MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES

FACULTY OF ALLIED HEALTH SCIENCES

SYLLABUS OF

I B.O.Th.

[Applicable to the batches admitted from the year 2001-2002]

1. HUMAN ANATOMY ---------- 265 HRS
2. HUMAN PHYSIOLOGY ---------- 265 HRS
3. BIOCHEMISTRY ---------- 100 HRS
4. FUNDAMENTALS OF OCCUPATIONAL THERAPY-I ---- 300 HRS
5. FUNDAMENTALS OF OCCUPATIONAL THERAPY-II ---- 300 HRS
6. SUPERVISED CLINICAL PRACTICE ---------- 330 HRS

HUMAN ANATOMY --- [265 hrs]

Course Objectives:

At the end of First year, the student will be able to demonstrate knowledge and skills in human Anatomy as in necessary for the practice of Occupational Therapy.

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

1. Identify the anatomical aspects of muscle, bones and joints and to understand and analyse the movements.
2. To analyse the anatomical basis of various clinical conditions (trauma, deformities pertaining to limb and spine).
3. To be able to localize the various surface landmarks.
4. To understand the mechanics of posture and gait, and the anatomical basis of abnormal gaits.
5. Neuroanatomy -
   - To identify various parts of CNS - Forebrain, mid-brain, hind-brain, brain-stem, attachments of cranial nerves – functional components and distribution, anatomical basis of clinical lesions.
   - Describe the sources and courses of spinal tracts.
   - Described blood circulation of CNS
   - Identify the components of various transverse sections.
6. To identify the outline of various systems.

Course Contents:

General Anatomy (Practical by Demonstrations only)

1. Histology - Microanatomy should be confined to Basic tissues (Epithelial, connective muscular and nervous)

   List of Microanatomy slides for examination:
   - Tendon (L.S.)
   - Skeletal Muscle (L.S.)
   - Ground Section of Bone.
   - Hyaline Cartilage.
   - Firbocartilage.
   - Elastic Cartilage.
2. Skin & appendages of skin (Brief outline)
3. Dissection of limbs and spine. Only prosected parts should be demonstrated.
4. Cardiovascular system - Heart, arteries, veins, collateral circulation, nervous control of circulation. (Details)
5. Respiratory system - Lungs, pleura, broncho- pulmonary segments.
6. Digestive system (Brief outline)
7. Urinary system (Brief outline)
8. Male reproductive system (Brief outline)

9. Female reproductive system (Brief outline)
10. Endocrine system (Brief outline)
11. Lymphatic system ((Brief outline)
12. List of Radiograms for examination (only plain X-rays to be shown and not contrast studies)

a. X-ray chest - PA View
b. X-ray Lumbar Spine - AP Lateral
c. X-ray Cervical Spine - AP Lateral
d. X-ray of the limbs.

Neuro Anatomy: (All the topics to be taught in detail)

- Organisation of C.N.S. – Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and Urogenital systems.
- Cranial nerves.
- Peripheral nervous system.
- C.N.S. (Practicals by Demonstrations Only)

Peripheral nerves	Neuromuscular Junction
Sensory and organs	Spinal cord segments and areas
Brain stem	Cerebellum
Inferior Coliculi	Superior coliculi
Dioncephalon	The thalamus
The hypothalamis	The corpus striatim
The cerebral hemisphere	The lateral ventricles
The rhiencephalon	The blood supply of brain
The menings	The visual radiation
Internal capsule	Thalamo cortical radiation
The auditory radiation	Basal ganglia, Pons, medulla
The pyramidal system	Extrapyramidal systems
Anatomic integration	Intracortical integration

Musculoskeletal Anatomy:

- All the topics to be taught in details, dissection of extremities and vertebral column should be compulsory.
- Anatomical positions of body, axes, planes, common anatomical terminologies (groove, tubersostity trochanters etc.)
- Fascial – hard connective tissue.
- Bones – composition and functions, classification and types according to morphology and development.
- Joints- definition, classification, structure of fibrous cartilaginous joints, movements of joints, blood supply and nerve supply.
- Regional Anatomy : Superior extremity, joints with extra articular structures, osteology, bones of upper limb and hand, soft parts, breast, pectoral region and muscles, fascias, ligaments, blood vessels, nerves with lymphatic drainage of the upper limb.
- Inferior extremity, osteology, bones and joints with extra articular structures of lower limb, blood vessels and nerves, lymphatic drainage of leg, arches of the foot, skin of the foot.
- Trunk, osteology, all the bones of the spine i.e. cervical thoracic, lumbar vertebrae, sacrum, cocoyx, ribcage, soft parts, intervertebral joints, intervertbral disc, ligaments and muscles.
- Bones of the skull and mandible muscles of the face, extra ocular muscles, salient points about the eyeball, internal ear. Thoracic cage, respiratory muscles, muscles of breathing mechanics of breathing

Text Books:

- Anatomy and physiology by Smout and McDowall (Edwad Arnold).
- Primary castes anatomy by Basmajian (Williams and Willkins Co. Batlimore).
- An Introduction of fundamental Anatomy by David Sinclair.
- Kinesiology by Katherine Wells (Saunders Co.)

Reference Books:

1. Anatomy of Chaurasia- All 3 volumes.
2. Limbs of Dr. Kadasana-All 3 volumes.
3. Anatomy of Grant.

Recommended Books:

- Clinical kinesiology by Signe Brunnstone.
- Human Embryology by Hamilton Body and Mossaman.
- Kinesiology and applied Anatomy by Resch Burko (Kec & Fileigar).
- Applied Anatomy and Kinesiolgy by W. Bower and H. Shose (Lae and Febigar).
- Extermities by Quining Wasbel.
- Neuro-Anatomy – Inderbin Singh.

SCHEME OF EXAMINATION (Practical)

PRACTICAL – University Exam 80 marks + Int. Assessment 20 marks = 100 marks

Topics	**Practical marks**	**Viva marks**
A. Soft tissue	10	10
B. Bones	10	10
C. Organs	10	10
D. Spotting (10 spots)	10	10
Total marks:	40	40

HUMAN PHYSIOLOGY --- [265 hrs]

Course Objectives:

At the end of First year, the student will be able;

- to describe the normal functions of all the organ systems, their regulatory mechanisms and interactions of the various system for well coordinated total body function.
- Understand the relative contribution of each organ system in the maintenance of the milieu interior (Homeostasis).
- Explain the physiological aspects of normal growth and development.
- Analyse the physiological response and adaptation of environmental stresses.
- Comprehend the Physiological principles underlying pathologenesis and treatment of disease.
- Correlate knowledge of Physiology of human reproductive system in relation of National Family Welfare Programme.

Course Contents:

Neuro Muscular Physiology: MUST KNOW

1. Peripheral Nervous System:
   A) Physiology of Nerve: Classification and structure of Neuron
      - Structure of Cell Membrane, Transport process across the membrane Homeostasis.
      - Classification of Structure of Neuron.
      - Classification and Properties of Nerve fibres.
      - Bioelectrical potentials, resting membrane potential, Graded potentials, Action potentials Evoked potentials.
      - Factors affecting production and propagation of an impulse.
      - Neuromuscular junction.
      - Degeneration and Regeneration.
      - Reaction of degeneration.

   B) Physiology of Skeletal Muscle:
      - Structure and function of skeletal muscle.
      - Classification and properties of muscle fibers.
      - Motor unit contraction: Excitation Neuro-muscular transmission contraction, coupling skeletal muscle sliding theory, types of muscle contraction, factors affecting coupling development, energy metabolism of muscle, Oxygen dept., muscle tension development, sliding and lament theory of muscle contraction.
2. Central Nervous System:
   a) Physiology of Synapses.
   b) Physiology of receptor organs for general and special sensation.
3. Physiology of Pin, Touch and Temperature and proprioception.
4. Physiology of reflex action.
   - Spinal Cord – Sensory and motor tracts of spinal cord.
   - Motor functions of the spinal cord and the cord reflexes.
   - Cerebellum and basal Ganglia.
   - The cerebral cortex : Sensory and Motor cortex.

General Physiology: Gross Studies – detailed not required.

[Short Note (Optional) to be put up in question paper.]

1. Blood (Lectures – 6)
   a. Composition and functions of blood.
   b. Blood groups.
   c. Erythropoesis.
   d. Coagulation.
   e. Immunity
   f. WBC functions.
2. Digestive System (Lectures – 4)
   a. General introduction. Organisation plan of digestive system.

b. Composition, functions of salivary, gastric, pancreatic intestinal and biliary secretion. Regulation of secretions of brief.
c. Movements of G.I. tracts – Deglutition reflex and defecation reflex in brief.

3. Kidney (Lectures – 3)
   a. General introduction.
   b. Structure and functions of Kidney, Formation of Urine (No Details)
   c. Physiology of Micturition.
4. Endocrine System (Lectures – 5)
   a. Regulation and functions of pituitary, thyroid, parathyroid, pancreatic secretions, Adrenal.
5. Reproduction System :
   a. Female reproduction system – Puberty, Ovarian cycle, menstrual cycle, contraception and lactation.
   b. Male reproductive system – Puberty Structure and functions of testes.
6. Respiratory System (Lectures – 8)
   a. Introduction and General organisation.
   b. Mechanics of respiration.
   c. Ventilation, Ventilation perfusion ratio. V:P ratio.
   d. Pulmonary Volumes and capacities.
   e. Transport of respiratory cases.
   f. Regulation of Respiration.
7. Cardio-Vascular System (Lecturer- 8)
   a. Structures and properties of cardiac muscle.
   b. Cardiac cycle – Brief.
   c. Regulation of heart rate, blood pressure and cardiac output.
   d. Regional circulation – coronary, cerebral and skin.
   e. Dynamics of tissue fluid system and oedema.
   f. Normal ECG: Rate, Rhythm S.T.T. Changes.
8. Physiology of Exercise:
   a. Physiological changes during mild, moderate and severe exercise physical parameters:
      - Oxygen transport.
      - B.M.R. / R.C.
      - Metabolic, thermal.
      - Cardio-respiratory system.
      - Body fluids and electrolytes.
   b. Physiology of Aging:

Text Books:

- Human Physiology: 1. Chaudhary 2. Bijlani
- Essentials of Medical Physiology: K.Semubulingam, Jaypee Publishers – 1st Edition.

Reference Books:

Text Books of Medical Physiology: Guyton – Prism. Saunders, Samson and Wright.

