli. Describe the principles of nebulisers.
10. Outline the principles of humidification therapy and methods of correcting humidity deficits. Describe the principles of operation of pass – over humidifiers and bubble – diffusion humidifiers.
11. Describe techniques of sterile nasopharyngeal and endotracheal suctioning.

E. PHYSIOTHERAPY IN OBSTRUCTIVE LUNG DISEASES:

Assess: Effort of breathing, extent of weeks, pattern of breathing, sputum production, chest deformity, exercise tolerance (Patients Effort Tolerance).

Identify problems: Decreased outflow due to brochospasm anxiety due to difficulty in ventilation, exhaustion due to increased work of disturbed breathing, Increased secretions which are difficult to remove, decreased exercise tolerance. Demonstrate treatment techniques: Relaxation postures and techniques, reassurance and education about disease, controlled breathing, breathing exercise, postural drainage, vibratory shaking, huffing and coughing graduated exercise programme and posture correction.

F. PHYSIOTHERAPY IN CHEST INFECTIONS:

Assess: sputum, cough, fever and dyspnea.

Identify problems: Productive cough with risk hemoplysis, exhaustion due to increased work of breathing, chest deformity, decreased exercise tolerance.

Demonstrate treatment techniques: Postural drainage with use of adjuncts, percussion, vibration, huffing and coughing to expectorate mobilizing exercise to thorax and graduated exercises.

G. PHYSIOTHERAPY IN RESTRICTIVE LUNG DISORDERS:

Assess: Chest expansion at different levels, mobility of thorax and spine, posture (kyphosis, scoliosis) and tests for exercise tolerance (six minutes walking test).

Identify problems: Decreased expansion of lung due to restriction of chest wall movement causing decreased ventilation, defective posture and decreased exercise tolerance. Demonstrate treatment techniques. Vigorous mobilizing exercises to thorax and spine, breathing exercises to increase ventilation and drain secretions, exercises for posture correction, graduated exercises to increase tolerance.

H. PRINCIPLES OF INTENSIVE CARE PHYSIOTHERAPY:

Describe the principles of intensive care therapy. Demonstrate knowledge of the following equipment: Endotracheal tubes. Tracheostomy tubes, Humidifier, ventilators. High frequency ventilators. Differential ventilators, CPAP masks. Suction pump, Electrocardiogram, Pressure monitors – arterial, central venous, pulmonary artery, Pressure monitors – arterial, central venous, pulmonary artery and pulmonary wedge: intracranial and temperature monitors.

Assess: Special instructions pertaining to any operation performed, respiration, level of consciousness, colour – blood pressure, pulse temperature, sputum, expectorated (colour and quantity), drugs (time last

dose of analgesic given), drains, presence of Pacemaker or Intraaortic balloon pump, ECG and blood gas results. Describe chest radiograph with respect to expansion of lungs, size of heart, presence of secretions and placement of chest tubes.

I. PHYSIOTHERAPY AFTER PULMONARY SURGERY:

Pre operative: Demonstrate treatment techniques: explanation to patient, care of incision, mechanical ventilation, breathing exercise, huffing and coughing, mobilizing exercise, posture correction, graduated exercise programmes.

Post – operative: Assess: special instructions pertaining to operative procedure performed, breath sounds, cyanosis, respiratory rate, temperature and pulse, blood pressure, drainage from pleural drain (pudding or swinging), sputum expectorated, analgesia, movements of chest wall (symmetry) position of patient and effort of breathing, chest radiograph and blood gases.

Identify problems: Pain intercostal drains in situ, decreased air entry, retained secretions, decreased movement of the shoulder of affected side, decreased mobility and poor posture.

Demonstrate treatment techniques: deep breathing and segmental breathing exercises, vibrations, percussions, huffing and coughing, full range active assisted arm exercises, ankle foot exercises, trunk exercises, posture correction, positioning of patient IPPB and inhalations.

J. PHYSIOTHERAPY AFTER CARDIAC SURGERY:

Pre operative: Assess patient's medical history, normal breathing pattern of patient, pulse, respiratory rate, BP, thoracic mobility, posture and patients exercise tolerance.

Identify problems: excess secretion, decreased mobility of thorax, defective posture, decreased exercise tolerance. Demonstrate treatment techniques: Explain to the patients about their operation and about the incision, ICU, endotracheal tube, central lines, nasogastric tube, ECG leads, drains, peripheral lines, temperatures probe, etc. Teach breathing exercises, splinting of incision, huffing and coughing, correct posture, range of motion exercises to trunk and shoulders, active exercises to ankle and foot. Post – operative : Assess, special instructions pertaining to operative procedure performed, type of incision, blood pressure, pulse rate, respiration, colour, time of last analgesic dose, drains, temperature, EGC, Chest x-ray and blood gases.

Identify problems: pain decreased air entry, retained secretions, reduced arm and leg movements, decreased mobility.

Demonstrate treatment techniques: Deep breathing exercise, sectioning, active / assisted exercises to arm and leg, graduated exercise programme.

K. PHYSIOTHERAPY IN GENERAL SURGERY:

Assess the patients medical history, past treatment, breathing pattern, ability to cough and pain. Identify problems of pain, increased secretions, defective posture and decreased exercise tolerance.

Demonstrate treatment techniques: Breathing exercises, huffing, coughing, mobilizing exercise, posture correction and graduated exercise programme.

