

BOT 1st Year

PSYCHOLOGY

Examination at the end of 1st Year

Instruction Hours: 60

Course Description

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

Course Objective

The objective of this course is that after 90 hours of lectures, the student will be able to recognize 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 behaviour for applying in the therapeutic environment. In addition, the students will be able to show their proficiency based on written and internal evaluation.

Objectives

1. Psychosocial assessment of patients in various developmental stages.
2. Concept of stress and its relationship to health, sickness and one's profession.
3. Ego defense mechanisms and learn counselling techniques to help those in need.
4. Reasons for non-compliance among patients and improving 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 first semester. Part B will be taught as an applied subject after the student has been exposed to clinical work.

UNIT I

A. Definition of Psychology

Definition of Psychology. Basic information in relation to the following schools, methods and branches:

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|-----------|-----------------|----------|---|
| a) | Schools | : | Structuralism, functionalist, behaviourism, psychoanalysis, gestalt psychology. |
| b) | Methods | : | Introspection, observation, and experimental method. |
| c) | Branches | : | Child, social, abnormal, industrial. |

B. Heredity and Environment

Twin studies relative importance of heredity and environment, their role in relation to physical characteristics, intelligence and personality, nature-nurture controversy.

C. Development and growth behaviour

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

D. Intelligence

Definitions : IQ, Mental Age, list of various intelligence tests: WAIS, WISC, Bhatia's performance test. Raven's progressive Matrices.

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. Psychological needs-information, security, self-esteem, competence, love and hope.

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. Definition - List of Components: Physical characteristics, character, abilities, temperament, interests and attitudes.
2. Discuss briefly the role of heredity, nervous system, physical characteristics, abilities, family and culture on personality development.
3. Basic concepts of Freud, unconscious, conscious, Id Ego and Superego. List and define the oral, anal and phallic stages of personality development. List and define the 8 stages of personality development as proposed by Erickson. 4 concepts of learning as proposed by Dollard and Miller, drive, cue response and reinforcement.
4. Personality assessment: interview, standardized, non-standardized. Exhaustive and stress interview, list and define inventories, BAI, CPI and MMPI. Projective tests: Rorschach, TAT and Sentence Completion Test.

UNIT III**H. Learning**

Definition: List the laws of learning as proposed by Thordike. 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, Whole Vs. Part, Recitation Vs. Reading, Serial Vs. Free recall, knowledge of results, Association, Organization, Pneumonic methods, Intentional learning, role of language.

I. Thinking

Definition: 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, Perception

1. List the senses: Vision, hearing, olfactory, gustatory and cutaneous sensation, movement, equilibrium and visceral 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 susceptibility, perceived seriousness, perceived benefits and socio-economic status.
3. Define illusion and hallucination.
4. List visual, auditory, cutaneous, gustatory and olfactory hallucination, communication, specific communication techniques.

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, counselling and religious conversion).

M. Defense mechanism of the ego

Denial, rationalization, projection, reaction formation, identification, repression, emotional, insulation, undoing, introjection, acting out, depersonalization. Behaviour modification for patients.

EXAMINATION METHOD

Internal marks (50): class tests, model exams and assignment

University Theory exam: 100 Marks

References : General Psychology S.K. Mangal

SOCIOLOGY

Total No. of Hours: 50

Hours per week: 2

University Exam at the end of I year

Course Description

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

Course Objective

The objective of the course is that after 50 hours of lectures, the students will be able to demonstrate an 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.

In addition, the student will be able to show their proficiency based on written and internal evaluation.

Objectives

- A. Understand the role of family and community in the development of behaviours.
- B. Develop a holistic outlook toward the structure of society and community resources.
- C. Identify the subtle influence of culture in the development of human personality, the role of beliefs and values as determinants of individual and group behaviours.
- D. Understand the social and economical aspects of community that influence the health of the people.
- E. Learn to assess the social problems and participate in social planning.
- F. Identify social institutions and resources.
- G. Understand the significance of social interactions in the process of rehabilitation.
- H. Appreciate the role of therapist as a member of society and the interdependence between individuals and society.

UNIT I

Course Outline

A. Introduction

Definition of Sociology. Sociology as a science, uses of the study of Sociology, application of knowledge of sociology in Physiotherapy.

B. Sociology and health

Social factors affecting the 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 health and the people.

C. Socialization

Meaning of socialization, influence of social factors on personality, socialization in hospital and socialization in rehabilitation of patients.

UNIT II**D. Social groups**

Concepts 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

Influence of family on human personality, discussion of changes in the functions of a family, influence of family on the individual's health, family and nutrition. The effects of sickness on family and psychosomatic disease.

F. Community

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

G. Culture

Components of culture, impact of culture on human behaviours cultural meaning of sickness, response to sickness and choice of treatment (role of culture as social consciousness in moulding the perception of reality). Culture induced symptoms and diseases, sub-culture of medical workers.

H. Caste system

Features of the modern caste system and its trends.

UNIT III**I. Social change**

Meaning of social changes, factors of social change, human adaptation 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 in rehabilitation.

J. Social control

Meaning of social control, role of norms, folkways, customs, morals, religions, laws and other means of social control in the regulation of human behaviour, social deviance and disease.

UNIT IV**K. 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

UNIT V**L. Social security**

Social security and social legislation in relation to the disabled.

M. Social worker

The role of a medical social worker.0

Evaluation:

Internal marks (50): class tests, model exams and assignment

University Theory exam: 100 Marks

References:

1. Sachdeva. D.R.and Bhshan. V.: An Introduction to Sociology, Allahabad, Kitab Mahal Limited - 1974.
2. Madan, G.R.: Indian Social Problems, Vol-I, Madras. Allied Publications - 1973

ANATOMY

University Exam at the end of I year

Total No. of Hours: 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, brain, cardio-pulmonary and nervous systems as these relate to the application of Physiotherapy.

Course Objective

The objective of this course is that after 200 hours of lectures, demonstrations and practicals, the student will be able to demonstrate knowledge in human anatomy as in necessary for the study and practice of physiotherapy.

Course Outline

UNIT I

A. Introduction

1. Define Anatomy and mention its sub-divisions
2. Name regions, cavities and systems of the body
3. Define anatomical position and anatomical terms

B. Cell

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

C. Tissues

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

D. Cardio-Vascular system

1.
 - a. Comprehend the external and internal features of the structure of the heart and their implications.
 - b. Mention position of the heart
 - c. Identify and name the chambers of the heart, surfaces and borders 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 and nerve supply of the heart.
 - b. State the basic arrangement of the pericardium
 - c. Identify the coronary arteries and coronary sinus
 - d. Name the parts of the conducting 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 types of arteries and veins. Give examples and indicate a basic microscopic structure of types of blood vessels.

E. Lymphatic system

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

UNIT II

F. Respiratory system

1.
 - a. List the parts of 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 arrangements of pleurae. 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 bronchopulmonary segments
 - g. Illustrate the main features of the microscopic structure of the lung
 - h. Identify the borders and surfaces of the lung on the specimen.

G. Digestive system:

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, sub-division, communication, internal features and muscles of pharynx
 - e. Identify internal features of the mouth and pharynx in the specimen

2.
 - a. State the position, course and extent of oesophagus.
 - b. Identify oesophagus in the specimen
 - c. State its basic nerve supply
3.
 - a. Mention the position and gross structure of the stomach
 - b. Identify the stomach and its borders, the surfaces and sub-divisions
 - c. Enumerate the immediate relations of the stomach
 - d. State the basic nerve supply of the stomach
4.
 - a. Name the sub-divisions of intestine and mention their positions
 - b. Mention the difference between small and large intestine
5.
 - a. Name the arteries arising from abdominal aorta
 - b. Name and mention positions of the principal autonomic visceral nerve plexuses 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 sub-divisions of the pancreas
8.
 - a. Name the major salivary glands
 - b. Indicate their positions
 - c. Mention the site of openings of their ducts

H. Genito-Urinary System

1.
 - a. Comprehend the basic functional implications and the basic structure of the kidney and ureter
 - b. Mention the position, size and shape of the 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 a kidney
 - e. 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, size and surfaces of the bladder
 - c. Indicate the immediate relations of the bladder
 - d. Mention the basic innervation of the bladder
 - e. Name and identify the sub-divisions of the male urethra
 - f. Mention the position, extent and immediate relations of 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 the parts of male reproductive organs and its location. State the anatomy and functional considerations of the testes, male accessory organs of reproduction and external organs.
 - b. Name the constituent structure 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 the female reproductive organs and their location. 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 prolapse.
 - d. Mention the position, extent and gross structure of the female breast.

UNIT III

I. Nervous System

1.
 - a. Define the sub-divisions of nervous system. Define central, peripheral and autonomic nervous systems and name their sub-divisions. Comprehend the position and formation of the spinal cord, its structure and functions 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 multi synaptic spinal reflex pathway
 - e. Illustrate the white and grey matter and anterior lateral and posterior columns of the spinal cord
 - f. Mention the origin, termination and position of important ascending and descending tracts, sites of crossing of fibres of these tracts and functions of each tract.
 - g. State the main consequences of spinal cord transection and hemisection and explain the rationale of cordotomy.
 - h. Indicate the blood supply and meninges of spinal cord
2.
 - a. Name the sub-divisions of brain. Identify and mention the external features of parts of the brain.
 - b. Mention the internal structure and basic features of parts of the brain stem and name the nuclei and fibre tracts with special emphasis on cranial nerve nuclei.
 - c. Identify and mention the parts of the cerebellum
 - d. Mention the external features and internal structures of the cerebellum and name its various afferent and efferent fibre tracts and their origin and termination.
 - e. Mention the features of the gross components of the cerebrum.
 - f. Mention the identify the location of gyri, sulci and cortical areas.
 - g. State and identify association commissural and projection fibres.
 - h. Define and identify components of forebrain, including cerebral cortex, insula, olfactory bulb, olfactory tract, uncus, fornix, basal ganglia, thalamus, hypothalamus, internal capsule, corpus callosum etc.
 - i. Sequelae following damage to internal capsule
 - j. Outline sensory and motor pathways
 - k. Name sensory and motor nerve endings with functions
 - l. Define pyramidal motor system and name its tracts
 - m. Define upper and lower motor neurons

- n. Name the parts and tracts of the extra-pyramidal system and indicate the functions
3. Outline the basic features of sensory organs, nose, tongue, eye, ear and skin.
 4. Briefly outline the nature and basis of muscle tone. Mention the anatomical pathways involved in the production and maintenance of muscle tone.
 5.
 - a. State the formation, circulation and drainage of CSF.
 - b. Locate and identify the ventricles
 - c. Identify and name the meninges and spaces around and locate cisterns
 - d. Define lumbar puncture and cisternal puncture
 - e. State the features of the meninges
 - f. Recognise the differences between extradural, subdural and subarachnoid heamorrhage.
 6.
 - a. Outline the arrangement of major blood vessels around the brain and spinal cord.
 - b. Mention the arteries forming the circle of Willis
 - c. Name the branches of major arteries supplying the brain and spinal cord and mention the parts they supply.
 - d. Predict the result of blockage or rupture of central deep branches
 - e. Predict the result of occlusion of cerebral arteries
 - f. Predict the result of occlusion of vertebral basilar arteries
 - g. Identify and mention the connections of dural venous sinuses
 - h. Name and identify the parts of the limbic system. Mention their function in emotion and behaviour.
 7.
 - a. Mention the position and structure of the autonomic nervous system.
 - b. Mention the site of origin and termination of preganglionic and post ganglionic sympathetic and parasympathetic fibres.
 - c. Name and locate the sympathetic and para-sympathetic ganglia.
 - d. Summarize the functional differences between sympathetic and parasympathetic system
 8.
 - a. Enumerate the cranial nerves in serial order
 - b. Mention the nuclei of origin and termination and indicate the site of attachment to brain/brain stem.
 - c. Explain the general distribution of the cranial nerves and the course of the VII nerve.
 - d. Predict the result of injury to cranial nerves
 9.
 - a. Anatomy of Spinal cord-review
 - b. Name the groups of spinal nerves
 - c. Explain the formation and branches of the spinal nerves and distribution of anterior and posterior rami
 - d. Locate and name the plexuses of nerves
 - e. Indicate the course and distribution of branches of the plexuses of nerves

J. Endocrine System

1. List the endocrine organs and mention their positions

2. Mention the hormones produced by each endocrine organ

UNIT IV

K. Introduction to bones (Osteology)

1.
 - a. Define Skeleton
 - b. Mention the sub-divisions of skeleton. Name the bones in each sub-division. Mention the number of bones in each sub-division and total number of bones.
 - c. Classify the bones and give examples
 - d. Enumerate the common surface features of bones
 - e. Define ossification. Explain the types of ossification and give examples. Define ossification centre. Explain the growth of a long bone in length and width.
 - f. Indicate blood supply and nerve supply of a bone
2.
 - a. Identification and orientation of bones
 - b. Identify surfaces, borders and all other surface features
 - c. Mark and indicate the muscular and ligamentous attachments on the bone

L. Introduction of joints (Syndesmology/Arthrology)

1.
 - a. Define a joint or articulation
 - b. Classify the joints and give examples for each joint. Define each type of joint.
 - c. Mention the basic features of a synovial joint
 - d. Define the axes and planes of movements possible in a joint
 - e. Define range of movement and limiting factors
 - f. Indicate the blood supply and nerve supply in general
 - g. Define stability of a joint
 - h. Demonstrate common movements
2. When regional anatomy is taught
 - a. Mention the type, the articular surfaces, ligaments, movements, axes of movements, chief muscles producing the movements, limiting factors and nerve supply and blood supply of all individual joints.
 - b. Mention the factors for stability
 - c. Articulate the bones correctly
 - d. Explain applied anatomy for all joints.

M. Introduction to Muscles (Skeletal Muscle) (Myology)

1.
 - a. Define a skeletal muscle
 - b. Define faciae, tendon, aponeurosis
 - c. Classify the skeletal muscles by shape etc and give examples.

- d. Define origin, insertion, muscle work (contractions), type of muscle work, range of muscle work, group actions agonists, antagonists, synergists and fixators, shunt and spurt muscles, types of lever with examples.

2. When regional anatomy is taught

- a. Mention the position, origin, insertion, nerve supply and actions of the skeletal muscles. (For the skeletal muscles of soft palate, pharynx and larynx, position, action and nerve supply may be sufficient).
- b. Indicate group of muscles by position and group action and nerve supply of group of muscles.
- c. Indicate segmental innervation of muscles
- d. Predict the result of paralysis of individual and group of muscles.

N. Upper extremity

1. Pectoral region

- a. Outline the features of pectoral region
- b. Name and identify the sternum, clavicle, scapula and humerus.
- c. Outline the main features of the bones of shoulder girdle
- d. Identify the parts, borders and surfaces of sternum. Mention its other features.
- e. Identify the ends, surfaces, curvatures and other features of clavicle.
- f. Identify the borders, angles, surfaces, processes, fossae and other features of scapula.
- g. Identify the ends, head, greater and lesser tubercles and anatomical and surgical necks of humerus also the capitulum, trochlea and radial, coronoid and olecranon fossa and epicondyles.
- h. Locate and identify the muscles of pectoral region. Mention their origin, insertion, nerve supply and action.

2. Scapular region

- a. Comprehend the main features of the muscles in the scapular region
- b. State the layered arrangements of the muscles of the back
- c. Name and identify the muscles of scapular region. Mention their origin, insertion, nerve supply and actions
- d. Demonstrate the bony landmarks of scapula, humerus and clavicle

3. Axilla

- a. Mention and 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.
- b. Illustrate the formation of brachial plexus

4. Shoulder Girdle

- a. Comprehend 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.
- c. Demonstrate and name the movements of scapula. Mention the chief muscles producing these movements. Correlate movements of scapula.
- d. Assign functional roles of the articular disc, costoclavicular ligament of sternoclavicular joint and coracoclavicular ligament.