Practicals and Demonstrations

- Physiology of nerve and muscle-Demonstration.
- Physiology of Blood: Blood grouping, ESR, Haemoglubunometry, RBC Count, WBC Count, Bleeding time and Clotting time-Demonstration. Differential WBC.
- Normal reflexes and sensations in Man-Practical.
- History taking and general examination-Practical.
- Examination of Alimentary system-Practical.
- Inspection and palpation of cardiovascular system-Practical.
- Percussion and Auscultation of C.V.S.-Practical.
- Recording of Blood Pressure, Effects of posture and exercise on B.P.-Practical.
- Examination of pulse and cardiac efficiency tests-Demonstration.
- Inspection and palpation of respiratory system-Demonstration.
- Percussion and auscultation of respiratory system-Demonstration.
- Stethography and factors affecting respiration-Demonstration.
- Demonstration Spirometry.

- Examination of higher function-Practical.
- Examination of cranial nerves.
- Examination of superficial and deep reflexes-Practical.
- Examination of motor system-Practical.
- Ergography.
- Tests of physical fitness-Demonstration.
- Interpretation of the given charts, graphs of amphibian skeletal muscle properties-Demonstration.
- Calculation of a) Work done, b) Cardiac output, c) Fitness Index, d) Maximum Voluntary Ventilation (MVV)-Demonstration.
- Simple muscle curve, two successive stimuli, Effects of free and after load, Starling's law. Muscle fatigue-Demonstration.
- Effects of temperature, adrenaline, acetyle choline on amphibian heart-Demonstration.

SCHEME OF EXAMINATION (Practical)

PRACTICAL – University Exam - 80 marks + Int. Assessment - 20 marks = 100 marks

--Topics	**Practical marks**	**Viva marks**
A. Neuromuscular physiology including CNS	10	10
B. General physiology, blood, digestive system, kidney	10	10
C. Respiratory system	10	10
D. Cardio-vascular system and physiology of exercise	10	10

BIOCHEMISTRY --- [100 hrs]

Course Objectives:

At the end of First year, the student will be able to fulfill with 75% accuracy (as measured by written evaluation) the following objectives:

- Describe the normal functions of different component of food, Enzymes, and tissues, their metabolism.
- Define basal metabolic rate (B.M.R.)
- Discuss nutritional aspects of carbohydrates, Lipids and proteins and vitamins.
- Explain Carbohydrate, protein and lipid metabolism.
- Define enzymes, and discuss briefly factors affecting enzyme activity.
- Correlate knowledge of clinical biochemistry in clinical conditions.
- Enumerate functions of DNA, RNA etc.
- Understand the process of muscle contraction and identify contractile elements in muscle.
- Discuss structure and functions of cell in relation to cell biology.

Course Contents:

Carbohydrates:

- Definition, Chemistry Metabolism, Classification, Common Carbohydrates, their sources and complication.
- Digestion and absorption of carbohydrates.
- Glycolysis-aerobic, anaerobic, energetics, regulation, Kreb's cycle.
- Citric acid cycle and its energetics.
- Glycogenesis, glycogenoysis and their regulation, role of liver and muscle glycogen.
- Glucogeogenesis.
- MMP Pathway.
- Hormonal regulation of blood sugar level.
- Importance metabolic disorders of glycogen, lactose intolerance, diabetic mellitus.

Protein:

- Definition of proteins and amino acids. Functions of proteins, Digestion and absorption of proteins. Classification of aminoacids and proteins. Structural Organization of proteins.

Lipids:

- Chemistry – Definition, classification of lipids, classification of fatty acids, examples and function of common lipids essential fatty acids and their importance.
- Digestion and absorption of lipids.
- Oxidation and its energetics, regulation.
- Fatty acid biosynthesis, energetics, regulation.
- Fat metabolism in adipose tissue, lipoprotein lipase.
- Ketone body formation and utilization.
- Cholesterol and its importance. Common hyper-lipoproteinamias.
- Atherosclerosis. Classification and functions of lipoproteins.

Enzymes:

- Definition, coenzymes, briefly on factors affecting enzymes activity, isoenzymes and clinical significance of enzymes.

Nucleic Acid:

- Functions of DNA, RNA, Genetic Code.
- Specialised products of amino acids – phenyalaminetryosine tryptophan, glycine, methionine. Transamination, deamination and urea cycle (Protein)

Biological Oxidation. ETC and Oxidative Phosphorylation.

Vitamins:

- Definition, classification according to solubility, Individual vitamins sources, coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and Toxicity.

Minerals:

- Individual minerals – calcium, phosphate, iron, Magnesium, Zinc, fluoride, selenium, molybdenum, copper their sources, RDA, digestion, absorption, transport, excretion, functions, disorders.

Muscles Contraction:

- Contractile elements in muscles, briefly on the process of muscle contraction.

Connective Tissue:

- Biochemistry of connective tissue, collagen, glycoproteins, proteoglycans

Cell Biology:

- Cell membrane structure, Intracellular organelles and their functions, briefly in cytoskeleton.

Hormone Action:

- Receptors, signal transduction, second messengers (Ca, CAMP, Inositol Phosphates) and cell function

Acid-base balance, Water and electrolytes:

- Body water, osmolarity, Extra – and intracellular sodium and potassium buffers, Ph. Buffer system in blood.
- Role of lungs and kidneys in acid-base balance.

Nutrition:

- Basal metabolic rate – definition, normal values, factors affecting B.M.R.
- Energy requirements (with age, sex), thermogenesis, specific dynamic action of food, energy expenditure for various activities.
- Nutritional aspects of carbohydrates, fat and fibers.
- Nutritional aspects of proteins, essential amino acids, chemical score, digestibility coefficient classification of proteins (complete and incomplete), Nitrogen balance and its' significance.
- Composition of Food, balance diet, dietary recommendations and nutritional supplementation.
- Protein – energy malnutrition, kwashiorkor and marasmus.

Clinical Biochemistry:

- Relevance of blood level of glucose, urea, ca-phosphates, lipid profile,
- Urine levels of sugar, creatinine, proteins.
- Clinically important enzymes.
- Liver and renal function tests.

Books Recommended:

Textbook of medical Biochemistry: S. Ramakrishnan (2^{nd} edn.)

FUNDAMENTALS OF OCCUPATIONAL THERAPY-I --- [300 hrs]

Course Objectives:

At the end of First year, the student will be able to fulfill with 70% accuracy the following objectives of the course:

1) a) Describe the history & development of Occupational Therapy internationally. Describe the present development of OT in India including organization of All India Occupational Therapists association.
   b) Define Rehab, discuss philosophy of rehab with reference to principles of physical medicine & briefly outline the role of different team members, describe Occupational therapist's contribution as a part to total rehab team
2) Briefly explain theory of Occupation & various area of occupation understanding the these dimensions to OT
3) Describe the occupational performance model with respect to physical dysfunction, treatment continuum based on this model & relationship of the model to treatment approaches viz. biomechanical, sensory motor & rehabilitation
4) Describe generalized & specific principles of therapeutic exercises. Explain type of movements, muscle contraction used in exercise. Describe classification of exercises & application to activity. Define power, endurance, coordination, ROM; state application of principles to develop these. Briefly outline principles of progressive exercises; brief repetitive isometric exercises & regressive resistive exercises.
5) Describe therapeutic modalities. Outline Rx objectives for purposeful activities & its characteristic. Describe principles of activity analysis in respect to biomechanical, sensory motor & socio-cultural aspects. Briefly, outline criteria for selection of activity.
6) Define, classify & state various testing methods of sensation, perception, and muscle tone. Discuss principles of testing ROM & muscle power. Demonstrate assessment of joint ROM & muscle strength (Group muscle testing) in normal healthy individuals.

Course Contents:

1) Definition and scope of Occupational Therapy
   a) History & development of O.T.
   b) Rehabilitation Philosophy, rehab team, need of rehab. Principles of physical medicine
2) Theory of Occupation - Forms of occupation, occupation as evolutionary trait, Biological dimensions, Social dimensions, Psychological dimensions of occupation, Application of theory to occupational Therapy
3) Occupational performance model
4) Principles of Therapeutic Exercise:-
   a) Generalised & specific principles
   b) Types of Movements, Muscle contraction used in exercise
   c) Exercise classification & application to activity
   d) Objectives to develop i) Power ii) Endurance iii) Coordination iv) ROM
   e) Progressive resistive exercise (PRE), Regressive resistive exercise (RRE), brief repetitive isometric exercise (BRIME)
5) Therapeutic Modalities: Purposeful activity & characteristics
6) Activity Analysis:
   a) Principles of activity analysis
   b) Biomechanical & sensory motor
   c) Adapting & grading activity
   d) Selection of activity
7) Principles and methods of Assessment
   a) Joint range of motion
   b) Muscle strength

8) Definition, classification, variation in testing methods of-
   a) Muscle tone
   b) Coordination
   c) Sensation
   d) Perception

Recommended Books:

1) Willard & Spackman Occupational Thera by H.Hopkins & H.Smith
2) Introduction to Occupational Therap by Ann. Turner
3) O.T. Practice skills for Physical Dysfunction by L.V.Pedritti
4) Principles of Exercise Therapy by Deena Gardner
5) Therapeutic Exercises by Basmajjan & Wolf
6) Muscle Testing by Daniels, Kendall
7) Occupational Therapy for Physical Dysfunction by Trombly

SCHEME OF EXAMINATION (Practical)

PRACTICAL – University Exam - 80 marks + Int. Assessment - 20 marks = 100 marks

Topics	**marks**
A. Goniometery	20
B. Muscle Testing	20
C. Activity Analysis	20
D. Viva Voce	20
Total	**80**

FUNDAMENTALS OF OCCUPATIONAL THERAPY-II --- [300 hrs]

Course Objectives:

At the end of First year, the student will be able to fulfill with 75 % accuracy the following objectives of this course.

1) a) Define human development and explain the importance of its knowledge in occupational therapy.
   b) Enumerate with examples the various aspects of human development such as physical, sensory, motor, cognitive, emotional, cultural & social.
   c) Specify & describe biological environmental & inherited factors influencing human growth & development & its importance related to Occupational Therapy.
2) a) Specify general principles of human maturation.
   b) Explain following anatomic directional principles of human development.
      i) Cephalocaudal pattern of development
      ii) Proximodistal pattern of development
      iii) Mediolateral pattern of development
      iv) Mass to specific pattern of development
      v) Gross to fine motor involved in evaluation
3) Define & classify ADL Discuss the evaluation of ADL & give outline of various scales used for evaluation of ADL. Briefly, outline principles & specific techniques in ADL training. Describe briefly achieving access to home, community & work place. Briefly, explain the socio-cultural-economic deviations. Briefly, outline the principles of adaptation process. Define adaptive devices.
4) Explain in brief the following steps involved in preparing the client for return to work.
   a) Prevocational evaluation
      i) Evaluation of work capacity
      ii) Evaluation of physical capacity
      iii) Evaluation of functional capacity
   b) On the job or work site evaluation
   c) Situational Assessment
   d) Psychometric instruments
   e) Work samples such as TOWER, BTE, WEST.
   f) Work hardening & work conditioning
5) Identify & have a brief knowledge of different types of tools & equipments with their uses. Explain therapeutic uses & maintainances of above tools & equipments.
6) Define & classify splints with their brief description, state general principles of splinting, describe material used. Design a paper model of following hand splints.
   a) Gutter splint
   b) Resting splint
   c) Short opponance
   d) Rigid radial bar wrist cock up
   e) Long opponence

   OR

   Any five hand splints.
7) Identify tools & equipments. Explain their parts, uses & therapeutic uses.
8) Measure & design paper pattern of hand splints.
9) Analyze job with respect to physical, sensory, environmental psychological & cognitive demands of a job.