L. PHYSIOTHERAPY IN REHABILITATION AFTER-MYOCARDIAL INFARCTION:

Describe the role of the physiotherapist in a Caronary Care unit during the first 48 hours. Describe the principles of formulate of an exercise programme. Bad exercise, walking, stair climbing. Describe a home exercise programme and advice on leisure activities. Describe physiotherapy for complication after myocardial infarction: chest infections, cerebral embolism and shoulder hand syndrome.

EVALUATION

COMMUNITY MEDICINE

Examination at the end of : III Year

Instruction hours : 55

COURSE DESCRIPTION

The course will enable students to understand the effects of the environment and the community dynamics on the health of the individual.

COURSE OBJECTIVES

The objectives of the course is that after 55 hours of lectures, demonstrations, practical and clinics, the student will be able to demonstrate an understanding of the influence of social and environmental factors of health of individual and society.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral and practical Internal evaluation) the following objectives of the course.

A. Outline the natural history of diseases and the influence of social, economic and cultural aspects of health and diseases.

B. Outline the various measures of prevention and methods of intervention – especially for diseases with disability.

C. Outline the national care delivery system and the public heath administration system at central and state Government level.

D. Outline selective national health schemes.

E. Define occupational health and list methods of prevention of occupational hazards.

F. Outline the Employees State Insurance scheme and its benefits.

G. Describe the social security measures for protection from occupational hazards, accidents, diseases, and workman's compensation act.

H. Outline the objectives and strategies of the national Family Welfare Programme.

I. Define community based rehabilitation institution based rehabilitation. Describe the advantages and disadvantages of institution based rehabilitation. Describe the advantages and disadvantages of institution based and community based rehabilitation.

J. Describe the following communicable diseases with reference to water reservoir, mode of transmission, route of entry and levels of prevention, a. Poliomyelitis, b.

Meningitis, c. Encephalitis, d. Tuberculosis, e. Filariasis, f. Leprosy, g. Tetanus and h. Measles.

K. Describe the Epidemiology of Rheumatic heart disease, cancer, Chronic degenerative disease and cerebrovascular accident.

L. Outline the influence of nutritional factors such as Protein Energy Malnutrition, Anaemia, Vitamin deficiency and minerals on disability.

M. List the principles of health education, methods of communication, and role of health education in rehabilitation service.

N. Define the role of community leaders and health professionals in health education.

O. Outline the role of international health agencies in rehabilitation of the disabled.

EVALUATION

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BASICS OF PHYSICS INCLUDING RADIOLOGY

NOT FOR UNIVERSITY EXAMINATION (IIIYEAR) INSTRUCTION HOURS: 10

COURSE OUTLINE

1. Radiation and radio activity – Radiation units – X-ray production and properties – Quality and intensity of X-rays – Interaction of radiation with human body – X-ray films – Radiographic image quality – Exposures to patients – Radiation safety and quality control.

2. Detailed radiological anatomy of joints and related regions – both in normal and in stress – Vertebral column – Lumbo-sacral, Knee joint, ankle joint, arches of foot etc,.

3. Role of physiotherapy in the management of cancer patients undergoing treatment.

BASICS OF PHYSICS INCLUDING RADIOLOGY

NOT FOR UNIVERSITY EXAMINATION (III YEAR) INSTRUCTION HOURS: 10

COURSE OUTLINE

1. Radiation and radio activity – Radiation units – X-ray production and properties – Quality and intensity of X-rays – Interaction of radiation with human body – X-ray films – Radiographic image quality – Exposures to patients – Radiation safety and quality control.

2. Detailed radiological anatomy of joints and related regions – both in normal and in stress – Vertebral column – Lumbo-sacral, Knee joint, ankle joint, arches of foot etc,.

3. Role of physiotherapy in the management of cancer patients undergoing treatment.

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BASICS OF ACUPUNCTURE

NOT FOR UNIVERSITY EXAMINATION (III YEAR) INSTRUCTION HOURS: 5

COURSE OUTLINE

1. Principles of Acupuncture
2. Physiological concepts behind acupuncture points
3. Effects of Acupuncture
4. Acupuncture points for common ailments.
5. Acupressure and Acupuncture
6. Techniques of Acupuncture
7. Indications and Contraindications
8. Complications of Acupuncture

III Year

BASICS OF YOGA

NOT FOR UNIVERSITY EXAMINATION (III YEAR) INSTRUCTION HOURS: 10

COURSE OUTLINE

1. Definition of yoga
2. Yogic diet
3. Essentials of yoga practice (time, place, dress, bath, method of practice, how much yoga)
4. Yama, Niyama for mental purity
5. Pranayama (breathing exercises) types and its methods
6. Asana (different static postures) – for physical health
    a. Uttan pada asana
    b. Pawanamukta asana
    c. Bhujanga asana
    d. Shalabha asana
    e. Shava asana
    f. Pashchimottan asana
    g. Suryanamaskar asana

7. Yogic practice for asthma
    a. Ujjayee pranayama
    b. Matsyendra asana
    c. Dhanur asana
    d. Yoga mudra
8. Yogic practices for Arthritis, headache, sinus, eye disorders
9. Yoga and obesity
10. Yogic practices for heart ailments, hypertension and diabetes
11. Principles of yoga & Basic yogic postures and the physiological effects

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SPORTS PHYSIOTHERAPY

NOT FOR UNIVERSITY EXAMINATION (III YEAR) INSTRUCTION HOURS:20

COURSE OUTLINE

1. Aerobic process and Anerobic process
2. Lactate production, distribution and loss
3. Training principles
4. Muscle soreness
5. Fatigue, Nutrition and Physical performance
6. Factors affecting performance (in brief)
7. Warm-up, Prevention and treatment of athletic injuries & First aid.