5. Shoulder joint

- a. Mention the type, articular surfaces and ligaments of the shoulder joint.
- b. Define and demonstrate the movements of shoulder joint.
- c. Name and identify the chief muscles producing these movements. Analyse these movements and mention limiting factors.
- d. Mention the blood supply and nerve supply of this joint.
- e. Analyse the association of movements of scapula and movements shoulder joints.
- f. Mention the limiting factors and the factors for its stability. Indicate applied anatomy.

6. Upper Arm

- a. Name and identify the muscles at the front and back of the upper arm.
- b. Name and identify the ends, borders, surfaces and features of the humerus. Identify the head, anatomical neck, tubercles, surgical neck, bicipital groove, condyles, capitulum, trochlea, epicondyles, radial, coronoid and olecranon fossae.
- c. Mention the origin, insertion, nerve supply and actions of the muscles of the front and back of upper arm.
- d. Indicate the course, relations and distribution of radial and musculocutaneous, nerves.

7. Elbow joint

- a. Mention the type, articular surfaces and ligaments of elbow joint.
- b. Define and demonstrate the movements possible and name the chief muscles producing these movements.
- c. Mention the factors for stability and limiting factors.
- d. Indicate the applied anatomy.
- e. Mention the blood supply and nerve supply.
- f. Explain the carrying angle.

8. Forearm, wrist and hand

- a. Mention the bones of forearm. Identify the ends, borders, surfaces and features of radius and ulna.
- b. Identify the head, neck, tuberosity and styloid process of radius. Identify the coronoid process, olecranon process, trochlear notch, tuberosity, head and styloid process of ulna. Also the radial notch of ulna and ulnar notch of radius.
- c. Name and identify the carpal bones, metacarpal bones and phalanges in an articulated hand.
- d. Identify the muscles of front and back of the forearm.

- e. Mention the position, origin, insertion, nerve supply and action of these muscles.
- f. Indicate the course, relations and distribution of median, ulnar and radial nerves.
- g. Mention the type, articular surface and ligaments of radioulnar joints. Define the movements and muscles producing these movements. Analysis and functional application of these movements in daily activities.
- h. Mention the position and distribution of radial and ulnar arteries and ulnar, median and radial nerves.
- i. Name and locate the carpal bones. Mention the type, articular surface and ligaments of wrist joint. Define and demonstrate the movements and mention the muscles producing them. Mention its blood supply and nerve supply. Mention the visible tensions around the wrist and their synovial sheaths.
- j. Predict the result of paralysis of muscles of the forearm.
- k. Mention the functional implications if prehension is lost in the hand.
- l. Indicate the arrangement of tensions of the digits, retinacula, fibrous flexor sheaths and synovial sheaths.
- m. Evaluate the hinge type of interphalangeal joints, ellipsoid type of metacarpophalangeal joints and saddle type of carpometacarpal joint.
- n. Name and identify the small muscles of the hand. Mention their position, origin, insertion, nerve supply and action.
- o. Mention the type of bones forming and ligaments of joints of hand. Define the movements and the muscles producing these movements. Predict the results of paralysis of the small muscles of hand.
- p. Demonstrate the types of grip.

9. Nerves of upper limb

- a. Comprehend the knowledge of the position distribution of nerves of upper limb and explain, the application of the same.
- b. Mention the root value of the nerves.
- c. Identify the nerves and mention the position, course, relations and distribution of nerves of upper limb.
- d. Predict the result of injury to these nerves.

10. Blood vessels and lymph nodes:

- a. Comprehend the knowledge of the position and distribution of blood vessels and lymph nodes and their application.
- b. Trace the main arteries and veins.
- c. Indicate their position and name the main branches of tributaries.
- d. Name and locate the lymph nodes.

11. Cutaneous nerves of upper limb

- a. Name the cutaneous nerves and illustrate the areas of their distribution.
- b. Illustrate the dermatomes.

UNIT V

O. Lower Extremity

1.
 - a. Name and identify the orientation of hip bone, femur, tibia, fibula and patella.
 - b. Identify the components and features of hip bone. Identify the ends, borders, surfaces, head, neck, trochanters, condyles and epicondyles of femur and the features of the tibia and fibula.
 - c. Identify and mention the origin, insertion, nerve supply and action of the muscles in the front and back of thigh.
 - d. Mention the boundaries and contents of femoral triangle and sartorial canal.
 - e. Indicate the position, course and distribution of femoral nerve.
 - f. Indicate the course and main branches of femoral artery and mention the blood supply of neck of femur.
 - g. Indicate the position of femoral vein.

2.
 - a. Name and identify the muscles of the leg. Mention their origin, insertion, nerve supply and tibial artery distribution.
 - b. Mention the position and attachment of flexor retinaculum.
 - c. Mention the arrangement, origin, insertion, nerve supply and action of muscles of foot.
 - d. Indicate the types and formation and factors for the maintenance of the arches of foot.
 - e. Mention the type, articular surface, ligaments, movements, chief muscles for the movement, axes of movements and applied anatomy of tibiofibular joint, ankle joint, subtalar joints, M.P. joints and I.P. joints.
 - f. Palpation and identification of the tendons around the ankle and dorsum of foot.

3. Medical side of thigh
 - a. Names and identifies the muscles of the medical side of thigh. Mentions their origin, insertion, nerve supply and action.
 - b. Indicates the course, relations and distribution of obturator nerve.

4. Back of thigh
 - a. Identifies and mentions the position, origin, insertion nerve supply and action of the hamstring muscles.
 - b. Indicates the position, course, relation and distribution of sciatic nerve.

3. Gluteal region
 - a. Identifies and mentions the position, origin, insertion, nerve supply and action of the muscles.
 - b. Names and mentions the position and course of the nerves found there and names the arteries there.

4. Hip joint
 - a. Mentions the type, articular surface and ligaments.
 - b. Defines the movements and names the chief muscles producing the movements.
 - c. Mentions the blood supply, nerve supply, factor for stability and limiting factors.
 - d. Indicates applied anatomy.
5. Knee joint
 - a. Mentions the type, articular surfaces, and ligaments.
 - b. Defines the movements and names and chief muscles for the movements.
 - c. Analyses the movements.
 - d. Knows the blood supply and nerve supply.
 - e. Indicates applied anatomy.
 - f. Defines locking and unlocking of the joint.
6. Popliteal fossa
 - a. Indicates the boundaries and contents
 - b. Mentions the position and branches of tibial and common peroneal nerves.
7. Front of leg and dorsum of foot
 - a. Names and identifies the tarsal bones, metatarsal bones and phalanges in an articulated foot.
 - b. Names and identifies the muscles.
 - c. Mentions the positions, origin, insertion, nerve supply and action of the muscles.
 - d. Position and distribution of deep peroneal nerve.
 - e. Indicates the position and attachment of extensor retinaculæ.
 - f. Mentions and identifies the features of the tibia and fibula.
8. Lateral side of leg
 - a. Names and identifies the muscles.
 - b. Mentions the position, origin, insertion, nerve supply and action of muscles.
 - c. States the position, course and distribution of superficial peroneal nerve.
 - d. States the position and attachment of peroneal retinacula.
9. Back of leg and sole of foot.
 - a. Name and identifies the features of the bones the foot.
 - b. Names and identifies the muscles of back of leg.
 - c. Mentions the position, arrangement, origin, insertion, nerve supply and action of the muscles.
 - d. States the position, course and distribution of tibial artery.
 - e. States the position and distribution of posterior tibial artery.
 - f. Mentions the position and attachment of flexor retinaculum.

- g. Indicates the types of formation and factors for the maintenance of the arches of foot.
- h. Mentions the type, articular surface, ligaments, movements chief muscles for the movement. Axes of movements and applied anatomy of tibiofibular joints, ankle joints, subtalar joints and I.P. joints.
- i. Palpates and identifies the tendons around the ankle and dorsum of foot.

10. Nerves

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

Vertebral column:

1. State the basic osteology of vertebral column.
2. Identify parts of a typical vertebra of each group of vertebrae. Identify a typical vertebra. Identify an atypical vertebra.
3. State the form, structure and movements of joints of vertebral column. Mention the movements and the muscles producing them.
4. Identify the intervertebral disc and mention 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.

Thoracic Spine

1. State the main features of the bones and joints of thoracic cage. Mention the boundaries.
2. Identify parts of a typical vertebra. Identify and state the main features of typical vertebra.
3. State the form, structure and movements of joints of vertebral column. Mention the movements and the muscles producing them.
4. Identify the intervertebral disc and mention 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.

Thoracic Cage:

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. Define true, false and floating ribs. Mention the parts and features of typical rib.
 - d. Mention the type and formation of the joints between rib and vertebrae, between costal cartilage and sternum, and between costal cartilages.
 - e. Mention the type and formation of joints between parts of sternum. Indicate the importance of sternal angle.
 - f. Explain pump handle and bucket handle movements of ribs.
 - g. Palpate bony landmarks such as jugular notch, sternal angle, xiphisternum and spines of thoracic vertebrae.

2.
 - a. Define intercostal space and list the contents. Mention the course and branches of typical intercostal nerve. Name the muscles 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 sub-divisions of the mediastinum and list the contents. Identify the contents.
 - b. State the features of thoracic parts of sympathetic trunk.

Abdomen:

1.
 - a. Mention the main features of lumbar vertebrae, sacrum and coccyx.
 - b. Mention the formation and sub-divisions of the bony pelvis. List the features of the female bony pelvis and their roles.
 - c. Mention the type, articular surfaces, 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 feature of these muscles.
 - c. Explain the formation of rectus sheath and list its contents.
 - d. Define inguinal canal and explain 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. List the organs 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. Explain the muscles of the back in layers. Mention the arrangements of lumbar fascia. Identify the muscles in lumbar region. Explain the lumbar routes

to abdomen. Identify and mention the attachments and actions of the large muscles of back.

- 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

- a. State the main features, sub-divisions, boundaries, walls and floor of pelvis.
- b. Mention the features of the pubic symphysis and sacroiliac joints.
- c. Compare the major differences between the male and female pelvis.
- d. Identify the muscles of the pelvic floor and mention their attachments, actions and nerve supply.
- e. Mention the structure of the urogenital diaphragm.

R. Head and Neck

Musculoskeletal and neurovascular features. Identify and explain the anterior and posterior triangles of neck. Name the sub-divisions. 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 the name of main muscles of the face. Mention their nerve supply and action.
 - f. Predict the result of paralysis of 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 nerve (V nerve) on the face.

2.
 - a. Identify the general feature of atypical cervical vertebra atlas, axis and seventh cervical vertebra.
 - b. Identify the erector spinae, sternomastoid and scalenei muscles. Mention their attachments, actions and nerve supply.
 - c. Identify the phrenic, accessory and vagus nerves. Mention their distribution.
 - d. Identify and state the position, distribution and root values of the nerves of cervical and brachial plexus.
 - e. Demonstrate the action of sternomastoid.
 - f. Mention the type, articular surfaces, ligaments, movements and muscles producing 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.
 - c. Identify the internal, jugular and subclavian veins. Mention their position, formation and termination.
 - d. State the basic organisation of the autonomic nervous system.
 - e. State the sites of craniosacral and thoracolumbar outflows.
 - f. Define the modes of distribution of pre and post ganglionic efferent neurons in sympathetic and parasympathetic nervous system.
 - g. Name the cranial nerves containing parasympathetic fibers and mention their distribution.
 - h. Distinguish between sympathetic and parasympathetic systems in relation to their functions.

Eye

- a. State the position of the lacrimal apparatus, the functional implications of structure of the eye and the lacrimal apparatus.
- b. Name and illustrate the coats, their sub-divisions, the refractive media, the chambers of the eye and the optic nerve.
- c. Mention the structure of retina and optic pathway.
- d. Briefly explain the basic information of the light and accommodation reflexes (omitting the pathways).
- e. Mention the distribution of the three divisions of trigeminal nerve (V nerve).
- f. Name and state the nerve supply and simple actions of the extraocular muscles.
- g. Predict the results of lesions of III, IV and VI cranial nerves.

Nose

- a. Name the bony components of the nose
- b. Mention the parts and boundaries of the nose
- c. State the main features of the nasal cavity
- d. Name and identify the paranasal air sinuses and locate their openings.

Temporomandibular joint

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

Mouth

- a. State the main features of the mouth cavity, tongue, palate, salivary glands, teeth and gums.
- b. Mention the sensory and motor innervation of the tongue.
- c. Identify the salivary glands.
- d. Demonstrate movements of the tongue and palate.
- e. Test and produce the swallowing (gag) reflex.
- f. Predict the sequelae of lesions of the VII and XII cranial nerves

Pharynx

- a. State the position and extent of the pharynx
- b. State the three sub-divisions and the features of each sub-division.
- c. Name the muscles of pharynx and their action.
- d. Mention the sensory and motor innervation of the pharynx.

Larynx and Trachea

- a. Identify the hyoid and state its parts.
- b. Identify the larynx and name the laryngeal cartilages.
- c. State the boundaries of laryngeal inlet and glottis.
- d. Identify the vocal and vestibular folds.
- e. State the movements of the laryngeal cartilages. Name the laryngeal muscles and mention
- f. their attachments, action and nerve supply.
- g. Define the position, extent and gross structure of the trachea.
- h. State the mechanics of Phonation and speech, production of sound, voice and speech.

Ear

- a. State the basic structural plan of the organs of hearing and equilibrium.
- b. Mention the three sub-divisions of the ear.
- c. Mention the nerve endings for hearing and equilibrium.

Cranial nerves

- a. Enumerate the cranial nerves in serial order.
- b. Relate and interpret the number of the names.
- c. Indicate the nuclei of origin of termination.
- d. Mention the attachments to the brain and the cranial exit.
- e. State the sensory and motor distribution.
- f. State the position and course of VII nerve.
- g. Predict the sequel of lesion.

Evaluation: Class Tests and Unit Tests

Unit tests, term examinations and assignments are conducted to evaluate a student.

References

1. Ross & Wilson - Anatomy & Physiology in Health & Illness.
2. T.S. Ranganathan - Text book of Human Anatomy
3. Gray's Anatomy 38th Edition for Reference only.

PHYSIOLOGY

Total No. of Hours: 150

University Exam at the end of I year

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, musculo-skeletal and nervous systems.

Course Objective

The objective of this course is that after 150+50 hours of lectures, demonstrations and practical the student will be able to demonstrate an understanding of elementary human physiology and Bio-Chemistry.

The student will be able to show their proficiency based on written oral and internal evaluation.

Course Outlines

UNIT I

A. Cell Introduction

Outline of basic concepts of cell structure, functions of components transport across membranes.

B. Skin Structure, functions, blood flow, temperature regulation.

C. Blood

1. Outline the components and their functions: RBC, WBC, Platelet, blood groups.
2. Significance of RBC and WBC count, ESR and other related tests.
3. Clotting mechanisms.
4. Blood volume and its regulation.

UNIT II

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 and factors affecting its flow.

E. Respiration

1. Defence mechanisms 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.

UNIT III**F. Digestion**

1. Digestion in the mouth, stomach and intestine.
2. Bile, pancreatic secretion.
3. Mechanisms of control of secretions and motility.
4. Diet and nutrition.

G. Excretion

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

UNIT IV**H. Endocrines**

1. General metabolism, carbohydrate, protein and fat metabolism.
2. Outline of the various hormones and their actions with special emphasis on thyroxine and parathyroid hormone. Abnormalities in function.