Course Contents:

1) Basic concepts of human development: -
   a) Importance of knowledge base, definitions.
   b) Aspects of human development: - physical, motor, sensory, cognitive, emotional, cultural, social.
   c) Factors influencing human growth & development: - biological, environment, inherited.
2) Principles of maturation:
   a) General

b) Anatomic directional principles
   i) Cephalocaudal patterns of development
   ii) Proximal distal patterns of development
   iii) Medial lateral patterns of development
   iv) Mass to specific patterns of development
   v) Gross motor to fine motor patterns of development.

3) Activities of daily living
a) Definition
b) Classification
c) Evaluation of ADL
d) Various scales used in ADL (Barthel, Katz, Kenny's, Klein-Bell, AMP's Indices)
e) Principles & specific techniques in ADL training for:
   i) Weakness
   ii) Low endurance
   iii) Limited ROM
   iv) In co-ordination
   v) Loss of use of one side of body
   vi) Limited vision
   vii) Decreased sensation
f) Achieving access to home, community & work place
g) Adaptation:
   i) Adaptation process
   ii) Introduction to adapted devices
h) Cultural & socio-economical deviations in ADL

4) Occupational Therapy as diagnostic & prognostic procedure
a) Definition of evaluation
b) Types of evaluation
c) Steps involved in evaluation

5) Preparing for return to work
a) Prevocational capacity evaluation
   i) Work capacity evaluation
   ii) Physical capacity evaluation
   iii) Function capacity evaluation
b) Job Analysis
   i) On job or work site evaluation
   ii) Work sample – Tower, West, BTE
   iii) Introduction to work hardening & work conditioning

6) Crafts: Knowledge of tools, equipment, materials, their therapeutic values & uses.

7) Hand function & evaluation methods:
a) Functional anatomy of hand.
b) Prehension & grasp patterns.
c) Grip & pinch strength.
d) Functional evaluation of hand
e) Oedema assessment.

8) Introduction to hand splints: Definition, classification, principles, materials used, designing & fabrication.

Recommended Books:

1. Willard & Spacksman's Occupational Therapy by H. Hopkins & H. Smith.
2. Introduction to Occupational Therapy by Ann Turner.
3. Occupational Therapy : Practice skills for Physical Dysfunction by L.V. Pedretti.
4. Principles of Exercises Therapy by N.Leena Gardner.
5. Therapeutic Exercises by Basmajian & Wolf.
6. Muscle Testing by Daniels, Kendall
7. Occupational Therapy for Physical Dysfunction by K.A.Trombly.
8. An Approach to Occupational Therapy by Mary Jones.

SCHEME OF EXAMINATION (Practical)

PRACTICAL – University Exam - 80 marks + Int. Assessment - 20 marks = 100 marks

Topics	**Marks**
A. Identification of spots	20
B. Preparation of basic splints (Paper patterns)	20
C. Job Analysis	20
D. Viva Voce	20
Total	**80**

SCHEME OF EXAMINATION

1. **Human Anatomy** – Total Marks = 200
   Theory = 100 Marks, (University Exam 80 marks + I. A. 20 marks)
   Practical = 100 Marks (University Exam 80 marks + I. A. 20 marks)
2. **Human Physiology** – Total Marks = 200
   Theory = 100 Marks, (University Exam 80 marks + I. A. 20 marks)
   Practical = 100 Marks (University Exam 80 marks + I. A. 20 marks)
3. **Biochemistry** – Total Marks = 100
   Theory = 100 Marks, (University Exam 80 marks + I. A. 20 marks)
4. **Fundamentals of Occupational Therapy-I** – Total Marks = 200
   Theory = 100 Marks, (University Exam 80 marks + I. A. 20 marks)
   Practical = 100 Marks (University Exam 80 marks + I. A. 20 marks)
5. **Fundamentals of Occupational Therapy-II** – Total Marks = 200
   Theory = 100 Marks, (University Exam 80 marks + I. A. 20 marks)
   Practical = 100 Marks (University Exam 80 marks + I. A. 20 marks)

Duration of paper 3 Hrs.

Scheme of Exam to be conducted out of 80 marks (Theory) as follows:

Section-A: M.C.Q: Q-1] Single best response [1 X 20] ---------- 20 marks

Section-B: L.A.Q: Q-2] One question ---------- 15 marks
Q-3] One question ---------- 15marks
OR
Q-4] One question ---------- 15 marks

Section-C: S.A.Q: Q-5] Short notes-Any Three out of Four [3 X 5] -- 15 marks
Q-6] Short notes-Any Five out of Six [5 X 3] ------ 15marks

SCHEME OF EXAMINATION – I-B.O.Th.

Subject	Theory	IA	Total	Practical	IA	Total
ANATOMY	80	20	100	80	20	100
PHYSIOLOGY	80	20	100	80	20	100
BIOCHEMISTRY	80	20	100			
FUNDAMENTALS OF O.T.-I	80	20	100	80	20	100
FUNDAMENTALS OF O.T.-II	80	20	100	80	20	100

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES

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SYLLABUS OF

II B.O.Th.

[This syllabus is applicable from 2002-2003 i.e. from the batch who got admitted to the I-B.O.Th. course in the year – 2001-2002]

1.	PHARMACOLOGY	075 HRS
2.	PATHOLOGY AND MICROBIOLOGY	150 HRS
3.	PSYCHOLOGY	250 HRS
4.	ERGOTHERAPEUTICS-I	330 HRS
5.	ERGOTHERAPEUTICS-II	330 HRS
6.	SUPERVISED CLINICAL PRACTICE	425 HRS

PHARMACOLOGY --- [75 hrs]

Course Objectives:

The student will be able to fulfil with 75% accuracy the following objectives of the course

- Knowledge about the -
  - Pharmacokinetics and pharmacodynamics of commonly used drugs
  - Drugs commonly used for disorders encountered in OT.
  - Drug interactions
  - Adverse effects of drugs
  - Clinical uses of drugs
  - Relevance of drug therapy to the practise of OT
- Practise skills -
  - No practical skills are expected

Course Content:

- General action of drugs
- Routes of drug administration
- Drug receptors
- Mechanism of drug action
- Factors modifying drug effects
- Drug toxicity
- Drugs acting on CNS: - General anaesthetics, Alcohols, Sedative and Hynotics, Anti-convulsives, Narcotics Analgesics, Non-Hareotic Analgesics and Antipyretics, CNS stimulants, Psychotherapeutics.
- Drugs acting on peripheral nervous system: - Stimulating and Inhibiting Cholinergic drugs.
- Drugs acting on muscles: - Muscle relaxants, and muscle stimulants.
- Drug therapy in Parkinsonism.
- Drugs acting on CVS: - Pharmacotherapy in Hypertension, Vasodilator drugs, Pharmacotherapy of Cardiac arrhythmias, Angina pectoris, Shock
- Drugs acting on respiratory system: - Cough, Bronchial Asthma.
- Chemotherapeutic agents.
- Thyroid and anti-thyroid drugs, Calcium, Phosphorus, Magnesium, parathyroid vitamins.
- Insulin and oral anti-diabetics
- Chemotherapy in malignancy
- Locally acting drugs - Anodione, Local anaesthetic drugs, counter irritants, soothing agents.

Text Books:

- Pharmacology and pharmacotherapeutics - By Satoskar and Bhandarkar
- Medical Pharmacology - Goth Anders

Reference Books:

- Pharmacology by Gaddum
- Medical Pharmacology by Drill
- The pharmacology Principle of Medical Practise by Krantx & Carr
- The pharmacological basis of therapeutics by Goodman, L.S. Gilman A

PATHOLOGY AND MICROBIOLOGY --- [150 hrs]

Pathology:

Course Objectives:

The student will be able to fulfil with 75% accuracy the following objectives of the course.

- Understand the aims and objects of the study of pathology, meanings of the terms: etiology, pathogenesis, lesions and diseases.
- Understand the concept of disease, various causes of disease, and approach to laboratory study and diagnosis of process of disease and the classification of lesions.
- Briefly outline - Cell injury with mechanisms, Degeneration & necrosis with types and examples
- Define inflammation - Describe Vascular and cellular events, enumerate and give functions of chemical mediators, differentiate between acute and chronic inflammation
- Understand the concepts of regeneration and repair, wound healing with primary and secondary intention, describe factors promoting and delaying healing and with emphasis on bone, muscle, skin and nerves.
- Describe vascular disturbances with emphasis on ischaemia, thrombosis, embolism, infarction, haemorrhage, shock and oedema.
- Briefly describe haematolgoical disorders - Anaemia, Leukemia, haemmorhaegic disorders. With emphasis on causes, clinical features and investigations.
- Explain in general bacterial and viral infections with emphasis on tuberculosis, syphilis, leprosy, and fungal infections.
- What are - Basic cells, antigens, antibodies, and the regulation of the immune response, explain hypersensitivity reactions with emphasis on types, mechanisms, and examples in brief, what is auto immunity; the mechanisms and examples. Briefly know about immunodeficincy and organ transplantation.
- Describe growth disturbances - Define with examples - atrophy, hyperthrophy, hyperplasia, agenesis, dysplasia, anaplasia; define and classify Neoplasia-, differentiate between benign and malignant neoplasms, mechanism of spread of tumour, the biological behaviour, grading and staging; know about carcinogenesis - viral, chemical, radiation and environmental.
- Understanding the etiopathgenesis, clinical and pathological features in brief about diseases of CNS, Bones and Joints, and muscles ; Briefly describe peripheral neuropathy - Acute and chronic demyelinating, hereditary, toxic, traumatic, metabolic, and infective; Briefly explain etiopathogenesis and clinical features of scleroderma, psoriasis, & auto immune disorders.
- Briefly describe etiopathogenesis, gross and microscopic features, clinical features and complications of
  - Respiratory diseases - Pneumonia, Bronchitis, Asthma, Emhysema, Lung cancers and occupation lung diseases.
  - CVS - Rheumatic heart disease, Ischaemic heart disease, Atherosclerosis, congenital heart diseases.
- Alimentary system - Peptic ulcer, carcinoma of the stomach, ulcerative lesions of the intestines - small intestine (Typhoid, TB, Crohn's Diseases) Large Intestine (ulcerative colitis, amoebic colitis, pseudomembranous colitis)
- Liver - Viral hepatitis, Cirrhosis
- Pancreas - Pancreatitis, carcinoma of pancreas, Diabetes.
- Pigment disorders. Briefly explain with lesions: exogenous-anthracotic and endogenous - Melanin, bilirubin, haemosiderin.
- Briefly describe medical genetics
- Define nephrotic syndrome and briefly describe causes, clinical features and pathogenesis of nephrotic syndrome & glomerulonephritis, briefly describe the etiopathogenesis, gross, microscopy, clinical features of BPH, Carcinoma of prostrate; In brief explain types, gross, clinical features, of thyroiditis and thyroid tumours - Papillary, follicular and medullary; In brief explain types and gross and microscopic features of salivary gland tumours.