CLINICAL NEUROLOGY FOR PHYSIOTHERAPISTS

Examination at the end of: IV Year

Instruction Hours: 55

COURSE DESCRIPTION

Following the basic science and clinical science course, this course introduces the student to the neurological conditions which commonly cause disability. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by neurological pathology on the functioning of the individual.

COURSE OBJECTIVE

The objective of this course is that after 55 hours of lectures and demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of neurological conditions causing disability and their management.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral and practical, internal evaluation) the following objectives of the course.

COURSE OUTLINE

A. NEUROANATOMY

Review the basic anatomy of the brain and spinal cord including : Blood supply of the brain and spinal cord, anatomy of the visual pathway, Connections of the cerebellum, and extrapyramidal system, relationship of the spinal nerves to the spinal cord segments, long tracts of the spinal cord, the brachial and lumbar plexuses, and cranial nerves.

B. NEUROPHYSIOLOGY

Review in brief the Neurophysiological basis of : tone, disorder of tone posture, bladder control, muscle contraction, movement and pain.

C. CLINICAL FEATURS AND MANAGEMENT

Briefly outline the clinical features and management of the following Neurological Disorders :

1. Congenital childhood disorders.
    a. Cerebral palsy.
    b. Hydrocephalus.
    c. Spina Bifida.

2. Cerebrovascular accident.

   a. General classification: thrombotic, embolic, haemorhagic and inflammatory strokes.
   b. Gross localization and sequelae.
   c. Detailed rehabilitative programme.

3. Trauma – blood localization, first aid and management of sequelae of head injury and spinal cord injury.

4. Diseases of the spinal cord,

   a. Craniocerebral junction anomalies.
   b. Syringomyelia.
   c. Cervical and lumbar disc Pesions.
   d. Tumours.
   e. Spinal archnoiditis.

5. Demyelinating diseases (central and peripheral).

   a. Guillain – Barre syndrome.
   b. Acute disseminated encephalomyelitis.
   c. Transverse myelitis.
   d. Multiple sclerosis.

6. Degenerative disorders.

   a. Parkinson's disease.
   b. Dementia.

7. Infections.

   a. Pyogenic Meningitis sequelae.
   b. Tuberculous infection of central nervous system.
   c. Poliomyelitis.

8. Diseases of the muscle . classification, signs, symptoms, progression and management.

9. Peripheral nerve disorders.

   a. Peripheral nerve injuries localization and management.
   b. Entrapment neuropathies.
   c. Peripheral neuropathies.

IV year

10. Miscellaneous.

a. Epilepsy : Definition, classification and management.
b. Myasthenia Gravis : Definition, course and management.
c. Intracranial tumours : Broad classification, signs and symptoms.
d. Motor neuron disease.

D. ASSESSMENT

Clinical assessment of neurological function to be taught through bedside or demonstration clinics spread out over at least 5 sessions.

1. Basic history taking to determine whether the brain, spinal cord of peripheral nerve is involved.
2. Assessment of higher mental function such as orientation, memory, attention, speech and language.
3. Assessment of cranial nerves.
4. Assessment of motor power.
5. Assessment of sensory function : touch, pain and position.
6. Assessment of tone : spasticity, rigidity and hypotonia.
7. Assessment of cerebellar function.
8. Assessment of higher cortical function : apraxia, etc.,
9. Assessment of gait abnormalities.

EVALUATION

PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Examination at the end of : IV Year

Instruction Hours : 120

COURSE DESCRIPTION

This course serves to integrate the knowledge gained by the students in clinical Neurology, with the skills gained in exercise therapy, electrotherapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to pathology in the nervous system.

COURSE OBJECTIVES

The objective of this course in that after 120 hours of lectures and demonstrations, practical and clinics, the student will be able to identify disability due to neurological dysfunction, set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situation to restore neurological function.

In addition, the student will be able to fulfill with 75% accuracy (as measured by written, oral and practical, internal evaluations) the following objectives of the course.

COURSE OUTLINE

A. REVIEW OF NEUROANATOMY AND PHYSIOLOGY .

Review the structure and function of
a) neuron
b) synapse
c) supporting tissue

Review the organization and function of
a) cerebral hemispheres
b) cerebellum
c) spinal cord
d) peripheral nerves
e) pyramidal system
f) extraphyramidal system

Review the factors influencing alpha motor neuron activity. Review the neurological basis of muscle tone and movement and demonstrate the following:
a) hypotonia
b) hypertonia – spasticity and rigidity
c) ataxia
d) athetosis
d) chorea

B. PRINCIPLES OF ASSESSMENT :

Review

a) skill in history taking

b) assessment of higher functions, cortical sensations, cranial nerves, dorsal column sensation and pain and temperature sensations

c) assessment of motor function: grading of muscle power, assessment of range of movement, balance and coordination

d) assessment of superficial and deep reflexes

e) assessment of reflex maturation in terms of stimulus, position negative / positive reactions and their significance

f) assessment of gait – both normal and abnormal (spastic, ataxic and paralytic patterns) Emphasis should be placed on teaching accurate assessment techniques and various recording methods e.g., colour coding on body charts, graphs, etc.,