I. Reproduction

1. Male reproductive system
2. Female reproductive system
3. Outline of pregnancy, function of placenta, parturition, lactation, contraceptive measures.
4. Physiology of the fetus, factors that affect fetal growth.

UNIT V**J. Nervous System**

1. Structure of neurons.
2. Properties of neurons (excitation and conduction).
3. Synapses and synaptic transmission, reflexes and properties of reflexes.
4. Sensory endings.
5. Spinal cord, pathways in the spinal cord in detail.
6. Brain stem, thalamus, basal ganglia, cerebellum, cerebral cortex.
7. Control of posture and control of voluntary motor activity.
8. Autonomic nervous system.

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 myofibrills, myoneural junction.
2. Chemical processes involved in muscle contraction.
3. Physiology of muscle contraction, single muscle twitch, temperature changes, all or none law, fatigue etc.
4. Exercise metabolism, oxygen debt, respiratory quotient.
5. Development of endurance, factors affecting endurance and muscle strength, factors affecting general and cardiorespiratory endurance, aerobic 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, and physical work capacity, age changes in NS.
7. Environment and exercise; adaption to heat and cold, exercise in heat and cold, human limitation in heat, acclimatization to heat, exercise at high altitudes.

PRACTICAL DEMONSTRATION

- A. Determination of RBC and WBC counts.
- B. Examination of different types of WBC in stained blood smears.
- C. Circulation in the web of the frog's feet.
- D. Ischaemia pain.
- E & F. Muscle contraction in frog, simple muscle curve, tetanus, wave summation, quintal summation, fatigue.
- G. Lung Volumes.
- H. Effects of exercise on ventilation.
- I. Physical fitness.
- J. Determination of BP. effects of exercise on BP.
- K. Examination of sensory and motor systems, examination of superficial and deep reflexes.
- L. Tests of vision (acuity and colour perception) and hearing (Rinne's test and Weber's test).

Evaluation: Class tests and unit tests

Unit tests, term examinations and assignments are conducted to evaluate a student.

References

Text book of Medical Physiology – Aurther C. Guyton

BOT 105 - OT BASIC PRINCIPLES AND THERAPEUTIC ACTIVITIES

I – OT BASIC PRINCIPLES

Examination at the End of: 1st Year

Instruction Hours: 60 hrs.

COURSE DESCRIPTION

This is an introductory course, briefly outlining the purpose and potential of Occupational Therapy. The students are exposed to clinical situations to illustrate the classroom teaching, but have no responsibility for patient treatment.

COURSE OBJECTIVES

The objective of this course is that after 28 hours of lectures & demonstrations and 32 hours of practical exposure to clinical work, the student will be able to demonstrate a basic understanding of the scope and aims of Occupational Therapy and a practical knowledge of at least five activities used in treatment.

BASIC PRINCIPLES OF O.T.

The students will be able to fulfill the following objectives of the course.

Unit I

- a. Describe the history and development of Occupational Therapy internationally organization of All India Occupational Therapist's Association.
- b. Define Occupational therapy. Discuss the scope of O.T in a major hospital and in the community.
- c. Describe Occupational therapy's contribution as part of the total rehabilitation team,. Briefly outline the roles of the different team members.
- d. Briefly explain objectives and media used in O.T. Outline the meaning of "Occupation" in relation to treatment objectives for all ages. Outline of Model of Human Occupation.
- e. Define the characteristic of activities used as treatment media plan analysis activities for physical, psychological and general aspects.
- f. Outline treatment objectives for children: development, remedial (physical mental and emotional). ADAL, include use of play creative and cognitive activities.
- g. Outline treatment objectives for physical conditions: remedial (physical & mental), ADL, prevocational, resettlement
- h. Outline briefly psychiatric treatment objectives:- Remedial (emotional, social cognitive) AD, prevocational and resettlement aspects.
- i. General Outline of Department & Outline the ethics and etiquette relevant to O.T
- j. Orientation to equipments and referral systems
- k. Professional conduct.
- l. Need for confidentiality in treatment of patients.
- m. Inter-staff and therapist-Patient relationships.
- n. . Describe the present development of O.T in India, including

II - THERAPEUTIC ACTIVITIES

Examination at the end of: 1st Year

Instruction Hours: 720 hrs.

COURSE DESCRIPTION

A variety of practical activities are taught in order to provide a wide selection of therapeutic media relevant to the need of individual patients. For each activity the following objectives apply.

COURSE OBJECTIVES

The objectives of this course is that after 720 hours of demonstrations and practical the student will be able to demonstrate an understanding of materials, tools and methods required for the activities studied, and their application in Occupational Therapy.

COURSE OUTLINE

Unit II. Wood work or Carpentry & Weaving , Chair Caning, leather work, tailoring , book binding , home making and design

1. Wood work
 - a. Introduction to Carpentry - Students will be able to describe different types of wood, including care and storage. Selection of wood, cost and availability.
 - b. Carpentry tools – Students will be able to describe structure, functions positions of use and precautions in using each tool, also to explain care and maintenance of tools.
 - c. Joints – Students will be able to identify and make 4 different types of joints
 - d. Application - Students will be able to explain therapeutic values and application for O.T. They will analyze at least 3 processes and describe methods of adaptations of tools.
2. Weaving
 - a. Simple card weaving
 - b. . Rug weaving & Frame weaving
3. Chair caning
4. leather work
 - a. Outline – History
 - b. Types of hides and skins used in leather work.
 - c. Manufacture leather, different characteristics in relation to methods employed.
 - d. Leather purchasing and calculation of cost.
 - e. Describe and use tools – basic tools, cutting tools, sewing tools, tools for special effects.
 - f. Outline purchase and care of tolls.
 - g. Carryout techniques – cutting, thronging, stitching, punching, braiding, lining, fastenings (rivets, eyelets, press buttons, buckles, zips and Velcro), decorating leather articles, use of paints, dyes and finishes.

- Prepare 1 splint and 1 aid e.g. opponens splint and palmar pocket aid.
- Prepare 1 or 2 projects – e.g. watchstrap, purse, wallet, belt, pocket pouch, spectacle case etc., using as many techniques as possible.
- i. Demonstrate practical knowledge of – Chappel making, with aids and adaptations.
- Costing of projects and footwear.
- j. Outline – storage availability, cost and care of material.
- k. Application: Activity analysis, therapeutic values and use to the therapist.

5. Tailoring

- a. Types of stitching and their uses
- b. Types of seams and their uses
- c. Types of opening and fastenings
- d. Pattern making, measuring and cutting
- e. To make any one of the following:

Pillowcase
Shopping bag
Apron
Cushion cover
Baby dress

6. Book binding

- a. Describe the book binding equipment
- b. Maintenance and care of binding tools
- c. make chit pads, letter pads
- d.. Application in therapeutic, prevocational and vocational aspects.

7. Home Activities

- a. Plan and prepare simple meals

8. Design

- a. Painting (Blow, Spray, blotch, finger, oil, wax, thread, charcoal, etc.)
- b. Montage
- c. Paper mat
- d. Macrame
- e. Symography
- f. Ball decoration and paper bead
- g. Aluminum wire pictures
- h. Embroidery
- i. Lettering and posters

Unit 3. Hand Splinting

- a. Paper patterns
- b. Hand splints
- c. Application

Unit 4. Computer Science

- a. Key board usage
- b. Hardware:
- c. Knowledge of the following terminology – Micro processor (CPU) , Memory , Monitor, Keyboard, storage device, floppy discs, hard discs, printers, Microcomputers.
- d. Switching on and switching off the computer and printer.
- e. Accessory management: Explorer and Outlook Express
- f. Printers, Modem, CD Floppy use.
- g. Simple trouble shooting
- h..Simple preventive maintenance techniques (dust, mouse pad maintenance, gentle use of keys)
- i. Software:

-Operating Systems: Eg. Windows, Linux, Dos. The student should know how to use any one.

-Word Processing Software: E.g. MS Word star office, Lotus. The students should be able to use any one.

-Spread sheet software: E.g. MS Excel, Star Office, and Lotus. The students should be able to use anyone

-Browser/Mail: Netscape Communication, Internet

Internet: Searching Medline and related research – Key terms, privacy issues and ethics.

Unit 5.Recreational Activities

- a. Outline the use of the following recreational activities as a therapeutic medium

Plan the following activities for various patient groups.

Sports
Games
Picnic
Drama
Leisure & Hobbies
Music

File preparation: This is an applied subject. Notes on the above will be marked.

Evaluation: Class tests and Unit Tests

Internal:

Files to be submitted for each of the above activities

Tests on Activity analysis, grading of activity

Written, Oral & Practical Examination in Basic Principles and Therapeutic Activities.

University: Written, Oral and Practical Examination of Basic Principles and Therapeutic Activities.

EXAMINATION METHOD : Internal marks will be calculated with the class tests, monthly test and assignment. At the end of the year university and theory exams will be conducted.

Internal Marks	:	50 Marks.
University Theory Exams	:	100 Marks.
Practical	:	75 Marks.
Orals	:	25 Marks
Total Marks	:	250 Marks.

2nd YEAR SUBJECTS

GENERAL MEDICINE, GENERAL SURGERY & PEDIATRIC

University Exam at the end of II year

Total No. of Hours: 150

Course Description

It covers relevant aspects of General Medicine, General Surgery, Paediatrics, Plastic Surgery.

Course Objectives

The objective of this course is that after 150 hours of lectures and demonstrations, in addition to clinics the student will be able to demonstrate a general understanding of the diseases that therapists would encounter in their practice. They should have a brief idea of the etiology and pathology, the patient's symptoms and the resultant functional disability. This would help the students to understand the limitations imposed by the diseases on any therapy.

Broad outline of goals of pharmacological and surgical therapy should be imparted in those diseases in which physical therapy will be an important component of over all management.

In addition, the student will be able to demonstrate proficiency by written, oral and practical internal evaluation.

GENERAL MEDICINE

A) General Medicine

Total No. of Hours: 50

Course Outline

UNIT I

1.1. Infections

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

Bacterial - Tetanus

Viral - Herpes simplex, zoster, varicella, measles, German measles, Hepatitis
AIDS.

Protozoal - Filaria

UNIT II

2 Hematology

- a. Define and briefly describe clinical aspects of iron deficiency, Vitamin B₁₂ and folic acid deficiency anaemia.
- b. List types of bleeding diathesis.
- c. Describe the clinical features of Hemophilia.

UNIT III

Renal Diseases

- 3.1 Define and briefly outline acute and chronic renal failure.
- 3.2 Urinary tract infection, pathogenesis, outline common clinical conditions complicated by UTI.

b. Metabolic Diseases

- 3.3 Diabetes - define and outline etiology. List types of diabetes and complications and briefly outline use of insulin, diet and oral hypoglycemic agents in management of diabetes.
- 3.4 Obesity - Define and outline management. Types of Obesity, various methods to measure obesity and complication of obesity.

UNIT IV

Geriatrics

- 4.1 Various physiological changes encountered in elderly population. Theories of aging. List diseases commonly encountered in the elderly population and their role in causing disability; Hypertension, Ischaemia Heart disease, cerebrovascular accidents, benign prostatic hyperplasia, cataracts & other causes of failing vision.
- 4.2 Dermatology Conditions

Diseases of skin - leprosy, pigmentary anomalies, vasomotor disorders, trophic ulcers, their classifications and management, dermatitis, coccal and fungal parasitic and viral infections, skin diseases related to rheumatology, tropical skin diseases, and hyperhydrosis. Psoriasis skin changes in vitamin D deficiency, alopecia, acne vulgaris.

UNIT V

5.1 RESPIRATORY TRACT

- a. Bronchitis – Define, list etiological factors and describe symptoms.
- b. Pneumonia – List types of pneumonia (lobar, broncho, aspiration pneumonia.)
- c. List etiologic agents and briefly outline symptoms and complications of pneumonia.
- d. Asthma – Define, describe briefly the etiological factors and clinical features during acute exacerbation.

- e. Chronic obstructive airway diseases – Define emphysema and chronic bronchitis. Briefly describe the pathology, symptoms of diseases and clinical course.
- f. Tuberculosis – Describe the etiology, pathology and clinical features of pulmonary TB.
- g. Bronchiectasis – Define and describe briefly the pathology, and clinical symptoms of bronchiectasis, bronchopulmonary segments and postural drainage.
- h. Emphysema – Define and briefly describe etiological factors.
- i. Chest wall deformities – Describe funnel chest, Pigeon chest, Barrel chest, Kyphoscoliosis of thoracic spine.
- j. Briefly outline functional disability of occupational lung diseases, List pneumoconiosis.

5.2 CARDIO – VASCULAR SYSTEM

- a. Cardiac failure – Define, List causes and symptoms.
- b. Rheumatic fever – Define and briefly describe etiology and gross pathology of rheumatic heart disease.
- c. Infective endocarditis – Define and outline etiology, symptoms and complications.
- d. Ischaemic heart disease – Outline pathology of IHD, define angina pectoris and Myocardial infarction. Describe clinical features and broadly outline medical and surgical treatment.
- e. Hypertension – Define and outline the clinical features, complications & goals of therapy.
- f. Outline pathogenesis and clinical features of: Pulmonary embolism, Deep vein thrombosis, pulmonary infarct.
- g. Congenital heart disease – List ASD, VSD, Fallot's Tetralogy and PDA & abriefly outline the pathologic anatomy

5.3 BONE, JOINT AND CONNECTIVE TISSUE DISORDERS

- a. Brief introduction to concept of autoimmune disease
- b. Define Systemic lupus erythematosus, Polymyositis, Dermatomyositis, Polyarthrits, Nodosa, Scleroderma.
- c. Rheumatoid arthritis - describe etiology, Clinical features and complications, drug therapy and non pharmacological therapy.
- d. Osteoarthritis – Describe Etiology, Clinical features and complications and review non steroidal anti inflammatory drugs and steroids.

EVALUATION

Unit tests, term examinations and assignments are conducted to evaluate a student.

References

Principles and Practice of Medicine – Davidson

B. PAEDIATRICS

Total No. of Hours: 50

UNIT I

- 1.1 Describe growth and developments of a child from birth to 12 years including physical, social adaptive development.
- 1.2. 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, tuberculosis, diabetes, epilepsy; bleeding to mother at any trimester.
- 1.3. 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.

UNIT II

2.1 Cerebral Palsy :

- a. Define and briefly outline etiology of prenatal, perinatal and postnatal causes : briefly mention pathogenesis, types of cerebral palsy (classification) findings on examination; general examination of C.N.S. Musculoskeletal and respiratory system.
- b. Briefly outline associated defects: Mental retardation, microcephaly, blindness, hearing and speech impairment, squint and convulsions.
- c. Prevention : Appropriate management of high risk pregnancies, prevention of neonatal and postnatal infections, metabolic problems.

2.2 Muscular Dystrophy :

- a. Outline various forms modes of inheritance and clinical manifestation; physical finding in relation to disabilities progression of various forms and prognosis. Describe treatment goals in forms which are and are not fatal.

UNIT III

- 3.1 Spinabifida, meningomyelocele : Outline development; clinical features - lower limbs, bladder and bowel control; complications - UTI & hydrocephalus; medical treatment and surgical treatment.
- 3.2 Still's disease: Classification, pathology in brief, physical findings, course & prognosis. Outline treatment, prevention and correction of deformity.
- 3.3 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 bowl problems, seizure disorder and specific problems such as subdural effusion, hydrocephalus, pressure sores, feeding difficulties.

UNIT IV

- 4.1 Normal diet of new born 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.
- 4.2 Lung infections: Outline the clinical findings, complications and medical treatment of bronchiectasis, lung abscess and bronchial asthma, cystic fibrosis, primary complex in infant and children.