Course Contents:

- Aims and objects of the study of pathology, Meanings of the terms, etiology, Pathogenesis, lesions and diseases.
- Concepts of disease, various causes of disease and approach to laboratory study and diagnosis of process of disease, classification of lesions.
- Brief outline of sick cells, degeneration, necrosis, gangrene.
- Inflammation: Definition, vascular and cellular phenomenon, tissue changes, exudate and pus formation, difference between acute and chronic inflammation
- Repair - Bone, skin, nerves and muscles.
- Vascular disturbances with emphasis on ischaemia, thrombosis, embolism, infarction, Haemmorhage, shock and oedema.
- Brief about - Anaemia, Leukemia, Haemmorhagic disorders.
- General approach o bacterial and viral infections. Emphasis on spirilla, leprosy and fungal infections.
- General approach to immunity and allergy.
- Clear concepts about tumours - Definition , classification, Etiology and spread of tumours, Benign versus malignant tumours.
- Diseases of :-
    - CNS - Meningitis and Encephalitis, brief outline of CNW, Tumours and peripheral nerve lesions.
    - Bones and Joints - Osteomylitis, Osteoarthritis, septic arthritis,
    - Gout,Rheumatic Arthritis, and bone tumours
    - Muscles: Poliomyelitis, myopathies, Volkmann's Ischaemic contractures
    - Skin - Scleroderma, Psoriasis, Autoimmune disorders.
    - Animal Parasites
- In brief about -
    - Respiratory diseases - Pneumonia, Bronchitis, Asthma, Emhysema, Lung cancers and occupation lung diseases.
    - CVS - Rheumatic heart disease, myocardial infarction, Atherosclerosis, congental heart diseases.
    - Alimentary system - Peptic ulcer, carcinoma of the stomach, ulcerative lesions of the intestines
    - Liver - Hepatitis, Cirrhosis
    - Pancreas - Pancreatitis, carcinoma of pancreas, Diabetes.
- General approach to immunity and allergy
- Deficiency diseases, pigments and pigmentations.
- Medical genetics
- In brief about –
    - Urinary system - Nephrotic syndrome, Nephritis, Glomerulonephritis
    - Prostrate - Prostratitis, BPH, Carcinoma of prostrate
    - Endocrine - Thyroid, Thyroiditis, Thyroid tumours
    - Salivary glands - Salivary gland tumours.

Recommended Books:

- Textbook of Pathology by Harsh Mohan
- Pathologic basis of Disease by Cotran, Kumar, Robbins
- Genral Pathology by Bhende

Microbiology:

Course Objectives:

The students should be able to fulfil with 75% accuracy the following objectives of the course:

i)

- What is microscopy, parts and use of light microscope and types of microscope.
- What are bacteria fungi, viruses and parasites; differentiate eukaryotes and prokaryotes; and bacteria and viruses
- What is Gram's and Ziehl Neelsen's stain and describe the structure of bacterial cell - Flagella, capsule, spores and cell wall.
- Briefly explain physical Sterilization and disinfection-Hot air over, incineration, boiling, & autoclaving; & chemicals used in sterilization and disinfection–Alcohol (ethyl and methyl), Halogens (iodine and chlorine), Biguanides (chlorhexidine), Surface active agents (soap), Gases (Ethylene oxide).
- Classify culture media, describe methods of anaerobiosis, explain blood culture.

ii)

- What are antigens and antibodies, exotoxins and endotoxins, Innate and acquired immunity, CMI and humoral immune response, vaccines, hypersensitivity - immediate and delayed, autoimmunity, antigen antibody reactions - Widal, VRDL, ELISA
- Explain pathogenesis and laboratory diagnosis of - Staphylococcus, Streptococcus, Pneumococcus, Neisseria, Mycobacterium tuberculosis & leprae, Clostridia, Corynebacterium diphtheriae, Treponema pallidum, E. coli, Klebsiella, Proteus, Pseudomonas, Salmonella, Shigella, Vibrio.
- Explain pathogenesis & laboratory diagnosis of candida and dermatophytes, Madura foot, Opportunistic fungal infections.
- What are general characteristics of viruses, explain laboratory diagnosis of viral infections and Pathogenesis and laboratory diagnosis of hepatitis B virus and human immunodeficiency virus, Immunoprophylaxis of polio and rabies viruses
- Explain pathogenesis and laboratory diagnosis of plasmodium, leishmania and wuchereria, laboratory diagnosis of amoebiasis, giardiasis and nematodes in stool.

Course Contents:

- **General Microbiology**
- Introduction
- Classification of micro-organisms
- Morphology of Bacteria
- Sterilization and disinfection
- Physiology
- **Immunology**
- Antigen, antibodies, general overview of antigen-antibody reaction and practical applications, immunity, immunoprophylaxis, hypersensitivity reaction and autoimmune diseases.
- **Systematic Bacteriology**
- Pathogenesis and laboratory diagnosis of micro-organisms.
- **Mycology**
- Pathogenesis and laboratory diagnosis of candida and dermatophytes, Madura foot,Opportunistic fungal infections.
- **Irology**
- General characteristics, laboratory diagnosis of viral infections, pathogenesis and laboratory diagnosis of hepatitis B and HIV, immunoprophylaxis of polio and rabies virus.
- **Parasiteology**
- Pathogenesis and laboratory diagnosis of plasmodium, wuchereria, leishmania; laboratory diagnosis of amoebiasis, giardiasis nematodes in stool.

Recommended Books:

- Text book of Microbiology by R. Ananthnarayan and C.K.Jayaram Panikar.

PSYCHOLOGY --- [250 hrs]
(GENERAL, DEVELOPMENTAL, EXPERIMENTAL PSYCHOLOGY)

Course Objectives:

The student will be able to fulfil with 75 % accuracy (as measured by written evaluation) the following objectives: -

- Give outline of fields of Psychology & various schools of thoughts.
- Describe nature of attention & perception, form perception, depth perception, constancy, movement, plasticity & individual differences in perception.
- Describe physiology & theories of emotion.
- Explain types of stresses, stress cycles & coping with stresses.
- Describe theories of motivation, different types of motives, sources of conflict.
- Describe theories of personality & enumerate types of assessments of personality.
- Define learning & basic principles of human learning.
- Explain what is thinking process, concepts, problem solving, decision making, creative thinking.
- Explain the nature of language communication.
- Discuss nature & theories of intelligence, individual differences & enumerate types of assessments of intelligence.
- Explain theories of memory, short term & long term memory, forgetting, amnesia, methods of improving memory.
- Describe developmental theories in brief.
- Describe physical, intellectual, personality, social development in Infancy, Early Childhood, Middle Childhood, Adolescence, Adulthood.
- Explain the various aspects of old age & issues of death & dying.
- Explain mechanics of brain & carry out basic neuro-psychological experiments on sensory system.
- Review & carry out experiments on learning & retention, memory, perception, emotion, motor behaviour & reaction time, motivation & rewards, attention.

Course Contents:

General Psychology

- Fields of Psychology, Schools of thoughts.
- Perception.
- Feeling & Emotion & Stress.
- Motivation, conflict & adjustment.
- Perception - Sensory basis of perception.
- Personality.
- Basic principles of human learning.
- Thinking.
- Communication & Language.
- Intelligence.
- Memory & retention.

Developmental Psychology

- Developmental theories.
- Infancy.
- The early childhood.
- The middle childhood.
- Puberty - Physiological & Psychological changes.
- The adolescent state.
- Adulthood.
- Old age.

Experimental Psychology

- Mechanics of brain & neuropsychological experiments on sensory system.
- Review of literature of experiments on learning & retention, memory, perception, emotion, motor behaviour & reaction time, motivation & rewards, attention.

Recommended Books:

- Morgan CT, King RA, Weijz JR, Schopler J.
- Introduction to Psychology, 7th edn (Tata McGraw Hill Publishing Co. Ltd) by Papalia DE, Olds SW.
- Human Development, 5th edn (Tata McGraw Hill Publishing Co. Ltd.) by Munn NL.
- Introduction to Psychology, (Premium Oxford, I.B.P. Publishing Co.) by Parameshwaran EG & Ravichandra K.
- Experimental Psychology : A Laboratory Manual, 1st edn) (Seema Publications, Delhi) by Munn Julia (ed)
- Laboratory Psychology : A Beginner's Guide (Psychology Press Ltd, East Sussex, U.K.)

ERGOTHERAPEUTICS-I --- [330 hrs]

Course Objectives:

The student will be able to fulfil with 75% accuracy the following objectives of the course: -

- Describe the three Newton's Laws of motion with examples, Definition of force, enumerate types of forces & their characteristics, explain composition and resolution of forces with examples, Describe static and dynamic equilibrium with examples, Describe friction and it's practical application in the human body.
- Explain the concepts of kinematics.
- Classify levers and explain the physiological significance of negative mechanical advantage.
- Analyse the motion at hip joint, outline the forces during single leg and double leg stance and the factors affecting it and state briefly the effect of use of cane on hip joint forces.
- Analyse the motion at knee joint, outline the forces acting at knee and the biomechanics of patello-femoral joint.
- Analyse the motion at ankle and subtalar joint, outline the forces acting at the ankle joint, state the stability achieved & describe the arches of foot.
- Briefly explain the normal human gait cycle, its parameters, the myokinetics, and the common gait deviations.
- Define posture; explain the anatomical aspects of posture & the factors affecting posture.
- Describe biomechanics of shoulder joint with respect to motion, articular surfaces muscles, ligaments, other joints contributing to the shoulder girdle complex.
- Describe the biomechanics of the elbow joint with respect to it's motion, the articular surfaces, ligaments and muscles, define carrying angle, describe biomechanics of the radio ulnar joint.
- Describe the articular complex at the wrist, the movements occurring, the ligaments, and muscles acting at the wrist, Enumerate the various joints of the hand, Describe the muscles and hand functions.
- Define vicarious movements, explain different types with examples and Describe the same in various nerve injuries.