C. PRINCIPLES OF TREATMENT :

Review the treatment principles as follows:-

a) Sensory re – education: hypersensitivity, hyposensitivity and anesthesia.

b) Treatment of altered toné : hypertonicity and hypotonicity.

c) Motor re – education : Strengthening exercises, coordination exercise, joint mobilization exercise, use of equilibrium and labyrinthine systems, use of PNF patterns, controlled sensory stimulation to bias the spindle cells e.g., vibration, tactile, ice, etc., use of stretch to elicit movement (facilitation) , light joint compression (inhibition) use of reflex activity to improve motor function, physlogenic sequence of motor behavior.

d) Treatment to improve function : Free exercise, gait training with and without aids, activities of daily living, mat exercise, exercise for recreation.

e) Review the use of ambulatory aids in neurological conditions: in spastic upper motor neuron lesions, in lower motor lesions, in dorsal column dysfunction and cerebral dysfunction.

f) Review the use of splints and braces in spastic upper motor neuron and in flaccid lower motor neuron lesions, in both upper and lower limbs.

g) Review the management of chronic pain in neurological conditions with respect to the type of pain, treatment modalities available, selection criteria for each modality and possible complications.

D. CEREBRAL PALSY· Define cerebral palsy and describe the topographical classification – monoplegia, diplegia, paraplegia, hemiplegia and tetraplegia. Describe types of cerebral palsy: Visual, hearing, speech and intelligence. Assess reflex activity at different levels Coritical, mid brain, brain stem, spinal. Assess developmental milestones from birth to five years. Assess functional ability: Prone to supine (rolling) Coming to sitting, quadripod, crawling, kneeling, kneel – stand, stand with support and walking. Examine for contractures as follows: hip flexion, adduction, internal rotation: knee flexion: ankle plantar flexion, inversion eversion: flexion contracture of elbow, wrist and fingers and spinal deformities.

Treatment – Describe and demonstrate the treatment motor dysfunction Passive movement, stretching of soft tissue tightness, use of ice to reduce spasticity, positioning the child to prevent soft tissue contractures, to inhibit abnormal reflexes and to facilitate volitional movement. Describe and demonstrate techniques of carrying of different types of CP children, encouraging bimanual activities in different starting positions like prone, sitting and standing and activities across the midline. Describe appropriate home programmes for positioning the child, handling them and assisting improvements of function. Introduction to treatment techniques: Bobath, Rood.

E. PERIPHERAL NERVE LESIONS: Identify types of peripheral nerve lesions. Assess the motor system: Specific muscles, range of motion, active and passive ranges, muscle girth. Assess sensory system: touch, pain, temperature, paraesthesia, nerve reverberation. Assess autonomic function: sweating, skin condition, soft tissue atrophy. Treatment: describe muscle reeducation techniques: electrical stimulation (selection of current): active, assisted, resisted movements: Passive and self assistive stretching and massage. Describe sensory reeducation and pain relief by various modalities. Describe the common splints used in peripheral nerve lesions, static, dynamic and functional; isolating muscle contraction, specific muscle strengthening.

Post-operative management : Pressure bandaging and muscle reeducation after transfer. Describe a home programme.

F. MUSCULAR DYSTROPHY. Describe stages of the disease; ambulatory, wheelchair and bed stages. Describe significance of exercises: resisted, active and free. Identify and assess common contractures and deformities. Assess range of motion and muscle power. Assess functional ability.

Demonstrate treatment: postural awareness and relaxation training, gait training techniques: associated reactions, heel – toe gait, overcoming obstacles, start and stop on command, turning and walking backwards, forwards and sidewards. Describe an appropriate home exercise programme.

H. SPINAL CORD LESIONS: Describe types of spinal cord lesions. Describe signs of tract and root interruptions. Describe positioning of the patient in acute spinal cord injury. Describe assessment of the major system: tone, power of specific muscles, range of motion and limb girth. Describe assessment of sensory system and reflexes. Describe assessment of functional ability and balance reactions in appropriate cases. Describe assessment of respiratory function. Muscles of respiration, coughing ability and vital capacity. Describe how the level of lesion is ascertained.

Treatment: Describe the stages of immobilization and stage when weight bearing is allowed. Describe spinal orthosis. Demonstrate motor reeducation programmes and programme for respiratory care in high level paraplegics and

quadriplegics. Demonstrate progressive amputation, mat exercises, various strengthening programmes, methods of decreasing spasticity and improving sitting balance. Demonstrate paraplegic gaits and reeducation in functional activities: transfers and protective falling. Describe common ambulatory aids used in paraplegics and commons splints used in tetraplegics. Describe the use of hydrotherapy in paraplegics. Describe the concept of team approach in rehabilitation of these patients.

I. HEMIPLEGIA : Define hemiplegia and identify the following : Sensory disturbance, alteration in tone, loss of selective movement, loss of balance reactions and communications problems.

Treatment: Describe the unilateral and bilateral approaches to treatment. Describe positioning in the supine position, on the affected and on the unaffected sides. Demonstrate activities in the recumbent position: arm mobilization, trunk elongation, scapular movement, arm elevation, activities for a recovering arm; activities for the lower limb i.e., hip and knee flexion over the side of the bed, knee extension with dorsiflexion, hip control, isolated knee extension.