UNIT V

- 5.1. Acute paediatric respiratory distress syndrome intensive paediatric care.
- 5.2 Intensive neonatal and paediatric surgical care.
- 5.3 Congenital cardiovascular problems - management.
- 5.4 Cardio and respiratory rehabilitation in children.

EVALUATION

Unit tests, term examinations and assignments are conducted to evaluate a student.

References

Essential Paediatrics – O.P. Ghai

GENERAL SURGERY

Total No. of Hours: 50

UNIT I

- 1.1 Principles of General Surgery.
- 1.2 Principles of Post operative management including surgical ICU.
- 1.3 Role of Physiotherapy in General Surgery.

UNIT II

- 2.1 Describe abdominal surgical incisions.
- 2.2 Outline the post operative complications and management in
 - a. Nephrectomy, Appendicectomy
 - b. Herniorrhaphy, Mastectomy
 - c. Thyroidectomy
 - d. Colostomy
 - e. Hysterectomy
 - f. Prostatectomy
 - g. Cystectomy
 - h. Hysterectomy
 - i. Prostatectomy
 - j. Cholecystectomy
 - k. Ileostomy

PLASTIC SURGERY

UNIT III

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

UNIT IV

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

UNIT V

- 5.1 Outline the plastic surgery procedures and management in rehabilitation of burns, including splinting methods for common deformities and prevention of burns contractures.
- 5.2 Reconstructive surgery for correction of deformities of upper and lower limbs.

EVALUATION

Unit tests, term examinations and assignments are conducted to evaluate a student.

References

A Concise Text book of Surgery – Das,

A Practical Guide to operative surgery - Das

PATHOLOGY, MICROBIOLOGY

University Exam at the end of II year

Total No. of Hours: 50

Course Description

This course follows the basic courses in anatomy and physiology. It will compliment the course in general medicine and surgery being taught next semester. Students will learn the pathological changes in various conditions, diseases and disorders, which are commonly treated by physiotherapy.

Course Objectives

The objective of this course is that after 50 hours of lectures, demonstrations and practical the student will be able to demonstrate an understanding of the pathology and microbiology of common diseases that therapists would encounter in their daily practice. The course will also help therapists to understand how to protect themselves and their patients from infections during their interactions.

In addition the students will be able to show their proficiency based on written and oral internal evaluation.

Course Outline

PATHOLOGY

Total No. of Hours: 30 Hrs

UNIT I

- a. Introduction: Concepts of diseases, classification of lesions
- b. Bacterial, viral and parasitic infections - a general outline,
- c. Inflammation and repair, degeneration, necrosis and gangrene

UNIT II

- D. Haemorrhage, shock, embolism, thrombosis
- E. Tuberculosis, leprosy, typhoid.
- F. Deficiency diseases

UNIT III

- G. Tumours: Aetiology and spread, common tumours
- H. Blood: Anemia, common congenital anomalies, rheumatic and coronary heart diseases.
- I. Respiratory system: Pneumonias, bronchiectasis, emphysema, chronic bronchitis, asthma.

UNIT IV

- J. Bone and Joints: Autoimmune disease, septic arthritis, osteomyelitis.
- K. Skin: Leprosy.
- L. Urinary system

UNIT V

- M. Central Nervous System: CNS infections, vascular disorders.
- N. Rheumatoid arthritis.
- O. Scleroderma and psoriasis.
- P. Diseases of muscle including poliomyelitis, myopathies.
- Q. Volkmann's Ischaemia.

MICROBIOLOGY**Total No. of Hours: 20 Hrs****UNIT I**

- A. Introduction and history of microbiology
- B. General lectures on micro-organisms
 - 1. Classification
 - 2. Shape and arrangement
 - 3. Special characteristics-spores, capsules, enzymes, motility, reproduction.

UNIT II

- C. Disinfection and antiseptics.
- D. Sterilization and asepsis.
- E. Antibacterial agents-fundamental aspect, susceptibility tests.

UNIT III

- F. Infection - sources of infection.
 - Portals of entry
 - Spread of infection
- G. Non-specific immunity.
- H. Immunity - natural and acquired.
- I. Allergy and hypersensitivity.

UNIT IV

- J. Outline of common pathogenic bacteria and diseases produced by them.
Treatment and prevention.
 - 1. Respiratory tract infections.
 - 2. Meningitis.
 - 3. Enteric infections.

4. Anaerobic infections.
5. Urinary tract infections.
6. Leprosy, tuberculosis and miscellaneous infections.
7. Wound infections.
8. Sexually transmitted diseases.
9. Hospital acquired infection

UNIT V

K. Pathogenic yeasts and fungi

L. Virology - virus infections with special mention of Hepatitis, Poliomyelitis and Rabies.

EVALUATION

Unit tests, term examinations and assignments are conducted to evaluate a student.

References

Text book of Pathology

1. Text book of Pathology (5th Edition) – Harsh Mohan
2. Text book of Pathology (2nd Edition) – Datta

Text book of Microbiology

1. Text book of Microbiology – C.K.J. Paniker
2. Text book of Microbiology – Logeswari Selvaraj

**APPLIED ANATOMY, APPLIED PHYSIOLOGY, BIOMECHANICS AND
BIOENGINEERING**

Examination at the end of: 2nd year

Instruction Hours: 120 hrs

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 application in musculo-skeletal function and dysfunction.

Course Description:

The objectives of this course is that after 80 hours of lectures, demonstrations and practical 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 fulfill with 75% accuracy (as measured by written & oral evaluation) the following objectives of the course.

Course Outline:

Unit - I

1.1 Mechanics

- a. Describe types of motion, planes of motion, direction of motion and quantity Of motion.
- b. Define forces, force vectors, components of forces.
- c. Describe gravity, segmental centers of gravity, and center of gravity of the human body, stability and center of gravity, relocation of the center of gravity.
- d. Describe Reaction forces, Newton's Law of Reaction.
- e. Describe equilibrium – Law of inertia and establishing equilibrium of an object.
- f. Describe objects in motion; Law of Acceleration, Joint distraction in a linear force system and Force of friction.
- g. Describe concurrent Force Systems: Composition of forces, Muscle Action Lines, Total muscle force vector, Divergent muscle pulls, Anatomic pulleys.
- h. Describe parallel Force Systems: - First class levers second class levers – Third class levers – Torque – Mechanical Advantage.
- i. Define moment Arm: Moment Arm of a muscle force. Moment arm of gravity and Anatomic pulleys.
- j. Describe equilibrium of a lever.

1.2 Describe The Following:

- a. Three types of motion.
- b. The plane in which a given joint motion occurs, and the axis around which the motion occurs.
- c. 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.
- d. The action line of a single muscle.
- e. The name, point of application, direction, and magnitude of any interface, given its reaction force.
- f. A linear force system, a concurrent force system, a parallel force system.
- g. The relationship between torque, moment arm and rotatory force component.
- h. Two methods of determining torque for the same given set of forces.
- i. How anatomic pulleys may change action line, moment arm, and torque of muscles passing through them.
- j. In general terms, the point in the joint range of motion at which muscle acting over that joint is biomechanically most efficient.
- k. How external forces can be manipulated to maximize torque.
- l. Friction, its relationship to contacting surfaces and to the applied forces.

1.3 Determine The Following:

- a. The identity (name) of diagrammed forces on an object.
The new center of gravity of an object when segments are rearranged, given the original centers of gravity.
- b. The resultant vector in a linear force system, a concurrent force system, and a parallel force system. If a given object is in linear and rotational equilibrium. The magnitude and direction on of acceleration of an object not in equilibrium. Which forces are joint distraction forces and which are joint compression forces. What are the equilibrium force for each?
The magnitude and direction of friction in a given problem.
The class of term in a given problem.

1.4 Compare The Following

1. Mechanical advantage in a second and third class lever.
Work done by muscles in a second and third class lever.
Stability of an object in two given situations in which location of the centre of gravity and the base of support of the object.

1.5 Draw the following:

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

1.6 Joint Structure And Function

- a. Describe the basic principles of joint design and a human joint.
- b. Describe the tissues present in human joints; including dense fibrous tissue, bone, cartilage and connective tissue.
- c. Classify Joints – synarthrosis, Amphiarthrosis, Diarthrosis, sub classification of synovial joints.
- d. Describe joint function, kinematic chains, range of motion.
Describe the general effects of injury and disease.

1.7 Recall The Following:

- a. The elementary principles of joint design.
- b. The three main classification of joints.
- c. The five features common to all diarthrodial joints.
- d. Types of materials used in human joint construction.
- e. Properties of connective tissue.

1.8 Identify The Following:

- a. The axis of motion for any given motion at a specific joint (knee, hip, metacarpophalangeal).
- b. The plane of motion for any given motion at a specific joint (shoulder, interphalangeal, wrist).
- c. The degrees of freedom at any given joint.
- d. The distinguishing features of a diarthrodial joint.
- e. The structures that contribute to joint stability.

1.9 Compare The Following

- a. A synarthrosis with an amphiarthrosis on the basis of methods, materials and function.
- b. A synarthrosis with a diarthrosis on the basis of methods, materials and function.
- c. Closed kinematic chain with an open kinematic chain.
- d. Dense fibrous tissue with bone.
- e. Hyaline cartilage with fibro cartilage.

Unit – II

2.1 Muscle Structure And Function

- a. Describe Mobility and stability functions of muscles.
- b. Describe elements of muscle structure – Compositions of a muscle fibre, the motor unit, types of muscle fibers, muscle fiber size, arrangement and number, Muscle tension, length – tension relationship.

- c. Describe types of muscle contraction, Speed and Angular Velocity, Applied load Voluntary control, Torque & Isokinetic exercise.
- d. Summaries factors affecting muscle tension.
- e. Classify muscles – spurt and shunt muscles, Tonic and phasic muscles.
- f. Factors affecting muscle function: Type of joint and location of muscle attachment, number of joints, passive insufficiency, and Sensory receptors.

2.2 Describe The Following:

Ordering of the myofibrils in a sarcomere.

- a. An alpha motor neuron.
- b. The connective tissue in a muscle.
- c. How tension develops in a muscle.
- d. Isokinetic exercise.

2.3 Define The Following:

- a. Active and passive insufficiency.
- b. Active and passive tension.
- c. Concentric, eccentric and isometric contractions.
- d. Reverse action.
- e. Agonists, antagonists and synergists.

2.4 Recall The Following:

- a. Factors affecting muscle tension.
- b. Characteristic of different fiber types
- c. Characteristic of motor units
- d. Factors affecting angular velocity.

2.5 Differentiate The Following:

- a) A spurt from a shunt muscle.
- b) A phase from a tonic muscle.
- c) Agonist from an antagonist.
- d) Active from passive insufficiency.
- e) Concentric from eccentric contractions.

2.6 Compare The Following:

- a. Tension development in eccentric versus concentric contractions.
- b. The angular velocity of isometric values concentric & is kinetic contractions.
- c. Isokinetic exercise with concentric exercise

2.7 The Vertebral Column:

- a. Describe the general structure and function of the vertebral column including: Primary and secondary course. Articulations, Ligaments and muscles, typical vertebra, inter-vertebral disc.
- b. Describe factors affecting stability and motility.

- c. Regional structure and function of cervical, dorsal, lumbar and sacral vertebrae.
- d. Describe the muscles of the vertebral column – Flexors, Extensors, Rotators and Lateral flexors.
- e. Describe the effects of injury and developmental deficits.

2.8 Describe the following:

- a. The curves of the vertebral column using appropriate terminology.
- a. The articulations of the vertebral column.
- b. The major ligaments of the vertebral column.
- c. The structural components of typical and atypical vertebrae.
- d. The intervertebral disc.
- e. Regional characteristics of vertebral structure.
- f. Motions of the vertebral column.
- g. Lumbar – pelvic rhythm.
- h. Rotation of the vertebrae in each region.
- i. Movements of the ribs during rotation.

2.9 Identify The Following:

- a. Structure that provide stability for the column.
- b. Muscles of the vertebral column and the specific functions of each.
- c. Ligaments that limit specific motions (i.e. flexion extension, lateral flexion, rotation).
- d. Forces acting on the vertebral column during specific motions.

2.10 Explain The following:

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

2.11 Analyses The Following:

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

Unit – 111

3.1 The Shoulder Complex:

- a. 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

- b. Describe the function of the shoulder complex including dynamic stability of the glenohumeral joint, musculohumeral Rhythm, Scapulothoracic and glenohumeral contributions.
- c. Describe the muscles of elevation (Deltoid, Supraspinatus, Infraspinatus, Teres minor, Subscapularis, Upper Trapezius, lower Trapezius, Serratus anterior, Middle Trapezius & Rhomboides).
- d. Describe the muscles of depression (Latissimus dorsi Pectoralis, Teres Major, Rhomboid's).

3.2 Describe The Following:

- a. The articular surfaces of the joints of the complex.
- b. The function of the ligaments of each joint.
- c. Accessory joint structures and the function of each.
- d. Motions and ranges available at each joint and movement of articular surfaces within the joint.
- e. The normal mechanism of dynamic stability of the glen humeral joint, utilizing principles of biomechanics.
- f. The normal mechanism of glen humeral stability in the dependent arm.
- g. Scapulohumeral rhythm, including contributions of each joints.
- h. The extent of dependent or independent function of each joint in scapulohumeral rhythm.
- i. How restriction in the range of elevation of the arm may occur.
- j. One muscular force couple at a given joint and its function.
- k. The effect a given muscular deficit may have on shoulder complex function.

3.3 Compare The Following:

- a. The advantages and disadvantages of coracoacromial arch.
- a. The structural stability of the three joints, including the tendency toward degenerative changes and derangement.
- b. Draw the action lines of muscles of the shoulder complex and the moment arm for each, and resolve each into components.

3.4 The Elbow Complex:

- a. Describe the structure of the Humeroulnar and Humeroradial joints including articulating surfaces, joint capsule, Ligaments & Muscles.
- b. Describe the function of the Humeroulnar and Humeroradial joints including the Axis of motion, Range of motion, Muscle action.
- c. Describe the structure of the superior and inferior radioulnar joints.
- d. Describe the function of the superior and inferior Radioulnar joints.
- e. Describe the mobility and stability of the Elbow complex and its relationship to Hand and Wrist.
- f. Describe the effects of injury and the resistance to longitudinal compression forces, to distraction forces & to Medial-lateral forces.

3.5 Describe The Following:

- a. All of the articulating surfaces associated with each of the following joints- humero-ulnar, humeroradial superior and inferior radioulnar.
- b. The ligaments associated with all the joints of the elbow complex.

3.6 Identify The Following:

- a. Axes of motion for supination and pronation and flexion and extension.
- b. The degrees of freedom associated with each of the joints of the elbow complex.
- c. Factors limiting the range of motion in flexion and extension.
- d. Factors that create the carrying angle.
- e. Factors limiting motion in supination and pronation.

3.7 Compare The Following:

- a. The translatory and rotatory component of the brachio-radial is and brachial is at all points in the range of motion.
- b. The moment arms of the flexors at any point in the range of motion.
- c. Muscle activity of the extensors in a closed kinematic chain with activity in an open kinematic chain.
- d. The role of pronator teres with the role of pronator quadratus.
- e. The role of biceps with that of brachial is.
- f. The resistances of elbow joint to longitudinal tensile forces with its resistance to compressive forces.
- g. The features of a classic tennis elbow with the features of cubital tunnel syndrome.
- h. The role and structure of the annular ligament with the role and structure of the articular disc.