Course Contents:

Biomechanics

i) Essential concepts
   - Motion and forces, Force distribution - linear force, resultant force & equilibrium, parallel forces in one plane.
   - Newton's laws - Gravity and its effects on human body
   - Moments
   - Forces and moments in action
   - Concepts of static equilibrium and dynamic equilibrium
   - Composition and resolution of forces
   - Friction

ii) Kinematic concepts

iii) Kinetic aspects of limb movement
   - Classification of levers
   - Physiological significance of negative mechanical advantage
   - Muscle function and performance

iv) Lower Extremity Kinematics
   - Hip and thigh
   - Hip joint motion and forces of hip joint
   - Two leg stances and one leg stances
   - Varus and valgus of femoral neck
   - Other factors affecting hip joint forces
   - Effect of cane by lever approach

v) Knee and leg kinematics

- Motion of knee joint
- Forces of knee joint
- Patellofemoral joint
- Ankle and foot Kinematics
- Motion of ankle
- Forces of ankle joint
- Stability of ankle joint
- Weight bearing on foot
- Arches of foot

vi) Biomechanics of gait

- Gait cycle
- Parameters of gait
- Myokinetics of human gait
- Gait deviations
- Crutch and cane exercises

vii) Posture

- Anatomical aspects of posture
- Factors affecting posture
- Biomechanics of Upper Extremity
- Shoulder Joint
- Elbow Joint
- Wrist Joint & Hand
- Vicarious movement

Recommended Books:

- Willard & Spackman's Occupational Therapy by Helen L Hopkins & Helen D Smith.
- An introduction to Occupational Therapy by Anne Turner.
- Occupational Therapy for Physical Dysfunction by Lorraine Williams Pedretti.
- Occupational Therapy for Physical Dysfunction by CA Trombly.
- Joint Structure & Function - A Comprehensive Analysis by CC Norkin, PK Levangie.

ERGOTHERAPEUTICS – II --- [330 hrs]

Course Objective:

The student will able to fulfil with 75% accuracy the following objectives of the course:

- Describe the theory of spatiotemporal adaptation and explain in brief the assumption on which the theory is based, illustrate & explain the SMS integrative process, In brief differentiate between reflexes and reactions, Enumerate the different phases of reflex & / or reaction development & elaborate upon any one of them with examples, Explain the importance of stability & mobility in human development.
- Enumerate the learning theories and briefly explain all the theories,
- Explain various sensory - motor approaches which are based on neurophysiological principles.
- Classify hand functions & describe tests for functional evaluation of hand & objective methods of evaluating grip, pinch & Oedema, Enumerate the subtests of hand function tests & its relevance to Occupational Therapy.
- Define functional bracing, enumerate the objectives & principles of functional bracing, explain importance of functional bracing in healing of fractures & its advantages over conventional bracing, Enumerate different materials used in functional bracing.
- Define play therapy, Briefly explain the different functions of play, Explain the basis of theories of play, Briefly outline the role of play in Occupational Therapy treatment process.

Course Contents:

i)
- Human Development Process
- Posture and movements
- Spatiotemporal adaptation
- Sensory - motor - sensory Integration
- Reflex and reaction maturation
- Stability & mobility development
- Theories: Learning Theory, Behavioural Theory, Social learning Theory, Maturation Theory of Arnold Gesell, Psychoanalytic theory of Freud , Erik Erikson, Cognitive Theory of Jean Piaget Humanistic self Theory

ii) Ethology: Overview of Sensory - motor approaches, Rood's approaches, Bobath approach, Brunnstom's approaches, Sensory integrative approach, Motor Relearning Program.

iii) Evaluation assessment of hand, Functional Tests- Jebson Taylor, Crawford Dexterity test, Purdue Peg board, MRMT.

iv) Functional bracing, Definition, concept of F.B., Factors to consider while using functional bracing, Objectives, Fracture healing use of F.B., Material used, Advantages over the conventional bracing

v) Play Therapy, Functions of Play, Social, Physical, Sensory, Emotional, Perceptual, Cognitive, Content and structure of play, Theories of play, E. Erikson, Freud, J. Piaget, Reilly, Role of play in Occupational Therapy process.

Recommended Books:

- Willard & Spackman's Occupational Therapy by Helen L Hopkins & Helen D Smith.
- An Introduction to Occupational Therapy by Anne Turner
- Occupational Therapy for Physical Dysfunction by Lorraine Williams Pedretti
- Occupational Therapy for Physical Dysfunction by CA Trombly.

SCHEME OF EXAMINATION

1. **Pharmacology** – Total Marks = 50
   Theory = 50 Marks, (University Exam 40 marks + I. A. 10 marks)
2. **Pathology and Microbiology** – Total Marks = 100
   Section – I: – Pathology Theory = 50 Marks, (University Exam 40 marks + I. A. 10 marks)
   Section – II: – Microbiology Theory = 50 Marks, (University Exam 40 marks + I. A. 10 marks)
3. **Psychology** – Total Marks = 100
   Theory = 100 Marks, (University Exam 80 marks + I. A. 20 marks)
4. **Ergotherapeutics - I** – Total Marks = 200
   Theory = 100 Marks, (University Exam 80 marks + I. A. 20 marks)
   Practical = 100 Marks, (University Exam 80 marks + I. A. 20 marks)
5. **Ergotherapeutics - II** – Total Marks = 200
   Theory = 100 Marks, (University Exam 80 marks + I. A. 20 marks)
   Practical = 100 Marks, (University Exam 80 marks + I. A. 20 marks)

a) Scheme of Exam to be conducted out of 80 marks (Theory) as follows:

Duration of paper 3 Hrs.
Section-A: M.C.Q: Q-1] Single best response [1 X 20] ---------- 20 marks
Section-B: L.A.Q: Q-2] One question ---------- 15 marks
Q-3] One question ---------- 15marks
OR
Q-4] One question ---------- 15 marks
Section-C: S.A.Q: Q-5] Short notes-Any Three out of Four [3 X 5] -- 15 marks
Q-6] Short notes-Any Five out of Six [5 X 3] ------ 15marks

b) Scheme of Exam to be conducted out of 40 marks (Theory) as follows:

Section-A: M.C.Q: Q-1] Single best response [1 X 10] ---------- 10 marks
Section-B: L.A.Q: Q-2] One question ---------- 15 marks
OR
Q-3] One question ---------- 15 marks
Alternately: Answer Any One out of Two Sub-questions --------- 08 marks
Answer Any One out of Two Sub-questions --------- 07 marks
Section-C: S.A.Q: Short notes-Any Three out of Four [3 X 5] ----------15 marks

SCHEME OF EXAMINATIONS (Practical)

1. **Ergotherapeutics - I** – Total Marks = 100

   Practical = 100 Marks, (University Exam 80 marks + I. A. 20 marks)

   The distribution of marks for university exam shall be as follows:

Topics		**Marks**
A. R.O.M. assessment	20	
B. Individual muscle testing		20
C. Gait analysis	20	
D. Viva Voce		20
Total		**80**

2. **Ergotherapeutics – II** – Total Marks = 100

   Practical = 100 Marks, (University Exam 80 marks + I. A. 20 marks)

   The distribution of marks for university exam shall be as follows:

Topics		**Marks**
A. Splints Fabrication	20	
B. Adaptive devices Fabrication	20	
C. Hand function tests	20	
D. Viva Voce		20
Total		**80**

SCHEME OF EXAMINATION II B.O.Th.

Subject	**Theory**	**IA**	**Total**	**Practical**	**IA**	**Total**
PHARMACOLOGY	40	10	050			
PATHOLOGY AND – Section – I -	40	10	050			
MICROBIOLOGY --- Section - II --	40	10	050			
PSYCHOLOGY	80	20	100			
ERGOTHERAPEUTICS-I	80	20	100	80	20	100
ERGOTHERAPEUTICS-II	80	20	100	80	20	100

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES

FACULTY OF ALLIED HEALTH SCIENCES

SYLLABUS OF

III B.O.Th.

[This syllabus is applicable from 2003-2004 i.e. from the batch who gets admitted to the I-B.O.Th. course in the year – 2001-2002]

1. Medicine ----------160 HRS
2. Surgery ----------160 HRS
3. Psychiatry ----------085 HRS
4. Work Physiology & Ergonomics ----------075 HRS
5. Occupational therapy in Medical Conditions ----------150 HRS
6. Occupational therapy in Surgical Conditions ----------150 HRS
7. Supervised clinical practice ----------780 HRS

MEDICINE --- [160 hrs]

Course Objectives:

The students will be able to fulfill with 75% accuracy in the following objectives as measured by written evaluation. They should also be able to evaluate common medical conditions that are routinely seen by occupational therapist.

Section – I

Course Objectives:

1) Diseases of cardiovascular system
   - Describe ischeamic heart diseases their clinical features investigation and management
   - Explain management of hypertension
   - Describe rheumatic heart diseases with their clinical features investigation and management
   - Enumerate the cause of peripheral vascular disease and discuss its management
2) Diseases of endocrine system
   - Explain clinical features, investigations management and complication of diabetes
   - Explain in brief hyperthyroidism, hypothyroidism and hypopitutarism
3) Diseases of respiratory system
   - Describe the investigation and management of the following respiratory condition as bronchial asthma, bronchiectasis, pulmonary embolism, tuberculosis, lung abscess, emphysema, lobar pneumonia, pleurisy, and empyema.
4) Rhuematological diseases:
   - Describe the pathogenesis, clinical features, investigations, complications and brief outline of management of the following diseases:RA, Stills disease, and collagen vascular diseases.
5) Diseases of digestive system
   - Discuss the management of gastric and duodenal ulcers and haematemesis
6) Deficiency diseases
   - Describe the clinical features, investigation and management of rickets and protein deficiency.
7) Obesity
   - Describe the aetiology and management & complications in brief of obesity
8) Paediatrics.
   - Explain normal process of growth and immunization schedule, importance of breast-feeding, birth injuries, nutritional deficiency, genetic anomalies and their management

- Describe neuro-muscular, musculo-skeletal, & cardio-pulmonary conditions related to immunological conditions, nutritional deficiencies, infectious diseases, & genetically transmitted conditions.
- Describe the management principles of intensive neonatological and paediatrics care

9) Geriatrics
   - Describe the age-related problems in elderly and their management in health care and wellness clinics.
10) Dermatology:
   - Describe the clinical features, investigation and management of leprosy and HIV infections, in brief common skin infections: psoriasis and venereal diseases.
11) Nephrology:
   - Describe the clinical features, and management of acute and chronic renal failure, glomerular nephritis, and urinary tract infection
12) Haematology:
   - Describe the clinical features, and management of anaemias, haemophilia, thalassaemia, leukaemia, and Hodgkin's disease.