Mat activities: demonstrate rolling on to affected and unaffected sides, sitting and kneeling. Describe the technique of making a patient sit passively and active assisted in sitting · Demonstrate Transfer Technique. Describe activities in sitting: equal weight transference on both buttocks shuffling on buttocks, weight transfer through arms balance reactions of truck – head. Demonstrate activities in the standing position · standing from plinth, from chair (assisted and independent), weight bearing on affected leg, knee control in standing weight transfers forward, backward and sideward, gait training and stair climbing. Describe tilt board activities in the lying and sitting climbing. Describe additional methods of stimulation using verbal cues, ice, pressure and tapping. Describe management of shoulder pain and shoulder hand syndrome. Identify and describe hemiplegic gait, identify synergy components and abnormal reflex activities.

Demonstrate reeducation of gait: motor relearning techniques functional approach and use of orthosis.

J. CEREBELLAR LESIONS Identify and assess abnormal tone, decomposition of movement, rapid alternate movements, pleurothotonus, proprioception, dysmetria, posture and gait.

Treatment: Demonstrate exercises for in coordination – Frenkel's and weighted exercises. Demonstrate techniques for reeducation of balance and equilibrium reactions by visual compensations. Describe use of appropriate aids for ambulation depending on the severity of affection – walker, elbow, crutches, qudripod, walking sticks, etc.

K. POLIOMYELITIS : Define poliomyelitis and review the stages in the disease – acute, recovery and residual paralysis. Describe treatment in the acute stage: heat, chest care, positioning. Describe the assessment of a patient in the recovery stage: active and passive range of motion, soft tissue tightness, muscle power and Spinal deformities. Demonstrate treatment in the recovery stage: muscle strengthening – progress resistive exercises, active – assisted, active and active – resisted exercises. Describe the role of suspension and hydrotherapy. Describe the treatment of soft tissue tightness by passive stretching, auto stretching Pre – operative assessment of contractures hip flexion, TA contractures, knee flexion and foot deformities. Describe also assessment of limb length discrepancy and spinal deformities. Review orthotic aids commonly used the management of polio. Describe tendon transfer operations commonly performed. Describe functional retraining for self care, gait training and posture correction.

EVALUATION

CLINICAL ORTHOPAEDICS FOR PHYSIOTHERAPISTS

Examination at the end of:IV Year | Instruction hours: 55

COURSE DESCRIPTION

Following the basic science and clinical science course, this course introduces the student to the orthopaedic conditions which commonly cause disability. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their under-standing of the limitations imposed by orthopaedic pathology on the functioning of the individual.

COURSE OBJECTIVES

The objective of this course is that after 55 hours of lectures and demonstrations. in addition to clinics, the student will be able to demonstrate an understanding of orthopaedic conditions causing disability and their management.

In addition, the student will be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluations) the following objectives of the course.

COURSE OUTLINE

A. INTRODUCTION TO ORTHOPAEDICS

Introduction to orthopaedic terminology, types of pathology commonly dealt with, clinical examination, common investigations and out line of non-operative and management.

B. PRINCIPLES OF OPERATIVE TREATMENT

List indications, Contra-indications and briefly outline principles of Arthrodesis, Arthroplasty, Osteotomy, Bonegrafting and Tendon – Transfers.

C. SPRAINS AND MUSCLE STRAINS

List common sites of sprains and muscle strains and describe the clinical manifestations and treatment.

D. FRACTURES & DISLOCATINS: General Principles Outline the following :

1. Types of Fractures including patterns, open and closed fractures and fracture – dislocations.
2. Difference between dislocation and subluxation.

3. General and Local signs and symptoms of fractures, dislocations.
4. Principles of management of fractures, dislocations.
5. Prevention and treatment of complications including : Fracture – diseases, Volkmann's ischaemic contracture, Sudek's Atrophy, Carpal Tunnel syndrome, Myositis – ossificans, and shoulder – hand syndrome.
6. Fracture healing.

E. UPPER LIMB FRACTURES AND DISLOCATIONS

1. Enumerate major long bone fracture and joint injuries.
2. Briefly describe their clinical features, principles of management and complications.

F. LOWER LIMB FRACTURES AND DISLOCATIONS

Enumerate major long bone fractures and joint injuries.
Briefly describe their clinical features, principles of management and complications.

G. SPINAL FRACTURES AND DISLOCATIONS

Outline the mechanism, clinical features, principles of management and complications of spinal injuries.

H. RECURRENT DISLOCATIONS

Outline the mechanism, clinical features, principles of management and complications of recurrent dislocation of the shoulder and patella.

I. AMPUTATIONS

Classify amputations, list indication of surgery.
Outline pre- operative, operative and prosthetic management.
Outline prevention and treatment of complications.

J. BONE AND JOINT INFECTIONS

Outline the etiology, clinical features, management and complications of: septic arthritis, osteomyelitis, Tuberculosis (including spinal T.B.)

K. BONE JOINT TUMORS

Classify and outline the clinical features, management and complications of the following (benign / malignant bone and joint tumours, osteoma, osteosarcoma, osteoclastoma, Ewing's sarcoma, multiplemyeloma.

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L. CHRONIC ARTHRITIS

Outline the pathology, clinical features, mechanism of deformities, management and complications of : Rheumatoid arthritis, Osteoarthritis of major joints and spine. Ankylosing spondylitis.