3.8 The Wrist And Hand Complex:

- a. Describe the wrist complex including Radio carpal joint Midcarpal joint and the Ligaments of the wrist complex.
- b. Describe the function of the radio carpal and midcarpal joints including the movements and muscles involved.
- c. Describe the Hand complex including: Structure on fingers (Carpometacarpal, Metacarpophalangeal and interphalangeal joints of fingers, ligaments Range of motion).
- d. Describe the finger musculature including Extrinsic & MCP, PIP and DIP joint function, and intrinsic finger muscles.
- e. Describe the structure of the Carpometacarpal, MCP and IP joints of thumb.
- f. Describe the Thumb Musculature including the Extrinsic & Intrinsic thumb muscles.

- g. Describe Pretension, Power, Cylindrical, Spherical & Hook grips.
- h. Describe Precision handling, Pad to pad, Tip to tip and Pad to side pretension and Functional position of wrist and hand.

3.9 Describe The Following:

- a. The particular surfaces of the joints of the wrist and hand complexes.
- b. The ligaments of the joints to the wrist and hand, including the significance of each. Accessory joint structures found in the wrist and hand complex, including the function of each.
- c. Types of movements and types of motion of the radio carpal joint, the midcarpal joint, and the total wrist complex.
- d. 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 lunar deviation from neutral.
- e. The role of the wrist musculature in producing wrist motion.
- f. Motions and ranges available to joints of the hand complex.
- g. The gliding mechanisms of the extrinsic finger flexors.
- h. The structure of the extensor mechanism, including the muscles and ligaments that compose it.
- i. How M.C.P. extension occurs, including the muscles that produce and control it.
- j. How flexion and extension of the PIP joint occur, including the muscular and ligamentous forces that produce and control these motions.
- k. How flexion and extension of DIP joints occur, including the muscular and ligamentous forces that produce and control these motions.
- l. The role of the wrist in optimizing length – tension in the extrinsic hand muscles.
- m. The activity of reposition, including the muscles that perform it.
- n. The functional position of the wrist and hand.

3.10 Differentiate Between

- a. The role of the interossei and lumbrical muscles at the MCP and IP joints.
- b. The muscles used in cylindrical grip to those active in spherical grip, hook grip, and lateral prehension.
- c. The muscles that are active in pad-to-pad, tip-to-tip, and pad to side prehension.

3.11 Compare:

- a. 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.
- b. The characteristics of power grip with those of precision handling.

- c. The most easily disrupted form of precision handling that may be used some one without any active hand musculature; what are the pre-requisites: for each?

Unit – IV

4.1 The Hip Complex

- a. 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; joint capsule. Ligaments & Muscles (Flexors, Extensors – one joint extensors, two joint extensors, Adductors, Medial Rotators and Lateral Rotators).
- b. Describe the function of hip – Rotation between pelvis, lumbar spine and hip; Pelvic motion – Anterior posterior pelvic tilting, Lumbar pelvic rhythm, Lateral pelvic tilting, Pelvic rotation.
- c. Summarise the pelvic motions in the static erect posture.
- d. Describe Femoral motion.
- e. Describe Hip stability in Erect Bilateral stance, sagittal plane equilibrium and Unilateral stance.
- f. Describe reduction of Forces with weight shifting and using a cane and deviations from normal in muscular weakness & Bony abnormalities.

4.2 Describe The Followings

- a. The articulating surfaces of the pelvis and femur.
- b. The structure and function of the trabecular systems of the pelvis and femur,
- c. The structure and function of the ligaments of the hip joint.
- d. The angle of inclination and the angle of torsion.
- e. The planes 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.
- f. The muscle activity that produces tilting and rotation of the pelvis.
- g. Motions of the femur on the pelvis including planes and axes of motion.
- h. The structure and function of all the muscles associated with the hip joints.
- i. The forces that act on the head of femur.
- j. The position of greatest stability at the hip.

4.3 Explain The Following:

- a. How sagittal and frontal plane equilibrium are maintained in erect bilateral stance.
- b. How frontal plane equilibrium is achieved in unilateral stance.
- c. How force acting on the femoral had may be reduced.
- d. How the function of the two joint muscle at the hip are affected by change in the position of the knee and hip.

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

4.4 Compare The Following:

- a. Forces acting on the femoral head in erect bilateral stance with the forces acting on the head in erect unilateral stance.
- b. Coxa valga with coxa vara on the basis of hip stability and mobility.
- c. The motions that occur at the hip, pelvis and lumbar spine during forward trunk bending with the motions that occur during anterior and posterior tilting of the pelvis in the erect standing position.
- d. Anterversion with retroversion on the basis of hip stability and mobility.
- e. The structure and function of the following muscles; Flexors and extensors, abductors and adductors, lateral and medial rotators.

4.5 The Knee Complex:

- a. 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 Medial – Lateral stability; Muscle structure; Knee flexors & extensors: Axes of knee complex: Mechanical axis, Anatomic axis and axis of motion.
- b. Describe the function of the Tibiofemoral joint: Range of motion. Flexion and extension, Rotation, Abduction and Adduction, locking and unlocking; Function of Menisci and Muscle function.
- c. Describe the structure of the patellofemoral joint.
- d. Describe the function of the patellofemoral joint.
- e. Describe the effects of injury and disease in the Tibiofemoral and patellofemoral joints.

4.6 Describe The Following:

- a. The articulating surfaces of tibiofemoral and patellofemoral joints.
- b. The joint capsule.
- c. The anatomic and mechanical axes of knee.
- d. Motion of the femoral condyles during flexion and extension in a closed kinematic chain.
- e. Motion of the tibia in flexion & extension in an open kinematic chain.

4.7 Draw:

- a. The Q angle when given an illustration of the lower extremity.
- b. Moment arm of quadriceps at the following degree of knee flexion: 90 deg., 130deg., 30 deg., 10 deg.
- c. The action lines of vastus lateralis and the vastus medialis oblique.

4.8 Locate:

- a. The origins and insertions of all the muscles at the knee.
- b. The bursae surrounding the knee.
- c. The attachments of the ligaments of the medial and lateral compartments.

4.9 Identify:

- a. Structures that contribute to the medial stability of the knee including dynamic and static stabilisers.
- b. Structures that contribute to the lateral stability of the knee including dynamic and static stabilisers.
- c. Structures that contribute to the posterior stability of the knee including dynamic and static stabilisers.
- d. Structures that contribute to the anterior stability of the knee including dynamic and static stabilisers.
- e. Structures that contribute to the rotatory stability of the knee.
- f. The normal forces that are acting of the knee.

4.10 Compare:

- a. The knee and the elbow joint on the basis of similarities/dissimilarities in structure and function.
- b. The lateral with the medial meniscus on the basis of structure and function.
- c. The forces on the patellofemoral joint in full flexion with full extension.
- d. The action of quadriceps in an open kinematics chain with that in a closed kinematics chain.
- e. The effectiveness of the hamstrings as knee flexors in each of the following hip positions:- hyperextension, ten degrees of flexion and full flexion (open kinematics chain).
- f. The effectiveness of the rectus femoris as a knee extensor at sixty degrees of knee flexion with its effectiveness at ten degrees of knee flexion.

4.11 Explain:

- a. The function of the menisci.
- a. How a tear of the medial collateral ligament may affect joint function.
- b. The functions of the suprapatellar, gastrocnemius, infrapatellar and prepatellar bursae.
- c. Why the semiflexed position of the knee is the least painful position.
- d. Why the knee may be more susceptible to injury than the hip joint.

Unit – V

5.1 Type Ankle – Foot Complex:

DESCRIBE the structure, ligaments, axis and function of the following: ankle joint, tibiofibular joints, subtalar joint, Talocalcaneonavicular joints, Transverse Tarsal joint, Tarsometatarsal joint, Plantarexion – extension and adduction and abduction.

5.2 Describe:

- a. The compound articulations of the ankle, subtalar, talocalcaneonavicular, transverse tarsal and tarsometatarsal joints.
- b. The role of the tibiofibular joints and supporting ligaments.
- c. The degrees of freedom and range of motion available at the joint of the ankle and the foot.
- d. The significant ligaments that support the ankle, subtalar and transverse tarsal joints.
- e. The triplanar nature of ankle joint motion.
- f. The articular movements that occur in the weight-bearing subtalar joint during inversion-eversion.
- g. The relationship between tibial rotation and subtalar / talocalcaneonavicular inversion-eversion.
- h. The relationship between hind foot inversion-eversion and mobility-stability of the transverse tarsal joint.
- i. The function of the tarsometatarsal joints, including when motion at these joints is called upon.
- j. Supination – pronation of the forefoot at the tarsometatarsal joints.
- k. Distribution of weight within the foot.
- l. The structure and function of the plantar arches including the primary supporting structure.
- m. When muscle supplement arch support, including those muscles that specifically contribute.
- n. The effects of toe extension on the plantar arches.
- o. The general function of the intrinsic muscles of foot.

5.3 Posture:

- a. Describe the effects of gravity and indicate the location of the gravity line in the sagittal plane in optimal posture.
- b. Analyze posture with respect to the optimal alignment of joints in the anterior-posterior and lateral views.

5.4 Describe:

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

- a. The position of body's gravity line in optimal erect posture, using appropriate points of reference.
- b. The effects of gravitational moments on body segments in optimal erect posture.
- c. The gravitational moments acting around the vertebral column, pelvis, hip, knee and ankle in optimal erect posture.
- d. Muscles and ligamentous structures that counter balance gravitational moments in optimal erect posture.
- e. The following postural deviations: pesplanus, halluxvalqus, pes cavus, idiopathic scoliosis, kyphosis and lordosis.
- f. The effects of the above postural deviations on body structures i.e., ligaments, joints and muscles.

5.5 Determine:

- a. How changes in the location of the body's gravity line will affect gravitational moments acting around specified joints axes.
- b. How changes in the alignment of body segments will affect either the magnitude or the deviation of the gravitational moments.
- c. How changes in alignment will affect supporting structures such as ligaments, joint capsules, muscles, and joints surfaces.

5.6 Gait:

Define:

- a. The stance, swing and double support phases of gait.
- b. The subdivisions of the stance and swing phases of gait.
- c. The time and distance parameters of gait.

5.7 Describe:

- a. Joint motion at the hip, knee and ankle for one extremity during a gait cycle.
- b. The location of line of gravity in relation to the hip, knee, and ankle during the stance phases of gait.
- c. The gravitational moments of force acting at the hip, knee and ankle during the stance phase.

5.8 Explain:

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

5.9 Compare:

- a. Motion of upper extremities and trunk with motion of pelvis and lower extremities.
- b. The traditional gait terminology with the new terminology.
- c. Normal gait with a gait in which there is a weakness of the hip extensors and abductors.
- d. Normal gait with a gait in which there is unequal leg lengths.

EVALUATION: Class Test Unit Tests

Instruction hours: 80hrs

Examination method: Internal Marks will be calculated with the class test. At the end of the year University exams will be conducted

Internal marks : 50

University Theory : 100

APPLIED PYSIOLOGY

Examination at the End of 2rd year

Instruction hours : 30

COURSE DESCRIPTION

The objective of this course is that after 30 hours of lectures & demonstration practical 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 students will be able to fulfill the following objectives of the course.

Unit I THE HEART AND CIRCULATION

- a. Structure and properties of heart muscles.
- b. The action of the heart.
- c. Determinants of cardiac performance.
- d. Normal E.C.G
- e. Maintenance of blood pressure.
- f. Cardiac arrest and heart failure
- g. Outline of lymphatic circulation & pulmonary circulation
- h. Cardiovascular compensation for postural and gravitational changes.
- i. Hypertension.
- j. edema.
- k. Central and peripheral venous pressures.

Unit II NERVOUS SYSTEM AND MUSCLES

- a. Outline of structure and function of the central nervous system
- b. Outline of the autonomic nervous system.
- c. Types of structure and function of the central nervous system.
- d. Outline nerve cells, electrical phenomena in nerve cells.
- e. Properties of mixed nerves.
- f. Degeneration and re-generation of nerves.
- g. Control of posture.
- h. Outline of voluntary movement.
- i. Cutaneous, deep and superficial sensation.
- j. Semantic transmission.
- k. Neuro Muscular transmission.
- l. Properties of muscles, contractile responses, types contraction electrical phenomena and tonic reflexes.

Unit III RESPIRATION

- a. Mechanics of respiration.
- b. Breath sounds.
- c. Exchanges of gases.
- d. Lung volumes.
- e. Magnitude of dead space.
- f. Control of bronchial smooth muscles.
- g. Lung compliance.

- h. Nervous control of respiration.
- i. Chemical control of respiration
- j. Voluntary control of respiration.
- k. Oxygen and carbon dioxide transport.
- l. Effect of exercise on respiration.
- m. Artificial respiration.
- n. Gas tensions in air at Sea level, tracheal, cellular mixed air plasma, arterial blood and mixed venous blood.
- o. Acid base reaction.

Unit IV Bio-Engineering

- a. Definition and principles of Bio-engineering.
- b. Designing and construction of prosthesis and orthotics devices using bio-engineering principles.
- c. Simple adaptive devices for the disabled.
- d. Use of sophisticated machines for research in bio-engineering.
- e. Utilizing the above knowledge for occupational therapy.

EVALUATION: Class Tests and Unit Tests and assignment

**BOT 204 - HEALTH PSYCHOLOGY, CLINICAL PSYCHOLOGY
AND CLINICAL PSYCHIATRY**

Examination at the end of 2nd Year

Instruction Hours : 150 hrs.

HEALTH PSYCHOLOGY

Instruction Hours : 50 hrs.

Unit 1:

- 1.1 Psychological reactions of a patient.
- 1.2 Reaction to loss.
- 1.3 Stress.

Unit 2:

- 2.1 Communications.
- 2.2 Counseling.
- 2.3 Compliance.

Unit 3:

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

Unit 4:

- 4.1. Behaviour modification.
- 4.2. Substance abuse.
- 4.3. Psychological aspects of substance abuse: smoking, alcoholism and drug addiction.

Unit 5:

- 5.1. Personality styles.
- 5.2. Different personality styles of patients.

CLINICAL PSYCHOLOGY

Instruction Hours : 50 hrs.

COURSE DESCRIPTION

This field of psychology covers the application of psychological principles in the etiology, pathology assessment and management of abnormal conditions of all age groups. This course runs concurrently with psychiatry for Occupational Therapy students. The basic foundation of general psychology would have been covered in 1st year.

COURSE OBJECTIVES

The objective of this course is that after 30 hours, of lectures, demonstrations and clinics the students will be able to demonstrate ability to apply their knowledge of psychology in clinical situations for assessing, understanding and treating their patients. They will learn to understand themselves, their feelings, attitudes and behaviour.

- a. To evaluate attention, concentration, sensation and perception and mention related abnormalities.
- b. To understand and explain behavioral aspects of learning maturation and appropriately use behavioral aspects, behavioral techniques in therapy.
- c. To evaluate memory, thinking & intelligence and mention related disorders.
- d. To evaluate motivation emotion and personality and assess their pathological manifestations. With the concepts of conscious and unconscious mind to explain frustration and conflicts and to study the role of mental mechanisms in normal and abnormal conditions.

COURSE OUTLINE

Unit 1:

- 1.1 Definition of clinical psychology general and historical introduction psychology in relation to medicine.
- 1.2 Different schools. Methods of clinical psychology.
- 1.3 Case history method, interview techniques, clinical observation, situational tests questionnaires.

Unit 2:

- 2.1 Concepts of normality and abnormality causes of abnormality.
- 2.2 Criteria for abnormality board classification of current model of abnormal behaviors medical model, psychodynamic model.
- 2.3 Behaviorist model & humanistic model etc.

Unit 3:

- 3.1 Functional units of mind, ego and super ego – Their functions and interactions role of mental mechanisms in normal and abnormal behaviors.
- 3.2 Disorders of attention and concentration: Sensation & perception, memory, thinking emotion etc.
- 3.3 Measurement possible demonstrations and practical work to be organized.