Course Contents:

1) Diseases of cardio-vascular system: Ischaemic Heart Disease, Hypertensive Heart Disease, Rheumatic Heart Disease, Thyrotoxic Heart Disease, Vascular Disease, Thrombosis, Embolism.
2) Diseases of Endocrine system: Emphasis on Diabetes mellitus - Definition, Diagnosis, classification & complications & management, outline of Hypopititutarism, Goitre, Hyperthyroidism & Hypothyroidism.
3) Diseases of Respiratory system: Diseases of lungs, Bronchi, Bronchial Asthma, Bronchiectasis, Pulmonary Embolism, Pulmonary Tuberculosis, Lung Abscess, Emphysema, Lobar pneumonia, Bronchopneumonia, Fibroid lung, Diseases of pleura-pleurisy, Emphysema.
4) Rheumatic Disease: Rheumatic fever. Rheumatoid Arthritis, still's disease - collagen Disease - aetiopathogenesis, clinical features, Complications, diagnosis and brief outline of the management.
5) Diseases of Digestive System: Gastric and Duodenal ulcers, haematemesis.
6) Deficiency Diseases: Rickets, protein deficiency.
7) Obesity - aetiology and management.
8) Paediatrics: Normal growth and development, immunization, breast feeding, Birth Injuries, C.N.S. involvement, nutritional deficiencies and associated systemic conditions, genetic anomalies, Intensive neonatological & paediatric care.
9) Geriatrics: Age related changes in human body & response, health care for elderly patients, wellness clinic.
10) Dermatology: Common skin infections, Psoriasis, Leprosy, Venereal disease & infections diseases HIV infections.
11) Nephrology: Acute and chronic renal failure, glomerular nephritis, urinary tract infection
12) Haematology: Anaemia, haemophilia, thalassaemia, leukaemia, Hodgkin's disease.

Books Recommended:

- API- Text book of Medicine 5th edition
- Golwalla's medicine for students
- Davidson Principles and Practice of medicine 16th Edition
- Essentials ofPaediatrics- by O. P. Ghai-Inter Print publications
- D.K. series in Paediatrics

Section II: Neurology

Course Objectives:

Describe the clinical features, investigation and management of the following neurology conditions:

1) Disorders of cerebral circulation (CVA)
2) Disorders of cerebellar function: infections, tumors and hereditary conditions of cerebellum.
3) Hereditary and degenerative disorders, cerebral atrophy, multiple sclerosis, motorneuron diseases, syringomyelia & spinabifida.
4) Disorders of higher cortical function with respect to lobes and hemisphere, neuropsychological evaluation and treatment.
5) Diseases of cranial nerves due to infections and entrapments and neuralgias, Disorders of nerve roots and peripheral nerves, polyneuropathies: Gullian Bare syndrome
6) Disorders of muscles: different types of muscular dystrophies.
7) Disorders of extrapyramidal system parkinsonism, athetosis, chorea hemiballismus.
9) Disorders of spinal cord and cauda equina mylopathies tumors and infections
10) Infections of nervous system: meningitis, encephalitis.
11) Epilepsy.

Course Contents:

1. Disorders of cerebral circulation.
2. Disorders of cerebellar function.
3. Hereditary and degenerative disorders.
4. Disorders of Higher Cerebral cortical function and behavioral neurology, Sp. areas of cerebral cortex, Neuro psychological syndromes, perceptions.
5. The Cranial Nerves & special senses.
6. Disorders of nerve roots & peripheral nerves.
7. Disorders of muscle
8. Movement Disorders (Extra pyramidal syndrome)
9. Disorders of spinal cord & cauda equina
10. Infections of Nervous system
11. Epilepsy

Books Recommended:

Disease of Nervous System Walton 9th edition

Clinical:

a) Evaluation, interpretation, presentation and recording of one case each in:-
i) Respiratory, ii) Cardiological, iii) Rheumatological Conditions.
b) Evaluation of neonatal / abnormal reflexes and examination of nervous system in paediatric cases.

SURGERY --- [160 hrs]

Course Objectives:

The student will be able to fulfill with 75% accuracy in the following objectives as measured by written evaluation. They should be able to evaluate common surgical conditions that are routinely seen by occupational therapist.

Section – I

Course Objectives:

a) General surgery

1) Describe classification of wound, stages of healing & their treatment
2) Describe importance of water-electrolyte balance in shock & hemorrhage & describe classification of shock in brief.
3) Describe acute & chronic infections of wound, their clinical features & complications with brief knowledge of their management.
4) Explain in brief pre & postoperative management & its importance
5) Describe in brief various surgeries of head & neck their indications, and complications.
6) Also explain indications for various surgeries of alimentary system & their post operative management.
7) Explain in brief surgeries of genitourinary system.
8) Explain causes of burns, various classifications, and their medical & surgical management with role of Burns rehabilitation team
9) Describe Indications & causes of amputation, criteria for selection of site of amputation & pre & post operative management
10) Explain in brief classification of tumours, clinical features & their pre & post operative management
11) Describe the etiological & anatomical classification of head injuries, their clinical features and management

b) Plastic surgery

1) Describe various Hand injuries, their surgical & post operative management with complications
2) Explain various skin grafts & flaps, their classification, criteria for selection & post operative management
3) Explain in brief various indications for cosmetic surgery, their preoperative surgical & post operative management
4) Describe in brief new techniques in microvascular surgeries their advantages & management

c) Neuro surgery

1) Describe common congenital and childhood disorders such as hydrocephalous, spina bifida their clinical features complications and their surgical management with post-operative care.
2) Describe first aid management of spinal cord injury and its importance and implications.
3) Classify and describe signs and symptoms of intra-cranial tumors

d) Cardiovascular and Thoracic surgery

Describe brief pathology, clinical features the indications, various operative procedures for surgery of cardiac and respiratory conditions and explain pre & post surgical management.

e) Describe problems of ear, nose throat and their management in brief.

f) Describe common opthalmological condition in brief &their management.

g) Evaluate common surgical condition that are routinely seen by occupational therapist

Course Contents:

a) General surgery

1) Wounds classification, healing process & principles of treatment.
2) Haemorrhage, shock water & Electrolyte imbalance.
3) Infectious: acute & chronic, signs, symptoms & complications.
4) Preoperative & post operative management
5) Head & neck, alimentary system, genito urinary system.
6) Burns: causes, classification & management.
7) Amputations: indications, site of election, management.
8) Tumours: classification & management.
9) Head injury: types, clinical features & management.

b) Plastic surgery

Hand injuries, skin grafts & flaps, classification, criteria for selection, indications for management of cosmetic surgery, micro vascular surgery.

c) Neuro surgery

1) Congenital & child hood disorders: Hydrocephalus, Spinabifida
2) First aid management of spinal cord injury.
3) Intracranial tumours: classification, signs & symptoms

d) Cardio vascular & thoracic surgery

Pathology, clinical features & criteria for surgical intervention of cardio-respiratory disorders, various operative procedures for surgery of cardiac & respiratory conditions, pre & post surgical management.

e) Common problems of ear, nose & throat & their management.

f) Common Opthalmological conditions & their management.

Clinical:

Students will have to undergo outdoor and indoor clinical teaching for surgical cases. They have to evaluate, present and record one case in each of following and obtain signature of teacher from time to time.

a) Burns, head injury, amputation, post-thoracic surgery, post-tendon transfers, post-hand injury cases.
b) Reading and interpretation of X-ray chest, P.F.T. Blood-gas analysis.
c) Observation of one abdominal, one thoracic surgery, one surgery of skin graft/flap

Books Recommended:

- Nan: Undergraduate Surgery
- Bailey & Love's Short practice of surgery 21st edition

Section II: <u>Orthopedics</u>

Course Objectives:

1) Describe the pathology clinical manifestations and the management of trauma of bones and soft tissues.
2) Describe the classification of fracture stages of fracture healing various types of management and their complications.
3) Explain various types of peripheral nerve injuries their clinical signs and surgical conservative management in detail.
4) Describe various deformities of spine and extremities, their clinical features, investigations and conservative surgical management with postoperative care.
5) Describe congenital conditions such as congenital dislocation of hip, CTEV etc. and describe its conservative and surgical management.
6) Explain reconstructive surgeries carried out in neuromuscular evolvement for successful rehabilitation and their postoperative management.
7) Enumerate infections and tumors of musculoskeletal system and explain their etiology clinical features surgical procedures and postoperative management.
8) Explain various etiological factors of backache, its clinical features, and conservative and surgical management. .

9) Explain classification of Arthritis, rheumatological conditions affecting musculoskeletal system, their clinical features, conservative and surgical management with importance of postoperative management.
10) To comprehend radiological examination, various techniques used in radiological examination and its use in diagnosis.

Course Contents:

1) Pathology, clinical manifestations, management of trauma of the bones & soft tissue involving musculoskeletal system.
2) Fractures - Classification, management, complications.
3) Peripheral nerve injuries & management.
4) Deformities of spine, extremities & management.
5) Congenital malformation & management.
6) Reconstructive surgeries for the rehabilitation of neuromuscular affection.
7) Infections & tumours of the musculoskeletal system & management.
8) Backache - Surgical management.
9) Arthritis & rheumatic disease & management.
10) Radiological evaluation and diagnosis.

Clinical:

Students will have to undergo outdoor and indoor clinical teaching for surgical cases.

a) They have to evaluate, present and record one case in each of following and obtain signature of teacher from time to time.
   Acute soft tissue lesion (including nerve injury)
   1) Degenerative arthritis of extremities
   3) Backache
   4) Post-operative fracture of extremities
   5) Traumatic paraplegia/quadriplegia
b) Observation of surgeries- Internal fixation, knee/hip replacement and reconstructive surgery of tendons.

Recommended Books:

- Adams Outline OF Fractures, 8th edition
- Outline Of Orthopaedics by Adams, 8th edition
- Orthopaedics by Dr Maheswari (2nd Revised edition)
- Orthopaedics by Dr L.N. Vora

PSYCHIATRY --- [85 hrs]

Course Objectives:

The student will be able to fulfill with 75% accuracy in the following objectives as measured by written evaluation. They should be able to evaluate common psychiatric conditions that are routinely seen by occupational therapist.

1) Explain purposes & types of classification of mental disorders.
2) Demonstrate techniques of psychiatric assessment viz. Interview & mental status examination.
3) Describe the etiological factors, symptoms, management of psychiatric conditions such as schizophrenic disorder (all types), brief psychotic disorder, delusional disorder, mood disorders conversion anxiety disorder, phobias, obsessive compulsive disorders, conversion dissociate reaction, substance related disorders, adjustment disorder, personality disorder, psychosomatic disorders, hypochondria's, psychosexual disorders, disorders of infancy, childhood & adolescence, eating elimination disorders, mental retardation, psychiatric emergencies – suicide.
4) Explain various treatment modalities & their indications viz. ECT, chemotherapy, group therapy, behavioural therapy, psychotherapy, cognitive behavioural therapy.