M. LOW BACK ACHE, PAINFUL ARC SYNDROME, TENDONITS FASCITIS AND SPASMODIC TORTICOLLIS

Outline the above including clinical features and management.

N. SPINAL DEFORMITIES

Classify spinal deformities and outline the salient clinical features, management and complications.

O. POLIOMYELITIS

Describe the pathology, microbiology, prevention, management and residual problems of polio, outline the treatment of residual paralysis including use of orthoses. Principles of muscle transfers.

P. CONGENITAL DEFORMITIES

Outline the clinical features and management of CTEV, CDH, Flat foot, vertical talus, limb deficiency (Radial club hand and femoral, tibial and fibular deficiencies, meningomyelocele, Arthogryposis multiplex congenita, osteogenesis imperfecta.)

Q. PERIPHERAL NERVE INJURIES

Outline the clinical features and management, including reconstructive surgery of:

1. Radial, median and ulnar nerve lesions.
2. Sciatic and lateral popliteal nerve lesions.
3. Brachial Plexus injuries including Erbs Palsy Klumpke's Paralysis, crutch palsy.

R. HAND INJURIES

Outline clinical features, management and complications of : Skin and soft tissue injury – Tendon injury, Bone and joint injury.

S. LEPROSY

Outline clinical features, management and complications of neuritis, muscle paralysis, trophic ulcer of hand and feet deformities.

EVALUATION

PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS

Examination at the end of : IV Year

Instruction Hours : 120

COURSE DESCRIPTION

This course serves to integrate the knowledge gained by the students in clinical orthopaedics with the skills gained in exercise therapy, electrotherapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to musculoskeletal pathology.

COURSE OBJECTIVES

The objective of this course is that after 120 hours of lectures and demonstrations, practicals and clinics, the student will be able to identify disability due to musculoskeletal dysfunction, set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situation to restore musculoskeletal function.

In addition, the student will be able to fulfill with 75% accuracy (as measured by written, oral and practical, internal evaluations) the following objectives of the course.

COURSE OUTLINE

A. Define fracture, Review the types, the signs and symptoms, first – aid measures, principles of immobilisation and healing of fracture.

B. Describe the PT assessment of a patient with a fracture during the immobilisation and post immobilisation periods.

C. List the aims of PT management in a patient with a fracture.

D. Review manual, mechanical, skin, skeletal, lumbar and cervical traction.

E. Describe the methods of mobilization of a patient / extremity after healing of a fracture.

F. Review the mechanism of injury. Clinical features, treatment and complications and describe the PT management and home programme for the following injuries :

   i. Fracture clavicle, upper 1/3 of humerus.
   ii. Fracture head of radius, olecranon process, shaft of radius and ulna, Colles'.
   iii. Fracture scaphoid. Bennett's and Potts' fracture and Dupuytrens contracture, calcaneum and metatarsal (March).
   iv. Dislocation of (a) Hip (Congenital), Traumatic Posterior and Central (b) Shoulder (Anterior and Recurrent) (c) Patella.

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G. Describe briefly the general and PT assessment of the vertebral column: Subjective history: Occupation, Symptoms, motor problems objective examination: 1. Observation – body type, musculature deformity and fair. 2. Palpation – Temperature, swelling, bony prominence, local tenderness. 3. Postural evaluation using a plumb line. 4. Active movement : the vertebral column – flexion extension, lateral flexion and rotation 5. Specific tests – straight leg raising, prone knee bend, passive neck flexion Kernig's sign. 6. Proximal joints of pelvic and shoulder girdles. 7. Neurological tests – muscle strength, sensation and reflexes.

H. Review cervical and lumbar spondylosis, spondylolisthesis, TB spine and spinal fracture. Outline PT assessment, PT aims and management and a detailed home programme

I. List the common postural abnormalities affecting the spine. Review kyposis, Lordosis and Scoliosis; Outline PT assessment, and PT aims and management along with home programme.

J. Review the clinical features and describe the PT management of Ankylosing spondylitis.

K. Intervertebral Disc Prolapse : Review basic anatomy and biomechanics of the spine. Review causes, sign, symptom and investigations done for IVDP. Review the different types and degrees of IVDP. List PT aims and demonstrate treatment techniques.

L. Define the following terms, review their etiology and clinical features and describe their treatment – strain, sprain (Medial Ligament of knee, and Lateral ligament of ankle), bursitis (Subacromial and Prepatellar) synovitis, tendonitis, tenosynovits, fibrositis, fibromositis, rupture and avulsion of tendons (Tendoachillis and Quadriceps) tennis elbow, torticollis, tendonitis (supraspinatus and biceps), periarthritis shoulder and shoulder – hand syndrome.

M. Review upper and lower limb and spinal orthoses and prostheses. Describe the principles and function of each list indications and Contra-indications, advantages and disadvantages of each. Demonstrate the fabrication of simple hand and foot splints out of POP.

N. Review the indications and principles of amputations of the upper and lower limbs and describe the PT management and training of amputees before and after prosthetic fitting. Review immediate post – operative prosthetic fitting and list its advantage.

O. Define poliomyelitis and review the etiology, clinical features, staging and medical management. Outline PT assessment during the acute, subacute and chronic stages. Describe PT aims and demonstrate treatment techniques. List the common deformities seen in polio and methods of preventing them. Review common reconstructive tendon transfer operations in polio and its PT management. Review the common orthoses used, and describe the technique of measurement for a KAFO and check – out along with detailed home programme including care of the orthosis.