Unit 4:

- 4.1 Intelligence and mental subnormality intelligence test – demonstrations.
- 4.2 Measurement of intelligence – children & adults.
- 4.3 Factors contributing to mental retardation.

Unit 5:

- 5.1 Personality disorders.
- 5.2 Learning and maturation with specific reference to behavioral aspects.
Behaviour techniques in therapy.
- 5.3 Counseling, psychotherapy and psychodrama.
- 5.4 Brief psychotherapy psychodrama.
Students are to be posted in psychiatry to attend the out patient clinics for at least a period of 2 to 4 weeks.

CLINICAL PSYCHIATRY

Instruction Hours : 50 hrs.

COURSE DESCRIPTION

In this course students will study abnormality of behaviour and mental functioning. It follows the study of psychology and clinical psychology. Course of mental illness, preventive measures and all clinical syndromes are covered. All treatment theories, approaches and Pharmacological aspects will be considered with particular emphasis on current use.

This will be done through 18 hours of lectures and 12 hours of experience in case studies and discussion.

COURSE OBJECTIVES

The objective of this course is that after 30 hours of lectures, demonstrations and clinics the student will be able to demonstrate understanding of mental illness, methods of assessment used in therapy.

COURSE OUTLINE:

Unit 1: Introduction

- 1.1. Brief history of psychiatry, with special reference to India and to ancient Indian medicine and its relationship with psychiatry. History taking in psychiatry including mental examination and assessment.
- 1.2. Hereditary factors, Birth injury, Systemic diseases/accidents, Emotional factors, Embryonic developmental factors, Endocrine disease, Cerebral diseases, Stresses related to cultural factors.
- 1.3. Preventive measures:

In relation to consanguineous marriages, adequate antenatal care, obstetric care, mother and child services, psychological services (e.g. child guidance, counseling service).

Unit 2: Symptoms of mental illness:

- 2.1 Disturbances of consciousness, 2. Disturbances of memory, 3. Disturbances of Volition, 4. Disturbances of speech, 5. Disturbances of reasoning and judgment, 6. Disturbances of motor behaviour, 7. Disturbances of affect, 8. Disturbances of affect.

Unit 3: Methods of Treatment:

- 3.1. 1. Individual and group psychotherapy, 2. Physical methods, 3. Chemotherapy, 4. E.C.T, Insulin therapy, Psychosurgery, 5. Social and rehabilitation, 6. Family interaction, 7. environmental manipulation, 8. O.T: Art, creative activity, social, music and recreation therapy – outline only.

Unit 4:

- 4.1. Criteria for classification and definition of psychiatric illness.
- 4.2. Description of the various clinical syndromes including etiology, clinical features, course, treatment and prognosis. To include;
- 4.3. Psychoneuroses.
 Functional Psychosis – schizophrenia, affective illness
 Organic status – general features of: Toxemia, epilepsy; anoxia; metabolic disorders; cerebral vascular disorders; infections, tumors; degenerative conditions; dementias; head injury; drug induced psychosis; endocrine and menopausal syndromes (acute delirious states and chronic organic psychotic states.)

Unit 5:

- 5.1. Substance abuse
- 5.2. Personality disorders
- 5.3. Sexual dysfunctions and disturbances in sexual orientation
- 5.4. Mental deficiency including treatment of accompanying physical symptoms.
- 5.5. Psychiatric disorders of childhood
- 5.6 Legal aspects related to psychiatric patients
- 5.7 Civil responsibility
- 5.8. Clinical teaching case studies and discussion

Evaluation: Class Test and Unit Tests and assignment

INSTRUCTION HOURS : **150 Hrs.**

EXAMINATION METHOD : 50 Marks for Internal, 100 Marks for University Theory.

BOT 205- Occupational Therapy in Psychiatry

Examination at the end of 2nd year

Instruction Hours : 75

COURSE DESCRIPTION

This course follows the study of clinical psychology and psychiatry. It covers the practical application of occupational therapy in psychiatric treatment, including a variety of assessment and treatment approaches.

COURSE OBJECTIVES

The objectives of this course are that the student will be able to demonstrate an understanding of evaluation and therapy techniques used in occupational therapy for psychiatric conditions.

Unit I

- 1.1 Describe the history of psychiatric occupational therapy, and its development upto the present day.
- 1.2 Define OT in relation to psychiatry, and the role of an occupational therapist in the psychiatric team.
- 1.3 Describe the general characteristics of a potential client. Identify problems that make a person seek help. Compare types of referrals. Discuss the potential of psychiatric OT in the community.
- 1.4 Discuss the role of activities in psychiatric treatment, including patient, therapist, activities and context of treatment

Unit II Frames of Reference in the treatment of psychiatric conditions:

- 2.1. Cognitive behavior.
- 2.2. Behavioral.
- 2.3. Psychoanalytical.
- 2.4. Occupational behavior and Model of Human Occupation
- 2.5. Therapeutic use of self.
- 2.6. Projective techniques.
- 2.7. Developmental groups and developmental approach.
- 2.8. Mosey's adaptive skills.
- 2.9. Sensory integrative approach

Unit III

- 3.1 List and describe the various attitudes applied by the therapist in different conditions.
- 3.2 Analyze activities with reference to psychiatry and psychodynamics of activities.
- 3.3. Describe in detail the assessment of a client including specific methods used in the following:
 - a. Observation.
 - b. Interest checklist.
 - c. Interview.
 - d. Personality questionnaire.
 - e. ADL

- f. Vocational and Pre-vocational
- g. Social dysfunction rating scales – to learn any one scale

3.4 Help students to identify their client's psychiatric problems in relation to the practical situations observed in OT. Eg.

Restlessness manifesting as decreased concentration and attention.

3.5 Counseling: Guidelines and practical demonstration

Unit IV

4.1 Discuss OT assessment, treatment aims, plan and methods of treatment for the following conditions:

- a. Schizophrenic and other Psychotic disorders
- b. Mood disorders
- c. Anxiety disorder including Phobias
- d. Somatoform disorders
- e. Factitious disorders
- f. Eating and sleep disorders
- g. Psychosomatic illness
- h. Personality disorders
- i. Substance related disorders
- j. Seizure disorders
- k. Organic Brain Syndrome
- l. Mental Retardation

4.2 Review psychiatric problems of childhood and apply OT principles and techniques.

4.3 Outline the types of therapeutic groups and briefly discuss the value of group therapy in psychiatry (Detailed study on group study is included in Group process in Occupational therapy in then 4th Year.)

4.4 Explain precautions to be observed by the therapist in a psychiatric unit, with reference to each condition; including handling of tools and materials, grouping and attitude of the therapist.

Unit V Outline the following psychiatric setups and the role of OT in each.

- a. Therapeutic community
- b. Half Way Homes
- c. Geriatric units.
- d. Sheltered workshops
- e. Day care centers.
- f. Government mental hospitals and psychiatric institutions
- g. Family therapy units
- h. Psychiatric rehabilitation

EVALUATION : Internal Examination in Theory(class tests,trem test,assignment) Practicals and Orals

University Examination in Theory ,Practicals and Orals

BIOCHEMISTRY

Total No. of Hours: 50

Non Exam paper for II year

UNIT I

1. Cell - Biochemical morphology of cell.
2. Carbohydrate Chemistry - Definition, general classification structure, properties and functions.
3. Lipid Chemistry - Definition, general classification, structure properties and functions.
4. Protein Chemistry - Definition, general classification, structure, properties and functions (Proteins and amino acids).

UNIT II

5. Nucleic acid - definition classification, structure of DNA, Types of RNA and their functions.
6. Enzymes - Definition, classification, properties, factors affecting enzyme action various types of inhibition of enzyme action, clinical importance.
7. Vitamins - Classification, sources, chemistry, functions, deficiency manifestations and requirement.

UNIT III

8. Bio-energetics - Biological oxidation - Oxidative phosphorylation (Electric transport chain).
9. Carbohydrate metabolism - Digestion and absorption, glycolysis, TCA cycle, gluconeogenesis, glycogenolysis, glycogenesis, HMP shunt and its importance, hormonal regulation of blood sugar, level, diabetes mellitus, GTT and its importance, inborn errors of carbohydrate metabolism.
10. Lipid metabolism - Digestion & absorption, metabolism of TGL, metabolism of fatty acids ketogenesis, ketolysis, outlines of metabolism of cholesterol.
11. Protein metabolism - Digestion and absorption, urea cycle, outline the metabolism of aminoacids.
12. Mineral metabolism – Ca, P, Mg, Fe & function of trace elements.

UNIT IV

13. Hormones - Definition, mechanizing action.
14. Water electrolyte balance and acid base balance.
15. Functional tests - liver and renal function tests.

UNIT V

16. Detoxification.
17. Physical - Chemical phenomenon, definition and biochemical importance of osmosis, viscosity, surface tension, absorption.
18. Common procedures used in the biochemistry - chromatography, blood-gas analysis, flame photometer, electrophoresis.

Evaluation

Unit tests, term examinations and assignments are conducted to evaluate a student.

References

Text Book of Medical Biochemistry - Chatterreja Shinde

PHARMACOLOGY

Total No. of Hours: 50

Course Objectives

Introduce the students to basic pharmacology of various common medication used and its effects on patients in physical therapy.

Course Outline

UNIT I

1. Terminology
2. Classification of drugs
3. Factors influencing the dosage of drugs and its actions.
4. Drug allergy
5. Principles of drug administration and routes.

UNIT II

Definition, action indications and contra-indications, adverse reactions of the following

1. Anti inflammatory
2. Anti epileptic
3. Sedatives, Hypnotic, Tranquilizers
4. muscle relaxants

UNIT III

- 1 Alcohol
- 2 Pulmonary effects of general anaesthetic agents
- 3 Mucolytic agents
- 4 Local anaesthetic agents
- 5 Narcotics

UNIT IV

- 1 Steroids
- 2 Vasodilator
- 3 Insulin and oral hypoglycemic agents
- 4 Antibiotics – Bacteriocidal, Bacteriostatic
- 5 Chemotherapeutic drugs in leprosy and tuberculosis.

Evaluation

Unit tests, term examinations and assignments are conducted to evaluate the student.

References

Essential of Medical Pharmacology - Tripathi

NURSING AND FIRST AID

Non Exam paper for II year

Course Description

This course enables a student to have a better understanding and development of skill in giving first aid treatment in emergencies in either the hospital or the community.

Course Objectives

The objectives of this course is that after 40 hours of lectures, demonstrations, practical and clinics, the student will be able to demonstrate an understanding of the principles of first aid and demonstrate skill in giving first aid treatment in emergencies that may be met in the community and in their practice as therapists.

UNIT I

A. Introduction

Definition of first aid. Importance of first aid, Golden rules of first aid, Scope and concept of emergency.

B. First aid emergencies

1. *Burns & Scalds* : Causes, Degrees of burns, First aid treatment, General treatment.
2. *Poisoning*: Classification (irritants, acid, alkali, narcotics), Signs and symptoms. First aid treatment, General treatment.
3. *Trauma due to foreign body intrusion* : Eye, ear, nose, throat, stomach and lungs.
4. *Bites* : First aid, signs, symptoms and treatment.
 - a) Dog bite : rabies
 - b) Snake bite: neurotoxin, bleeding diathesis

UNIT II

C. Skeletal injuries

Definition: Types of fractures of various parts of the body. Causes, Signs and Symptoms. Rules of treatment, Transportation of patient with fracture and spinal cord injuries. First aid measures in dislocation of joints. Treatment of muscle injuries.

D. Respiratory emergencies :

1. Asphyxia : Etiology, Signs & Symptoms, rules of treatment.
2. Drowning : Definition and management.
3. Artificial respiration : Types and techniques.

UNIT III

E. Wounds and Hemorrhage

1. Broad outline of Anatomy and Physiology of the circulatory system.
2. Wounds: Classification, management.
3. Hemorrhages: Classification, signs and symptoms, rules for treatment of hemorrhage.
4. Treatment of hemorrhage from special areas (Scalp, mouth, nose, ear, palm and various veins).
5. Internal hemorrhages: Visible and concealed.

F. Shock and unconsciousness

Definition: Types of shock, Common causes of shock, signs and symptoms of shock (assessment of established shock). General and special treatment of established shock.

UNIT IV**G. Transportation of the injured**

1. Methods of transportation : Single helper, Hand seat, Stretcher, Wheeled transport (ambulance).
2. Precautions taken : Blanket lift, Air and Sea travel.

UNIT V**H. Community emergencies**

Role of first aider (immediate and late) in fires, explosions, floods, earthquakes.

I. Community resources

Police Assistance, Voluntary agencies (local, National, International). Ambulance services (Functions).

Evaluation

Unit tests, term examinations and assignments, are conducted to evaluate a student.

References

1. Hoon R.S. "First aid to the injured" 1st edition, Delhi. St. John Ambulance Association.
2. Raine Hardhins and Hunt Vaheirs "Urgencies and emergencies for Nurses" 1965 English Universities Press Ltd.
3. Gardner Hard "New Advanced First Aid" London Butter Worths 1969.
4. "First aid Textbook" by American Red Cross 1945. The Blackiston Company, Philadelphia.
5. Golwalla Asoi "A Handbook of Emergencies" 2nd Edition Bombay Samet and Company, 1981.

OPHTHALMOLOGY

Not for University Exam

Instruction Hours: 50 hrs.

Briefly outline the following:

a.1 COURSE OUTLINE

- Unit 1: Eye lesions in leprosy including causes, treatment and complication of lagophthalmos.
- Unit 2: Field defects arising from lesions in the visual pathway, their clinical symptoms and methods of testing. Effects of paralysis of the ocular muscles and treatment.
- Unit 3: Causes clinical features and a treatment of disorders of ocular movement occurring in disease such, as myasthenia gravis, progressive supranuclear palsy and lower motor neuron disease.
- Unit 4: Causes, clinical features. Treatment and prognosis in visual failure arising from cataract, inflammatory disorders, vitamin A deficiency, glaucoma and Trachoma; emphasis preventable causes and prophylactic measures.
- Unit 5: Definition of blindness and visual disability evaluation. Investigative procedures used for testing visual failure including basic screening procedure for visual acuity suitable for community health surveys.

ENT

COURSE OUTLINE

ENT

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

OBSTRUCTIVE AND GYNECOLOGY

- Unit 1: Review the anatomy of the female pelvis and embryonic and foetal development.
- Unit 2: Outline the physiological skeletal changes during pregnancy, delivery and post partum period.
- Unit 3: Describe an antenatal programme in preparation for labor: antenatal training, breathing, relaxation, and pelvic, lower extremity exercises.
- Unit 4: Outline the mechanism of labour and post-natal management after normal delivery, forceps delivery ad caesarean sections.
- Unit 5: Outline the pre disposing factors and the role of exercises in the management of stress incontinence and prolapse uterus.

RADIODIAGNOSIS

Unit I. Outline the basic views used in radiography, list the different types of radiodignostic

methods using X-ray, CT Scan, Ultra sonogram. Outline the guideline for interpretation.

Unit II. Demonstrate X-rays showing different anomalies of the “spinea’ in comparison with a normal X-ray.

Unit III. Outline the value of C.T scan of Brain and Spinal Cod in diagnosis, recognize some of the normaland abnormal features.

Unit IV. Outline the value of MRI of Brain and Spinal cord in diagnosis; recognize some of the normal and abnormal features.

UnitIV. Identify on X-rays: Fractures and dislocations of extremities and spine, different disorders of bone e.g.: Osteomyelitis. Osteoporosis, rickets, tumors, etc.

3RD YEAR SUBJECTS

CLINICAL ORTHOPAEDICS

University Exam at the end of III year

Total No. of Hours: 60

Course description

Following the basic science and clinical science course, this course introduces the student to the orthopaedic conditions which commonly cause disability.