Course Contents:

1) Psychiatric history, mental status examination
2) Classification of mental disorders.
3) Schizophrenic disorders (all types), brief psychotic disorder, delusional disorder,
4) Schizoaffective disorder, post partum psychosis. Mood disorders, others affective disorders. Organic mental disorders, psychiatric aspects of aids.Anxiety disorders, phobia, obsessive compulsive, dissociative, conversion disorders, hypochondriasis, post traumatic stress disorders. Personality disorders. Substance related disorders. Adjustment & impulse control disorders. Psycho-sexual disorders. Psychological factors affecting medical conditions. (psychosomatic disorders) Psychiatric emergencies – suicide. Stress management. Disorders of infancy, childhood & adolescence. Disruptive behaviour disorders, conduct disorder. Attention deficit & hyperactivity disorder. Eating disorders, tic disorders elimination disorders. Affective disorders, child abuse, eneuresis.
5) Treatment: ECT, chemotherapy, group therapy, psychotherapy, cognitive behavioural therapy, behaviour therapy.

Recommended Books:

- Short Text Book of Psychiatry – Ahuja N.
- Handbook of Psychiatry – Shah L. P.
- Short Text Book of Psychiatry – Gandhi & Gandhi

WORK PHYSIOLOGY & ERGONOMICS --- [75 hrs]

Course Objectives:

The student will be able to fulfill with 75% accuracy in the following objectives as measured by written evaluation:-

Work Physiology:

1) Explain the nature of aerobic & anaerobic processes. Describe physiology of anaerobic exercises.
2) Explain evaluation of physical performance by using various tests of maximum aerobic power and anaerobic power.
3) Describe principles & methods of physical training.
4) Explain the concepts of energy expenditure at work, rest, leisure & fatigue.
5) Outline the effects of nutrition in physical performance capacity.
6) Explain the mechanism of temperature regulation.
7) Describe factors which affect physical performance.

Ergonomics:

1) Define & describe various areas of ergonomics.
2) Define Anthropometry & explain purpose, facets, principles in it's application.
3) Understand the types of environment their effect on human body
4) Explain Skill learning, stages involved, characteristics of well learnt task.
5) Describe functioning of man-machine system, information processing theory.
6) Explain the design of work space & work equipment.
7) Explain layout of equipment, design of seating & displays, characteristics of controls & their compatibility.
8) Briefly outline the effects of environmental factors such as temperature, humidity, noise, vibration, visual environment, pollution.
9) Briefly explain the safety factors, accidents & their prevention.
10) Define & underline the assumptions of fundamental philosophy of time & motion study. Explain the cycle of managerial control & its application.
11) Outline the steps involved in scientific methods of solving problem.
12) Enumerate methods of man-product analysis.
13) Explain scope of ergonomics in modern industrial society
14) Apply the principles of ergonomics in occupational therapy.
15) Skill psychology- Skill learning, stages involved characteristics of well-learnt task.
16) Time & motion study- definition, assumptions of fundamental philosophy of time & motion study, cycle of managerial control & its application, steps involved in scientific methods of solving problem.

Course Contents:

Work Physiology

1) Physical performance: Aerobic & anaerobic processes, physiology of aerobic and anaerobic exercises.
2) Evaluation of physical performance, tests of maximum aerobic power and anaerobic power, master step test tread mill bicycle ergometry, measurement of oxygen uptake.
3) Principles & methods of physical training.
4) Applied work physiology: energy expenditure at work, rest, leisure & fatigue.
5) Nutrition and physiology performance.
6) Temperature regulation.
7) Factors affecting performance.

Ergonomics

1) Definition & areas of ergonomics
2) Anthropometry- definition, facets, purpose and methods of carrying out studies, principles in application
3) Environmental physiology- types of environment their effect on human body
4) Man-machine oriented topics- functioning of man-machine system, information-processing theory.
5) Design of work space and work equipment.
6) Layout of equipment, design of seating, displays, characteristics of control & compatibility.
7) Environmental factors: temperature, humidity, noise, vibration, and visual environment pollution.
8) Safety factors- accidents and their prevention
9) Outline of methods of man-product analysis.
10) Scope of ergonomics in modern industrial society
11) Application of ergonomics in O.T.

Recommended Books:

- Astrand P.A., Rodahl K. Text book of work physiology (3rd edition.)
- Fitts P.M & Posner M.I. :Human performance (latest Ed.)
- Mural K.F. – Ergonomics : man in his working environment (latest Ed.)
- Mundel M.E. Motion & time study : principles & practices (4th Ed.)

O.T. IN MEDICAL CONDITIONS --- [150 hrs]

Course Objectives:

The student will be able to fulfill with 75% accuracy in the following objectives as measured by written, oral & clinical evaluation: -

1) Rheumatoid Arthritis: Define R.A., describe role of O.T in treatment of R.A. with assessment, explain in detail pathomechanics of hand deformities their prevention & splintage, describe rehabilitation in acute, subacute & chronic stage of R.A, explain joint protection techniques & their implication in R.A patients with work simplification & energy conservation techniques.
2) Gerontology: Describe biologic & psychological theories of aging, explain the interrelation of aging & disease & concepts of death & dying. Describe & understand O.T assessment in geriatrics
3) Dermatology: Define leprosy, Explain the psychosocial implications of leprosy & need for intervention by O.T, Describe O.T treatment in acute & chronic dermatological conditions
4) HIV: Describe the stages of infection, Define physical psychological & environmental needs of patient with HIV infection, Explain assessment processes & develop appropriate treatment planning
5) Pulmonary Conditions: Interpretation of pulmonary function tests and their application in rehabilitation. State general approach of O.T in Pulmonary conditions such as chronic bronchitis, bronchial asthama, emphysema, empyema, COPD, ILD, T.B., lung abscess, occupational lung diseases. Explain postural deviations after thoracic surgery & O.T. management, Assess functional performance- capacity to perform occupational activities including work, leisure and self-care. Energy conservation techniques and work assessment. and incorporate. Development of pulmonary endurance & work capacity.
6) Cardiac conditions: Describe clinical application of O.T. with respect to common cardiac conditions such as ischaemic heart diseases, acute myocardial infarction, hypertension, cardiac myopathies, congenital and acquired heart diseases, valvular diseases, and following interventions like CABG, angioplasties, valve replacements. Understand the clinical presentations with respect to physical findings, pathophysiology and investigative reports. Administer exercise protocols using modalities like treadmills, ergometers, step-equipments, Understanding applicatiton of exercise training effect for work,& activity, Interpret from exercise performance based on parametric evaluation- ECG and haemodynamic responses. Define METS & state its classification in brief. Explain work simplification & energy conservation techniques based on ergonomic principles & state use & application, Assess and prescribe work simulation techniques in cardiac dysfunctions. Understand & apply different components of work assessment in cardiac conditions.
7) Haematological conditions: Explain the term haemophilia & terminal illness, Describe its physical &psychological implications & O.T. management

Course Contents:

1) Rheumatoid Arthritis: Definition, O.T treatment in R.A., pathomechanics of hand deformities, rehabilitation of R.A in Acute stage, rehabilitation of R.A in subacute stage, rehabilitation of R.A in chronic stage, joint protection techniques, work simplification techniques.
2) Gerontology: Theories of ageing, ageing & disease, death & dying, O.T treatment in gerontology.
3) Dermatology: Leprosy, O.T in acute & chronic dermatological conditions with psychosocial implications
4) HIV: Stages of infection, physical psychological & environmental consideration, O.T assessment & treatment.
5) Pulmonary conditions: - Chronic bronchitis, bronchial asthma, emphysema , empyema, COPD, ILD, T.B., lung abscess, occupational lung diseases, thoracic surgeries, related postural deviations and their correction, Assessment, Interpretation of pulmonary function tests and their application in rehabilitation. Therapeutic intervention - Assessment of functional performance capacity to perform occupational activities including work, leisure and self-care. Energy conservation techniques and work assessment. Development on pulmonary endurance & physical work capacity.
6) Cardiac conditions: - Intervention in acute, convalescent and late phases of cardiac illnesses such as ischaemic heart diseases, acute myocardial infarction, hypertension, cardiac

myopathies, congenital and acquired heart diseases, valvular diseases, and following interventions like CABG, angioplasties, valve replacements. Categorisation of cardiac patients on the basis of risk factors for exercise prescription. Indications and contra-indications for , work prescription, & activity, Cardiac conditioning using treadmill, ergo metre, step-apparatus, Interpretation of signs and symptoms during work assessment, Effects of drugs on exercise performance, Modification of work and activity programmes with respect to residual cardiac function, Assessment on work simulation, Work simplification & energy conservation techniques based on ergonomic, principles, their uses & application

7) Haematological conditions: O.T. in Haemophilia and terminal illnesses.

Recommended Books:

1) Occupational Therapy - Willard & Spackman's - 8th edition
2) O.T. Practise Skills for Physical Dysfunction – Pedretti 4th edition.
3) O.T. in physical Dysfunction - Scott 4th edition.
4) McDonald 4th edition
5) Therapeutic Exercise – Basmajian 5th edition
6) Rehab Medicine - Goodgold
7) Rehabilitation of Hand - Wynn & Parry.
8) Hand Hunter
9) Hand splinting – Fess
10) O.T. & physical dysfunction – Ann Turner 4th edition.

O.T. IN SURGICAL CONDITIONS --- [150 hrs]

Course Objectives:

The student will be able to fulfill with 75% accuracy in the following objectives as measured by written, oral & clinical evaluation:-

1) Burns: Define the term "Burns", classify burns depending on various aspect, describe stages of burns, explain role of O.T. in burns patients including assessment, describe O.T. treatment in pregraft, postgraft & rehab phase.
2) Amputation: Define amputation & state an etiology in brief, briefly state surgical management, explain special considerations & problems encountered after amputation, advise various ways of psychological adjustment in this problem, describe various levels of amputation & suggest functional prosthetic components or accessories, describe pre & post-prosthetic training program.
3) Tendon injuries: Flexor & extensor tendon injury, state aetiology in brief, explain various surgical procedures in brief, describe O.T. treatment & splintage.
4) Crush Injuries of Hand: Assess using various tests for evaluation of hand functions, grip, pinch, oedema, sensory examination. Enumerate causes & describe pre & post operative management of tendon & nerve injuries & their repair & describe various types of splints made. Describe various types of splint made with their uses in different conditions.
5) Cancer rehabilitation: Describe preventive, restorative, supportive and palliative aspects in radical masectomy and head and neck cancer. Explain the concept of hospice, family systems and the need for treatment of the family as the unit of care.
6) Vascular Condition: Explain peripheral vascular diseases their complications & role of O.T. in their management
7) Occupational Therapy in Blind: Describe the role that the senses play in person's life & in the process of rehabilitation, define the term blindness, refute common misconception about blindness, describe the emotional physical & psychological needs of blind person, explain preventive measures.
8) Occupational therapy in deaf, dumb and other ENT conditions, Explain development of auditory perception, define and classify deafness, enumerate causes of deafness, types of hearing aids, communication skills, facilities for the deaf-mute, functional and vocational rehabilitation, explain preventive measures, describe vestibular affectations and re-training.