P. Define cerebral palsy. Review its cause, signs, symptoms, classification and common deformities. Outline PT assessment, aims and management along with home programme. Review common surgical correction and its PT management.

Q. Define Rheumatoid Arthritis. Review its signs, symptoms radiological features, pathology, common deformities, medical and surgical management. Describe the PT assessment, aim and management in the acute and chronic stage and detailed home programme.

R. Define Osteoarthritis. Review its signs, symptoms radiological features, pathology, common deformities, medical and surgical management. Describe the PT assessment, aim and management and detailed home programme with special emphasis on osteoarthritis of hip, knee, ankle and shoulder joints.

S. Define leprosy. Review the incidence and mode of transmission of leprosy. Review the clinical features, common deformities and Medical management. Review the tendon transfer operations and describe PT management before and following tendon transfers. Describe the risk of anesthetic limbs and outline its care to prevent complications. Review planter ulcer in leprosy and its management (including foot wear).

T. Describe the different degrees of norms and review relevant first aid measures. Outline the PT assessment of burns as follows: degree and percentage of burns, presence of edema and adherent skin, ROM of involved joints, muscle power, contractures, deformities, altered posture and chest movements. Review Medical and Surgical management including skin grafting. Describing the PT aims and management of a patient with burns along with home programme.

EVALUATION

REHABILITATION MEDICINE INCLUDING GERIATRIC REHABILITATION

Examination at the end of : IV Year

Instruction hours: 55 -120

COURSE DESCRIPTION

Following the basic sciences and clinical science course, this course will enable the students to understand their role in the management of disability within the rehabilitation team.

COURSE OBJECTIVES

The objective of this course is that after 120 hours lectures & demonstrations in addition to clinics the student will be able to demonstrate an understanding to:

A. The concept of team approach in rehabilitation will be discussed and implemented through practical demonstration with contribution from all members of the tam.
B. Observation and identification of diagnostic features in physical conditions will be practiced through clinical demonstration.
C. Medical and surgical aspects of disabling conditions will be explained in relation to rehabilitation.
D. Identification of residual potentials in patients with partial or total disability (temporary or permanent).
E. Formulation of appropriate goals (long & short term) in treatment & rehabilitation will be discussed.

In addition the student will be able to fulfill with 75% accuracy (as measured by written, oral & practical internal evaluations) the following objectives of the course.

COURSE OUTLINE

A. INTRODUCTION

Define the term rehabilitation. Explain its aims and principles.

Discuss team work involved in rehabilitation, explaining briefly the role of each team member.

B. THERAPEUTIC TECHNIQUES

Explain the theory and mechanisms of therapeutic techniques and relevant precautions, for the following:

1. Joint mobilization
2. Reducing spasm
3. Assisting weak muscles
4. Increasing endurance
5. Muscle re- education following muscle transfer surgery
6. Strengthening muscles.
7. Increasing co – ordination.
8. Improving balance
9. Gait training.

C. COMMUNICATION PROBLEMS

Identify communication problems, classify these and out line principles of treatment/ training.

D. BEHAVIOURAL PROBLEMS

Identify behavioural problems in the disabled and outline the principles of management.

E. PAIN

Describe the theories of pain and discuss therapeutic management of pain using various modalities. Describe the common myo – facial pain syndrome and outline their management.

F. EVALUATION OF PHYSICAL DYSFUCNTION

Demonstrate methods of evaluation for physical dysfunction and management of disabilities with particular reference to : Spinal cord injury (including stroke and cerebral palsy) Arthritic conditions, Muscular Dystrophy, Hansen's disease, Peripheral nerve, lesions, Fracture, disease and Cardio – respiratory dysfunction.

G. ORTHOTIC DEVICES

Explain the principles involved in prescribing orthotic devices for different parts of the body. Outline the purpose of each type and list major indications and Contra-indications and demonstrate methods of training in their use.

H. PROSTHETIC DEVICES

Describe types of artificial limbs and their functions. Demonstrate methods of training in their use.

I. MOBILITY AIDS

Demonstrate knowledge of the indications for different types of mobility aids, and their functions, e.g., wheel chairs, walkers, crutches.

J. PRE- VOCATIONAL EVALUATION

Discuss methods and term involvement in pre – vocational evaluation and training.

K. ARCHITECURAL BARRIERS

Describe architectural barriers and possible modifications with reference to Rheumatoid arthritis, Cerebrovascular accident, Spinal cord injury, and other disabling conditions.

L. DISABILITY EVALUATION

Outline the principles of disability evaluation and discuss its use.

M. LEGAL ASPECTS

Outline legal aspects of disability in terms of compensation for disability and benefits available to the disabled.

N. SOCIAL IMPLICATIONS

Outline the social implications of disability for the individual and for the community.

O. COMMUNITY BASED REHABILITATION MODULE

Describe a CBR module and module and compare this with an institutional based rehabilitation system.

P. GERIATRIC REHABILITATION 10 Hours

Life history
Sociological and Technological
The Ageing Body
-Theories of Ageing : Physiological . Environmental
Locomotor System
Cardio Respiratory System
Neurological Function
Autonomic Function
Metabolic Changes
Mental Function

115

239
-237

APPROACH TO THE TREATMENT :

Interview
Examination
Aims of Intervention

Role of the Physiotherapist.