Course Objectives

The objective of this course is that after 80 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.

Course Outline/

UNIT I

1.1 Introduction to Orthopedics

Introduction to Orthopedic terminology, types of pathology commonly dealt with, clinical examination, common investigations and outline of conservative and operative management.

1.2 Principles of operative treatment

List indications, contraindications and briefly outline principle of : Arthrodesis, arthroplasty, osteotomy, bone grafting and tendon - transfers.

- a. Pathology & clinical manifestation of trauma of the bones, of soft tissues involving musculo - skeletal system.
- b. Methods of study of mechanics & causes of injury
- c. Inflammation & repair

UNIT II

3.1 Types of Soft Tissue Lesions:

Sprains and Muscle Strains

List common sites of sprains and muscle strains and describe the clinical manifestations and treatment. Soft tissue lesions: capsulitis, bursitis, tenosynovitis.

3.2 Fractures and dislocations : General Principles

Outline the following

1. Types of fractures including patterns, open and closed fractures and fracture - dislocations.
2. Differences between dislocation and subluxation.

3. General and local signs and symptoms of fracture dislocations.
4. Principles of management of fractures & dislocations.
5. Prevention and treatment of complication including Fracture - disease, Volkmann's ischaemic contracture, Sudek's atrophy, carpal tunnel syndrome, myositis ossificans and shoulder - hand syndrome.
6. Fracture healing.

3.3 Upper limb fractures & Dislocation

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

3.4 Lower Limb Fractures & Dislocations

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

3.5 Spinal Fractures and Dislocations

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

3.6 Recurrent Dislocations

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

UNIT III

3.1 Amputations

- a. Classify amputations, list indication for surgery
- b. Outline pre-operative, post operative and prosthetic management.
- c. Outline prevention and treatment of complications.

3.2 Bone and Joint infections

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

3.3 Bone & Joint Tumors

Classify and outline the clinical features, management and complications of the following (benign/malignant) bone and joint tumors: osteochondroma, osteosarcomas, ewing's sarcoma, multiple myeloma.

3.4 Chronic Arthritis

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

3.5 Low back ache, painful arc syndrome, tendinitis, fascitis & spasmodic torticollis

3.6 Spinal Deformities

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

UNIT IV

4.1 Poliomyelitis

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

4.2 Deformities (Congenital & Acquired)

Outline the clinical features and management of CTEV, CDH, Flat foot, vertical talus, limb deficiency (Radial club hand and femoral, tibial and fibular deficiency, meningomyelocele, arthrogryposis multiplex congenita, osteogenesis imperfecta and other causes of deformities including rickets, polio etc.).

4.3 Peripheral Nerve Injuries

Outline the clinical features and management, including reconstructive surgery of

- a. Radial, median and ulnar nerve lesions.
- b. Sciatic and lateral popliteal lesions.
- c. Brachial plexus injuries including Erb's, Klumpke's and crutch palsy.

UNIT V

5.1 Hand injuries

Outline of clinical features, management and complications of skin and soft tissue injury, tendon injury, bone and joint injury of the hand and fingers.

5.2 Leprosy

Outline of clinical features, management and complications of neuritis, muscle paralysis, tropic ulceration and hand & feet deformities.

5.3 Sports Injuries - Bio Mechanics and Management

5.4 Reconstructive surgeries for the rehabilitation of

- a. Diseases of bones -T.B., leprosy, osteomyelitis septic and pyogenic arthritis etc.
- b. Traumatic conditions
- c. Deformities following paralysis - special emphasis given to spine, hand and foot.
- d. Degenerative conditions such osteoarthritis, avascular necrosis.
- e. Relief of pain.

EVALUATION

Class tests, monthly examinations and assignments are given to evaluate the Student.

EXAMINATION METHOD :50 marks for internal and 100 marks for external theory.

References : Text book of Orthopaedics M.N. Natarajan

CLINICAL NEUROLOGY

Total No. of Hours: 60

University Exam at the end of III Year

Course Description

Following the basic science and clinical science course, this course introduces the student to the neurological conditions which commonly cause disability.

Course Objectives

The objectives of this course is that after 80 hours of lectures and demonstrations, in addition to clinics, the student will be able to demonstrate an understand of neurological conditions causing disability and their management.

Course Outline

UNIT I

1. 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 the spinal cord, segments, long tracts of the spinal cord, the brachial and lumbar plexuses and cranial nerves.

1.2 Neurophysiology

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

UNIT II

2.1 Clinical Features & Management

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

2.2 Congenital and childhood disorders.

- a. Cerebral Palsy.
- b. Hydrocephalus.
- c. Spina Bifida

2.3 Cerebrovascular accidents

- a. General Classification: thrombotic, embolic, hemorrhagic & inflammatory stroke.
- b. Gross localization and sequelae.
- c. Detailed rehabilitative programme.

2.4 Trauma - broad localization, first aid and management of sequelae of head injury and spinal cord injury.

2.5 Diseases of the spinal cord.

- a. Craniovertebral junction anomalies.
- b. Syringomyelia.
- c. Cervical and lumbar disc diseases.
- d. Tumors
- e. Spinal arachnoiditis

UNIT III

3.1 Demyelinating diseases (Central and peripheral)

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

3.2 Degenerative disorders.

- a. Parkinson' disease & extrapyramidal syndromes.
- b. Dementia.

3.3 Infection

- a. Pyogenic meningitis sequelae
- b. Tuberculosis of central nervous system
- c. Poliomyelitis

UNIT IV

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

- a. Myopathies
- b. Muscular dystrophy
- c. Spinal Muscular Atrophy

4.2 Peripheral nerve disorders

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

4.3 Miscellaneous

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

UNIT V

5.1 Disorders of Autonomic nervous system

5.2 Toxic and metabolic disorders of nervous system.

5.3 Deficiency disorders.

5.4 spinal cord lesions - Paraplegia, Quadriplegia – Management, Neurogenic bladder - Management.

5.5 Assessment

Clinical assessment of neurological function to be taught through bedside or demonstration clinics.

- a. Basic history taking to determine whether the brain, spinal cord or peripheral nerve is involved.
- b. Assessment of higher mental function as orientation, memory, attention, speech and language.
- c. Assessment of cranial nerves.
- d. Assessment of motor power.
- e. Assessment of sensory function- touch, pain and position.
- f. Assessment of tone - spasticity, rigidity and hypotonia.
- g. Assessment of cerebellar function.
- h. Assessment of higher cortical function.
- i. Assessment of gait abnormalities.

EVALUATION

Class test, monthly tests, and assignments are given for internal marks

EXAMINATION METHOD : 50 marks for internal and 100 marks for external theory.

References

Neurology and Neurosurgery illustrated – Kenneth W.lindsay. Ian bone.

BOT 303- COMMUNITY MEDICINE

Examination at the end of III Year

Total No. of Hours: 60

Course Description

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

Course Objectives

The objective of this course is that after 50 hours of lectures, demonstrations and clinics, the student will be able to demonstrate an understanding of the influence of social and environmental factors on the health of the individual and society.

UNIT I

- a. Outline the natural history of diseases and the influence of social, economic and cultural aspects of health on diseases.
- b. Outline the various measures of prevention and methods of intervention- especially for diseases with disability.
- c. Outline the national health care delivery system and the public health administration system in the central and state level.

UNIT II

- a. Outline selected national health programmes.
- b. Define occupational health and list methods of prevention of occupational diseases and hazards.
- c. Outline the Employees State Insurance Scheme and its various benefits.
- d. Describe the social security measures for protection from occupational hazards, accidents, diseases and the workman's compensation act.

Unit III

- a. Outline the objectives and strategies of the National Family Welfare Programme.
- b. Define community based and institution based rehabilitation. Describe the advantage and disadvantages of institution and community based rehabilitation.

UNIT IV

- a. Describe the following communicable diseases with reference to 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.
- b. Describe the Epidemiology of Rheumatic heart disease, cancer, chronic degenerative disease and cerebrovascular accidents.

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

UNIT V

- a. List the principles of health education, methods of communication and role of health education in rehabilitation services.
- b. Define the role of community leaders and health professionals in health education.
- c. Outline the role of international health agencies in rehabilitation of the disabled.

EVALUATION

Class tests, monthly tests and assignments

EXAMINATION METHOD : 50 marks for internal and 100 marks for external theory.

References

Text book of Preventive and Social Medicine - K. Park

BOT 304- OCCUPATIONAL THERAPY IN NEUROLOGY & ORTHOPEDICS

Examination at the end of 3rd year

Instruction Hours: 75 Hrs.

COURSE DESCRIPTION

This course follows the study of neurology and orthopedics and involves the application of occupational therapy techniques to these conditions. Further study on aspects of rehabilitation and term involvement will be covered in OT V.

COURSE OBJECTIVES

The objectives of this course is that after 75 hours of lectures, demonstrations, practical and clinics the student will be able to demonstrate an understanding of evaluation and therapy techniques used in Occupational Therapy for neurological and orthopaedic conditions.

COURSE OUTLINE

Unit I:

- 1.1 Activity analysis and therapeutic activity for physical conditions including:
- 1.2 Selection criteria and grading methods
- 1.3 Positioning and posture
- 1.4 Muscle action and range of motion (Biomechanical approach)
- 1.5 Control of movement (Neurodevelopmental approach)
- 1.6 Sensory perception analysis (sensory motor integration approach)
- 1.7 Prevocational analysis/assessment potential (Methods to be covered in OT in rehabilitation)

Unit II:

- 2.1 Evaluation procedures including
- 2.2 ROM, muscles strength, muscle tone, co-ordination, control of movement, sensation (cutaneous and cortical), cortical function, hand functions (in detail), gait
- 2.3 ADL (Activities of daily living)

Unit III:

- 3.1 Application of occupational therapy principles and techniques in evaluation and treatment of the following neurological and orthopaedic conditions to include: possible deficits, dysfunction and potential functional improvement.
Planning of long term and short term treatment goals.
- 3.2 Selection and implementation of appropriate treatment techniques, including biomechanical. Neurodevelopmental, psychological and biofeedback

- 3.3 Identification of residual dysfunction, applications of appropriate training in activities of daily living and adaptation to home environment.
- 3.4 Injuries to upper limb and hand, including Peripheral nerve injuries, including appropriate reconstructive surgery & muscle re-education
- 3.5. Shoulder hand syndrome
- 3.6 Leprosy deformities (including appropriate reconstructive surgery and muscle re-education)
- 3.7 Volkman's ischaemic contracture
- 3.8 Brachial plexus injury.

Unit IV:

- 4.1 Amputations, emphasizing upper limb treatment and prosthetic training
- 4.2 Fractures, with emphasis on upper limb and complications
- 4.3. Muscular dystrophy
- 4.4 Multiple sclerosis
- 4.5 Parkinson's disease
- 4.6 Cerebellar ataxia
- 4.7 Cerebrovascular accidents
- 4.8 Cerebral tumors
- 4.9 Head injury
- 4.10 Guillain barre syndrome
- 4.11. Spinal cord injuries
- 4.12. Poliomyelitis
- 4.13. Low back pain

Unit V:

- 5.1 Hand splinting – Classification and application of treatment
- 5.2 Materials used and precautions to be observed
- 5.3 Practical splint making classes – see therapeutic activities outline (20 hours)

EVALUATION- Theory- class tests, monthly tests and assignment Practicals and orals

EXAMINATION METHOD : 50 marks for internal and 100 marks for external theory 100 marks for and oral and practical.

BOT 305- OCCUPATIONAL THERAPY IN PAEDIATRICS

Examination at the end of : 3rd Year

Instruction Hours : 75 Hrs.

COURSE DESCRIPTION

This course covers the application of the principles of Occupational Therapy to physical, mental and emotional disorders of childhood. It is the first of five courses in the application of Occupational Therapy.

COURSE OBJECTIVES

The objectives of this course is that after 75 hours of lectures, demonstrations, practicals and clinics the student.

COURSE OUTLINE

- Unit 1: 1.1 Normal development from birth to five years
 - 1.2 Physical development
 - 1.3 Reflex development and practical
 - 1.4 Perceptual, mental emotional and play development and testing

- Unit 2: Psychological aspects
 - 2.1 Psychological reaction to disability in childhood and OT
 - 2.2 Psychological aspects of hospitalization

- Unit 3: Treatment approaches
 - 3.1 Bobath's NDT
 - 3.2 Rood's neuromuscular facilitation
 - 2.3 Ayre's sensory motor integration
 - 3.4 Peto's conductive education
 - 3.5 Special education principles of education for perceptual and cognitive training
 - 3.6 Play therapy
 - 3.7 Creative activity

- Unit 4: OT Application in
 - 4.1 Cardiac condition
 - 4.1 Sensory perceptual dysfunction
 - 4.3 Cerebral palsy
 - 4.4 Erbs palsy
 - 4.5 Muscular dystrophy
 - 4.6 Poliomyelitis
 - 4.7 Spina bifida
 - 4.8 Arthrogyphosis and congenital orthopedic disorders
 - 4.9 Stills disease
 - 4.10 Early intervention for congenital neurological disorders (High risk infants)
 - 4.12 Nutritional disorder
 - 4.13 Mental retardation
 - 4.15 Learning disability
 - 4.16 Autism

- 4.17 Hyperactivity
- 4.18 Behaviour disorder
- 4.19 Visual/auditory loss
- 4.20 Speech and communication disorder

Unit 5 Pediatric splinting

**EVALUATION- Theory- class tests, monthly tests and assignment
Practicals and orals**

EXAMINATION METHOD : 50 marks for internal and 100 marks for external
theory 100 marks for and oral and practical.

4TH YEAR SUBJECTS

CLINICAL CARDIO RESPIRATORY & WORK PHYSIOLOGY

Examination at the end of: 4th Year

Instruction Hours: 60 Hrs.

COURSE DESCRIPTION

Following the basic science and clinical science course 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 limitation imposed by cardio thoracic pathology on the functioning of the individual.

COURSE OBJECTIVES

The objectives of this course are that after hours of lectures & 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 & practical internal evaluation) the following objectives of the course.

COURSE OUTLINE

CLINICAL CARDIO RESPIRATORY

Unit I:

- 1.1 Anatomy and Physiology.
- 1.2 Describe in detail the anatomy of the lungs, bronchi and bronchopulmonary segments.
- 1.3 List the relationship of the bony cage and lungs to each other and to the abdominal contents.
- 1.4 Briefly describe the variations in the bony cage in the conditions like
- 1.5 Cervical ribs, Ricket – ricket rosary, Pigeon chest, Funnel and Scoliosis

Unit II:

- 2.1 Describe the movements of the thorax: Bucket handle pump handle.2
- 2.2 List the muscles of respirations involved in inspirations and expirations (including accessory muscles that are involved).
- 2.3 Describe in brief the anatomy of the heart and its blood supply and briefly outline the electrical activity of the myocardium and normal ECG.

Unit III:

- 3.1 Describe the physiological control of respiration and highlight the function of the medullary and pontine respiratory centers and peripheral chemoreceptors.
- 3.2 Describe the mechanism for maintenance of blood pressure
- 3.3 Describe in detail the cough reflex.

Unit IV:

- 4.1 List the mechanical factors involved in breathing. Describe factors affecting lung compliance and airway resistance.
- 4.2 List the factors affecting diffusion of oxygen and carbon dioxide in the lungs.
- 4.3 Explain ventilation, perfusion and their interrelationship.
- 4.4 Outline the energy expenditure of various common activity of daily living.

Unit V:

- 5.3 Pulmonary function assessment: Briefly describe the pulmonary function tests and their use; briefly outline the basis and value of blood gas analysis.
- 5.4 Briefly outline the principles of cardio vascular stress testing.
- 5.5 Cardiac surgery
- 5.6 Miscellaneous

WORK PHYSIOLOGY

Unit 1: Physiology of exercise.

Unit 2: .Cardiac out put and cardiac work during regulation of exercise.

Unit 3: Cardiac rate during exercise.& Oxygen consumption of the body at rest, during exercise and after exercise.

Unit4:

- 4.1 Effect of exercise on.
 - a. Calorie intake
 - b. Coronary circulation
 - c. Metabolism.
 - d. Renal blood flow
 - e. Contractility of myocardium
 - f. Blood pressure
 - g. Haemodynamics variable.
 - h. Increase in C.O₂. tension & mixing venous blood
 - i. Increase in pulmonary ventilation.

Unit 5:

5.1 Equipment for work Physiology

- a. Ergometer Cycle type
- b. Ergometer Hand book & Hook treadmill type.

EVALUATION- Theory- class tests, monthly tests and assignment

EXAMINATION METHOD : 50 marks for internal and 100 marks for external
theory 50 marks for and oral

REHABILITATION MEDICINE

Examination at the end of: 4th Year

Instruction Hours: 60 Hrs.

Course Description

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

Course Objectives

The objectives of this course is that after 100 hours of lectures and demonstrations, in addition to clinic, the student will be able to demonstrate an understanding of:

- a. The concept of team approach in rehabilitation will be discussed and implemented, through practical demonstration with contributions from all members of the team.
- 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.
- f. Student should be able to prescribe, check - out and train the uses of various rehabilitation aids.

Course Outline

UNIT I

A. Introduction

1. Define the term Rehabilitation. Explain its aims and principles.
2. Scope of rehabilitation
3. Discuss team work involved in rehabilitation, explaining briefly the role of each team members.
4. Various methods of approach in rehabilitation.

B. Legal Aspects of Disability

Legislation for physically handicapped (in brief).

C. Communication problems

Identify communication problems. Classify these problems and outline principles of treatment

D. Behavioral problems

Identify behavioral problems in the disabled and outline the principles of management

UNIT II**E. Evaluation and rehabilitation of Conditions**

Demonstrate methods of evaluation for physical dysfunction and management of disabilities with particular reference to: Spinal cord injury (paraplegia and tetraplegia), Poliomyelitis, Brain injury, (including stroke and cerebral palsy) Arthritic conditions, Muscular Dystrophy, Hansen's disease, peripheral nerve lesions, fracture disease and chronic cardio - respiratory dysfunction, congenital conditions and osteoporosis.

F. Mobility Aids

Demonstrate knowledge of the indications for different types of mobility aids and their functions, eg, wheelchairs, walkers, crutches.

G. Pre - vocational Evaluation

Discuss methods and team involvement in pre-vocational evaluations and training

H. Architectural barriers

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

UNIT III**I. Disability Evaluation**

Outline the principles and limitations of disability evaluation and discuss its use.

J. Community Based Rehabilitation Module

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

UNIT IV**K. Outline of Occupational Therapy.****L. Outline of Speech Therapy and Hearing Aids.****M. Outline of Social and vocational counselling****N. Principles of Bio - Engineering**

Bio mechanical requirements for aids and appliances.

UNIT V**O. Classification of aids and appliances.**

Measurement & P.O.P. cast, techniques. Simple splints techniques.

P. Principles of U.L. Prosthetics and Orthotics.

Q. Principles of L.L. Prosthetics and Orthotics.

R. Principles of Spinal Orthotics.

Assistive devices.

Three point pressure system.

Functional electrical stimulation.

S. Introduction to material sciences relevant to Bio - engineering

EVALUATION

Internal marks (50): class test, assignment and model exams

University theory exams: 100 marks

References

Text Book of Rehabilitation – Sundar

OCCUPATIONAL THERAPY IN
ORGANIZATION ADMINISTRATION & WORK STUDY

Examination at the end of : 4th Year

Instruction Hours : 75 hrs.

COURSE OBJECTIVES

The objective of this course is that after 60 hours of lectures, demonstrations, practicals and clinics the student will be able to demonstrate an understanding of the principles and methods of organization, administration and work study as appropriate to the OT delivery system and to patient treatment and training.

ORGANIZATION AND ADMINISTRATION:

Unit I:

- a. Outline the purpose of the subject in relation to OT. Define organization. Explain aspects of administration in general and in relation to OT work situation. Outline principles of administration.
 - 1.1 Describe methods of administration in an OT department.
 - 1.2 Records: Their purpose eg. Attendance, statistics, inventory, stock.
 - 1.3 Maintenance of records. Eg., methods of community and institutional based departments
 - 1.4 CBR & IBR
 - 1.5 Referrals – purpose and types of referral

Unit II:

- a. Demonstrate administration of following
 - 2.1. Store keeping materials, inventory records, purchase ordering, petty cash accounting.
 - 2.2. General maintenance of equipment, furniture, buildings, costing of splints/aids/equipment/articles/made in OT.

Unit III:

- 3.1 Types of correspondence
- 3.2 Methods of filing
- 3.3 Describe methods for care of equipment and materials.
- 3.4 Discuss budgeting – including items for an annual budget.
- 3.6 Discuss considerations for construction of a new department and modification of an old department including:
 - a. Space required
 - b. Allotment of space, eg., suitability for access, plumbing requirement, & circulation of air.
- 3.7 Plan assessment forms eg., pre vocational, ADL, hand function & higher functions for initial evaluation and progress recording.

Unit IV

- 4.1 Outline method of writing OT department annual reports. Calculate monthly

and annual statistics. Make plans for future requirements eg., Consider staff patient ratio, equipment and staff requirements.

4.2 Plan to organize picnic or sports programme for patients.

4.3 Outline legal aspects related to rehabilitation: Medico legal cases, workmen's compensation act & insurance facilities. Other financial benefits available for the disabled.

Unit V:

5.1 Outline safety precautions in OT discuss considerations relating to the following:

a. When using small hand tools.

b. General safety in the OT department, eg., Moving patients, training attenders and "helpers", while using safety machinery, while doing activities outside. Safety precautions in relation to patients with, Leprosy, Hemiplegia, Paraplegia, Back injury, Epilepsy, M.R., Suicidal patients, Patients with incoordination.

5.2 Plan teaching methods for assistants and OT students in the clinical situations

5.3 Discuss staff management and development, purpose of staff meetings.

5.4 Practical work to be carried out under supervision, during clinical postings in 4th year eg., maintaining records, stores requests, care of equipment, inventory check, costing of aid, adaptations, petty cash records.

WORK STUDY

Unit I: 1.1 Work

a. Define work. Explain the purpose and need to work and identify its relationship to culture.

b. Describe the importance of work to a handicapped person.

c. Distinguish categories of work. Outline the importance of work study to an Occupational Therapist.

1.2 Job analysis

a. Explain the purpose of job analysis. Identify aspects to be analyzed using sample form.

b. Gain experience in analyzing different types of job. Carry out individual assignments.

Unit II:

2.1 Productivity

a. Define productivity mention factors which influence productivity and causes for decreases in productivity.

2.2 Study principles

a. Perform work measurement related to productivity.

b. Carry out methods of recording and analyzing. Use process chart flow diagram accurately.

c. Prepare a string diagram. Participate in problem solving – practical activity e.g., coffee making using string diagram.

Unit III.

3.1 Serving of meals in a ward using flow diagram or process chart.

3.2 Teach different symbols used in a process chart.

3.3 Working Conditions

- a. Specify importance of good working conditions and their relationship to productivity.
- b. List different aspects of working conditions like lighting, ventilation, sanitary facilities, safety precautions, etc.

Unit IV. Motion economy or ergonomics

- a. Specify the main objectives or ergonomics, energy saving techniques, using free movements, gravity, pre-arrangement of work etc.
- c. Describe energy saving and joint protection techniques in O.T. related to relevant conditions e.g., Arthritis.

Unit V. Visits

- 5.1 Make visits of observation to local industries for observation of how to:
 - a. Carry out practical job analysis and recording
 - b. Assess working condition
 - c. Note the use of facilities like workmen's compensation, insurance benefits.
 - d. Observe distribution of work and line of responsibility
 - e. Note productivity: Whether it is profit making or subsidized etc.
 - f. Identify advantage and disadvantages (limitations) of including sheltered work as a part of Occupational Therapy.
- 5.2 Visit sheltered workshops and other sheltered work situations for physically or mentally handicapped people, in order to:
 - a. Enumerate organizational aspects to consider when setting up a
 - b. sheltered workshop for physically, emotionally or mentally handicapped people.
 - c. Identify advantage and disadvantages in setting up a production workshop.
 - d. Specify an Occupational Therapist's role in this activity.
 - e. Assignments on visit to be submitted.

EVALUATION- Theory- class tests, monthly tests and assignment Practical and orals

Internal Marks – 50 marks

University Theory Exams – 100 Marks

OCCUPATIONAL THERAPY IN REHABILITATION

Examination at the end of : 4th Year

Instruction Hours : 75 hrs.

COURSE DESCRIPTION

This course covers rehabilitation methods in detail and the application of O.T. to physical conditions not covered in O.T. in neurology and orthopaedics, and including medical, surgical, and chronic deforming conditions, visual, hearing deficits. It runs parallel to Rehabilitation medicine, which is studied together with physiotherapy students. The exam covers both subjects.

COURSE OBJECTIVES

The objective of this course is that after 60 hours of lectures, demonstrations, practicals and clinics the student will be able to demonstrate an understanding of the OT role in medical and surgical conditions, and rehabilitation methods for people with residual disability.

COURSE OUTLINE

Unit I

- a. Explain in detail the OT in rehabilitation the physically disabled. Describe in ADL and functional assessment, training and planning methods of mobility.
- b. Discuss the removal of architectural barriers, and use of appropriate adaptive devices. Explain purposes and methodology in home situation evaluation.
- c. Discuss the role of OT including therapeutic media, in rehabilitation of the deaf and visually handicapped.

Unit II

- a. Explain in detail the OT objectives and principles and appropriate treatment media for the following.
 1. Arthritis
 2. Burns
 3. Cardiac rehabilitation
 4. Hansen's disease early treatment, prevention of deformity, treatment of neuritis reaction, rehabilitation measures for chronic disabilities.
 5. Amputation, both upper and lower limb including rehabilitation measures.
 6. Cancer with emphasis on terminal illness and post operative treatment.
 7. Geriatric condition, including social implications.

Unit III.

- a. Plan appropriate hand splint design prepare and fit four different hand splints, and explain their use.
- b. Explain disability evaluation for physical conditions and mention the legal aspects relating to compensation and insurance.

Unit IV

- a. Outline the role and value of O.T in community based rehabilitation (CBR) with emphasis on rehabilitation of disabled children. Identify Occupational hazards in the community and discuss possible safety precautions.
- b. Demonstrate the principles and practice of work/job analysis in relation to pre-vocational assessment and training. Identify situations for their use by Occupational Therapists.

Unit V

- a. Observe and interpret psychological reactions in patients with physical disabilities and their relatives, and plan therapeutic approaches and methods for treating such reactions.
- b. Understand the principles and use techniques of group dynamics in both psychiatric and physical treatment areas as agents of change in behaviour.

EVALUATION- Theory- class tests, monthly tests and assignment**Practicals and orals**

Internal Marks – 50

University Theory Exams – 100 Marks

University oral and Practical Exams – 50 Marks

GROUP PROCESS IN OT**Examination at the end of : 4th Year****Instruction Hours : 40 hrs.****Unit I**

- 1.1. Different approaches in-group work
- 1.2. Group process
- 1.3. Roles

Unit II

- 2.1 Group .Interaction – verbal and non verbal
- 2.2. Intra group relationship
- 2.3. Stages of a group

Unit III

- 3.1 Group Norms
- 3.2. Group cohesion
- 3.3. Managing groups

Unit IV

- 4.1. Leadership roles and styles
- 4.2 .Developing group leadership
- 4.3. Managing problems within a group
- 4.4 .Evaluating groups

Unit V Ability to plan and organize the following groups

- 5.1 Stress Management .Groups
- 5.2 Anger Management Groups
- 5.3 Drama therapy groups
- 5.4 Assertiveness training groups
- 5.5 Social interaction groups
- 5.6 Self esteem groups
- 5.7 Self help groups
- 5.8 Anxiety Management Groups

EVALUATION- Theory- class tests, monthly tests and assignment

Internal Marks – 50

University Theory Exams – 100 Marks

Research Methodology and Biostatistics

Not for University Examination.

Instruction hours: 50

Course objectives:

After 30 hours of lectures on Research Methodology and Biostatistics the students should acquire knowledge of principles of scientific methods of enquiry and basic statistical methods of enquiry and basic statistical concepts, be initiated to skills of information searching, identification, retrieval and evaluation, principles of measurement and experimental design. The students should be able to use the above knowledge to carry out a study.

Course Description:

The inclusion of this subject is to provide a basic knowledge and skills to the undergraduate Occupational Therapy students of the following:

Critical review of literature

To be able to plan and carry out a simple using basic statistical concepts

Course content:

Unit I Research Methodology:-

- 1.1 Stages of research process
- 1.2 Developing ideas and defining a research question
- 1.3 Literature review
- 1.4 Errors in measurement and their control,
- 1.5 Reliability and validity
- 1.6 Epidemiological measures of disease frequency

Unit II Research design:

- 2.1 Quantitative (epidemiological)
- 2.2 Experiment (Clinical, field, community)
- 2.3 Observational
 - a. Cohort
 - b. Case control
 - c. Cross sectional study
 - d. Ecological study

2.4 Qualitative Research Method (sociological)

- a. Developing instruments (Delphi technique)
- b. Focus groups
- c. In depth interview
- d. Key information interview

Unit III

3.1 Ethical issues

3.2 Critical Appraisal of a research report

Unit IV Biostatics

4.1 Data Collection, basic statistics and graphs

4.2 Probability and Probability distribution (Binominal and normal)

4.3 Sampling and sampling techniques.

4.4 Confidence interval

Unit V

5.1 Tests of significance (for large sample and small sample)

- a. T Test
- b. Z Test
- c. Chi square test

5.2 Non-parametric tests (where to use, sign test and Mann- Whitney U test)

- a. Correlation and Regression
- b. Epi info

Project

(Special Study)

Examination at the end of : VIII Semester Alloted hours: 200

COURSE DESCRIPTION

The special study is a major project undertaken by students. It is a Subject in its own right and must be satisfactorily completed in order for the students to graduates. As an alternative to this, the student can present a record of cases.

The special study requires the student: to identify a problem area of relevance to the theory and / or practice of Occupational therapy: to carry out an investigation of one aspect of that problem area: and, to present a clear report on the process and results of the project.

Students are encouraged to identify problems of special interest to them that fall within the interest areas of physiotherapy or occupational therapy service, Students are encouraged to aim towards knowledge on the topic in the specified problem area.

COURSE OBJECTIVES

The objectives of this course is that at the end of the specials study will have:

Developed skills in critical thinking, research method (including review of literature, formulation of a problem for study, selection of a research strategy to investigate the problem,) implementation of that strategy), and the formal presentation of information related to the theory and or/ practice of physiotherapy and occupational therapy.

Gained an interest in research, writing, and publishing material, which contributes to the ongoing development of professional therapy both as a science and an art.

In addition, the student will be able to fulfill (as measured by written, Oral & practical internal evaluation) the following objectives of the course. Identify problems of relevance to the theory and/or practice of therapy in rehabilitation.

Undertake injury into a specific problem area.

Formally document the stages of such a study, including description of the problem, the process of investigation, the findings and their implications for therapy education, practice and research.

EVALUATION

50 marks will be awarded by internal assessment, which will include the guide
50 marks will be awarded by external examiner.