EVALUATION

116

-239-

ADMINISTRATION, SUPERVISION AND ETHICS

NOT FOR UNIVERSITY EXAMINATION (IV YEAR) INSTRUCTION HOURS: 60

COURSE OUTLINE

SECTION-I-PROFESSIONAL ISSUES [INCLUDING ETHICS]

Objectives -

This course is aimed to enable the candidate to acquire the knowledge of ethical code of professional practice ,as well as its moral & legal aspects; & role of W.H.O.& W.C.P.T.

Contents-

1]-Concepts of morality, Ethics & Legality-rules of professional conduct & their Medico- legal & moral implications-The need of Council Act for Physiotherapy.

2]-Constitution & Functions of the Indian association of Physiotherapists.

3]-Functioning of the World Confederation of Physical therapy[W.C.P.T.] & its various branches-Special Interest groups [brief]

4]-Role of W.H.O.& WCPT

SECTION-II-ADMINISTRATION/MANAGEMENT & MARKETING-

Objectives –At the end of the course the student will acquire the knowledge of the basics in Managerial & Management skills, & use of Information technology in professional Practice.

Contents-

1]-Management studies related to -local health care organization management & structure,-planning delivery with quality assurance & funding of service delivery - information technology -Time management -career development in physio therapy.

2]-Administration-principles-based on the Goal & functions -at large hospital set up / domiciliary services/ private clinic /academic.

3]-Methods of maintaining records

4]-Budget-planning

5]-Performance analysis--physical structure/reporting system [man power /status /functions / quantity & quality of services/turn over-cost benefit- revenue contribution.

EVIDENCE BASED PRACTICE AND CLINICAL REASONING:

1. Importance of Evidence based practice.
2. Priciples of Evidence based practice.
3. Application of Evidence based practice in professional day to day practice.
4. Clinical reasoning principles and its applications.

PHYSICAL EDUCATION

NOT FOR UNIVERSITY EXAMINATIN (IV YEAR) INSTRUCTION HOURS: 45

COURSE OUTLINE

-Basic principles of General fitness-warming up exercises, aerobics – cooling down exercises.

-Group & recreational activities-General fitness exercises-Warm up-stretching - mobility- strengthening –cool down exercises.

-Diet and Nutrition in general digestion, food for athlete, slimming diets, ideal body weight and obesity.

VISITS AND SPECIAL LECTURES

75 Hours

Applied essentials in regard to Physiotherapy.

PROJECT WORK/CASE STUDY

EXAMINATION AT THE END OF IV YEAR COMMENCEMENT OF WORK: III YEAR

OBJECTIVES

This assignments of clinical study/review of literature is designed to develop the aptitude among students towards further reading and selecting references and present a written report, or study the efficacy of a physiotherapy procedure in a selective group of patients and normal subjects finally justifying the result. The work shall be commenced in the III year itself.

Thus the student will submit to the University a written project/case study/report through institution of study. The student will be expected to submit the above one month before the final year theory examination of the four and half year B.P.T degree course. course.

GUIDANCE:

Each student will receive guidance from the physiotherapy teacher towards referring relevant literature/collect required data and discuss them with the project guide periodically.

After correction and edition of handwritten manuscripts by the project guide, the student will compile his/her study/ work into a manual form for submission to the institution of study.

Under case study, the student may study the patients in clinical areas, consolidate the findings and discuss them with the project guide before compiling into final shape.

EVALUATION/SCORING:

Total Marks for Project work/case study record

Internal Assessment	External Assessment	Oral	Total
50	25	25	100

DESCRIPTION OF SCORING:

Internal Assessment : 50 Marks.

External Assessment : 25 Marks

119
247
120
-245-

Note: Project evaluation by the external Physiotherapy examiner will carry 25 marks.

Oral : 25 Marks

The two Physiotherapy examiners (one external and one internal examiner) will conduct oral examination conjointly and score for 25 marks.

Thus project evaluation marks offered by the external Physiotherapy examiner is added with the oral examination marks and internal examination marks, and collectively entered as university marks scored by the student.

UNIVERSITY EXAMINATION :

The Project work / case study record examination will be conducted by the university in a oral examination pattern with two physiotherapy examiners (one internal physiotherapy examiner and one external physiotherapy examiner) conducting the orals.

The student will be expected to present at University Viva-Voice exam, the project work and discuss the cases studied and also answer when questioned by the examiners.

A student must earn a minimum of 50% of marks for passing the project work / case study at the University examinations.

MODE OF SUBMISSION OF PROJECT WORK / CASE STUDY TO THE UNIVERSITY :

As done with other allied health science courses (Occupational Therapy. Speech Therapy. etc.) two copies of the project work done by the student be certified by the project guide as a bonafide record of project work done and be forwarded to the University by the Principal of the College / Head of the Institution atleast 1 month before the commencement of University final year theory Examination.

II. Research Design : Principles and Methods :

a. Descriptive, exploratory, single subject.
b. Others
c. Design models utilized in physiotherapy. (review of literature).
d. Application ; Selection of design fodel for Project II class.

III. Interpretation of Experiment Findings :

a. Collection and interpretation of data—theory.
b. Collection and interpretation of data—review of physiotherapy literature.
c. Collection and interpretation of data—project II class.

IV. Clinical Research for Physiotherapists :

A. Why? How? When?.

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