Course Contents:

1) Burns: Definition, classification, stages of burns, OT. in burns, pre-graft treatment, post-graft, treatment, rehabilitation of burns.
2) Amputation: Aetiology, surgical management, special consideration & problems, psychological adjustment, levels of amputation, accessories & component parts of prosthesis, upper & lower extremity prosthetic training program.
3) Tendon Injuries: Aetiology, Surgical Treatment, O.T. Treatment
4) Crush injuries of hand, tendon & nerve injuries & their reconstruction, pre & post operative management in OT & splinting
5) Cancer rehabilitation: Preventive, restorative, supportive and palliative aspects of radical masectomy, head and neck cancer. Hospice care.
6) Vascular Conditions: Peripheral vascular diseases and O.T.
7) Occupational Therapy in blind:Definition and Classification, mobility techniques, communication, skills, sensory re-education, emotional and psychological aspects of blindness, facilities for blind, prevention of blindness
8) Occupational Therapy in deaf , dumb, and other ENT conditions: Definition and classification, communication skills, types and uses of hearing aids, emotional and psychological aspects, facilities for deaf, prevention of deafness, vestibular affectations and re-training.

Recommended Books:

1) Occupational Therapy - Willard & Speckeman 8th edition
2) O.T. Practise Skills for Physical Dysfunction – Pedretti 4th edition.
3) O.T. in physical Dysfunction - Scott 4th edition.
4) McDonald 4th edition
5) Therapeutic Exercise – Basmajian 5th edition
6) Rehab Medicine - Goodgold
7) Rehabilitation of Hand - Wynn & Parry.
8) Hand Hunter
9) Hand splinting – Fess
10) O.T. & physical dysfunction – Ann Turner 4th edition

SCHEME OF EXAMINATION (Theory all Subject)

1) **Medicine: -** Total Marks – 100.
   Section – I: General Medical Conditions = 50 Marks (University Exam 40 + I. A. 10 marks)
   Section – II: Neurology = 50 Marks (University Exam 40 + I. A. 10 marks)
2) **Surgery: -** Total Marks – 100.
   Section – I: General Surgery = 50 Marks, (University Exam 40 marks + I. A. 10 marks)
   Section – II: Orthopaedics = 50 Marks, (University Exam 40 marks + I. A. 10 marks)
3) **Psychiatry: -** Total marks – 50.
   Theory = 50 Marks, (University Exam 40 marks + Internal Assessment 10 marks)
4) **Work Physiology and Ergonomics:** - Total Marks – 50.
   Theory = 50 Marks, (University Exam 40 marks + Internal Assessment 10 marks)
5) **Occupational Therapy in Medical Conditions: -** Total Marks – 100.
   Theory = 100 Marks, (University Exam 80 marks + Internal Assessment 20 marks)
6) **Occupational Therapy in Surgical Conditions: -** Total Marks – 100.
   Theory = 100 Marks, (University Exam 80 marks + Internal Assessment 20 marks)

A) Distribution of maximum marks for the subject having 100 marks shall be as follows:
University Exam 80 Marks, Internal Assessment 20 Marks

Scheme of Exam to be conducted out of 80 Marks (Theory) as follows:

Section-A: M.C.Q: Single best response ----- [1 X 20] ------ 20 marks
Section-B: L.A.Q: 1) One question ---------- 15 marks
L.A.Q.-2) One question ---------- 15 marks

OR

L.A.Q.- One question ---------- 15 marks
Section-C: S.A.Q.-Short notes Three out of Four [3 X 5] --- 15 marks

And

S.A.Q.- Short notes Five out of Six [5 X 3] ------ 15 marks

B) Distribution of maximum marks for each subject/section having 50 marks shall be as follows:
University Exam 40 Marks, Internal Assessment 10 Marks

Scheme of Exam to be conducted out of 40 Marks (Theory) as follows:

Section-A: M.C.Q: Single best response [1 X 10] ---------- 10 marks
Section-B: L.A.Q. One long question ---------- 15 marks
Section-C: S.A.Q.- Short notes Three out of Four [3 X 5] -- 15 marks

SCHEME OF EXAMINATION (Clinical Only)

1) **Occupational Therapy in Medical Condition: -** Total Marks - 100
University Exam 80 Marks + Internal Assessment 20 Marks

2) **Occupational Therapy in Surgical Condition**: - Total Marks - 100
University Exam 80 Marks + Internal Assessment 20 Marks

Scheme of Exam to be conducted out of 80 Marks (Clinical) as follows:

One long case:	40 Marks
One short case:	20 Marks
Viva Voice:	20 Marks

Long case to include evaluation, treatment & future planning of a single patient.
Short case to include evaluation of a single patient.

SCHEME OF EXAMINATION III B.O.Th

Subject	Theory	IA	Total	Practical	IA	Total
Medicine: - Total - 100 Marks						
a) Gen. Med. Conditions-Section-I--	40	10	050			
b) Neurology----------Section-II--	40	10	050			
Surgery: - Total - 100 Marks						
a) Gen. Surgery - Section-I---	40	10	050			
b) Orthopaedics -Section-II----------	40	10	050			
Psychiatry	40	10	050			
Work Physiology & Ergonomics	40	10	050			
OT in Medical Conditions	80	20	100	80	20	100
OT in Surgical Conditions	80	20	100	80	20	100

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES

FACULTY OF ALLIED HEALTH SCIENCES

SYLLABUS OF

IV B.O.Th.

[This syllabus is applicable from 2004-2005 i.e. from the batch who gets admitted to the IV - B.O.Th course in the year 2001-2002 batches.]

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1. ADVANCES IN OCCUPATIONAL THERAPY ---------- 100 HRS
2. OCCUPATIONAL THERAPY IN ORTHOPAEDIC CONDITIONS ---------- 150 HRS
3. OCCUPATIONAL THERAPY IN NEUROLOGICAL AND DEVELOPMENTAL CONDITIONS --- 150 HRS
4. OCCUPATIONAL THERAPY IN PSYCHIATRIC CONDITIONS ----------150 HRS
5. COMMUNITY BASED OCCUPATIONAL THERAPY AND REHABILITATION ----------100 HRS
6. BIOSTASTICS AND RESEARCH METHODOLOGY ---------- 075 HRS
7. SUPERVISED CLINICAL PRACTISE ---------- 835 HRS

ADVANCES IN OCCUPATIONAL THERAPY AND REHABILITATION --- [100 hrs]

Course Objectives:

At the end of 4th year student will be able to fulfill with 75% accuracy in the following objectives as measured by written evaluation:

1. Appreciate and apply social legislation as far as it is relevant to the disability and their rights.
2. Understand and use
3. Identify the issues of communication, purposes and guidelines of documentation, components of a 'SOAP' note, uses of ICIDH codes.
4. Discuss quality assurance as a method for evaluating program delivery and outcome and apply steps of program evaluation to occupational services.
5. Define environment, identify components of human and non-human environments, understand the science of psychology & apply these concepts to the practice of occupational therapy.
6. List potential sources & product lines of referral for an industrial rehabilitation program, classify work levels, and explain industrial rehabilitation service, vocational evaluation & rehabilitation.
7. Explain hospice & family systems and the need for treatment of the family as the unit of care.
8. Describe home care delivery model and its implementation, parameters of home care delivery service-the patient, environment & caregiver, skills required for effective practice, constraints, influence of various issues that shape home care practice, role of practitioner in private practice.
9. Identify common strands of computer application in occupational therapy evaluation. Identify domains of treatment in occupational therapy where computer applications can be implemented. Explain the criteria for selection of software.
10. Explain the stress factors, stress response, techniques of stress management.
11. Define sexuality, list sexuality developmental milestones & response cycle. Explain role of nervous system in sexual functions, how nervous, cardiac & pulmonary dysfunctions affect sexual functioning, levels & formats provided to patients regarding sexual counseling appropriate to occupational therapy.
12. Define biofeedback, describe biofeedback instrumentation,

Course Contents:

1. Ethics in Occupational Therapy - key terms in ethical issues, ethical jurisdiction of the standards and code of ethics of All India O. T. Association, current ethical dilemmas in occupational therapy, issues and conflicts involved and solutions to the dilemmas.
2. Documentation in O.T. issues of communication, purposes and guidelines of documentation, components of a 'SOAP' note, uses of ICIDH codes.
3. Quality Assurance as a method for evaluating program delivery and outcome, application to occupational therapy services.
4. The human and non-human environments and the occupational therapy process- Definition of environment, components of human and non-human environments, science of environmental psychology & application to practice of occupational therapy.
5. Industrial Rehabilitation potential sources & product lines of referral for an industrial rehabilitation program, classification of work levels, industrial rehabilitation service, vocational evaluation & rehabilitation.
6. Disability evaluation and Social legislation- Definition of 'Person with disability', disability evaluation and certification in India, 'The Indian Disability Act'.
7. Environments of care- hospice
8. Home Care and Private practice- Home care delivery model, its implementation, parameters of home care, delivery service, skills required for effective practice, constraints, influence of various issues that shape home care practice, role of practitioner in private practice.
9. Computer and video technology application in occupational therapy-Use of computers as a tool in clinical implementation, soft-ware selection-criteria and method, strategies and methods of clinical implementation in motor, sensory, cognitive, ADL, affective domain.
10. Stress management- stress factors, stress response, techniques in stress management.
11. Introduction to human sexuality in relation to disability management in O.T.- Definition of sexuality, sexuality developmental milestones & response cycle, role of nervous system in sexual functions, effect of nervous, cardiac & pulmonary dysfunctions on sexual functioning, levels & formats provided to patients regarding sexual counseling appropriate to occupational therapy.
12. Biofeedback as an adjunct to O.T. - Definition, instrumentation,

Recommended Books:

1. Occupational Therapy practice Skills for Physical Dysfunction – Lorraine Pedreti, Barbara Zoltan, 3rd, 4th Edn.
2. Occupational Therapy for Physical Dysfucntions – Trombly, 3rd and 4th Edn.
3. Willard and Spackman's Occupational Therapy – Helen Hopkins and Smith.H.

OCCUPATIONAL THERAPY IN ORTHOPAEDIC CONDITIONS --- [150 hrs]

Course Objectives:

At the end of 4th year student will be able to fulfill with 75% accuracy in the following objectives as measured by written, oral and clinical evaluation:

Course Contents:

1. Orthopaedic clinical evaluation and treatment.
2. O.T. for fractures of upper and lower limbs, management of complications, internal fixation, external fixation, excision and replacement arthroplasty.
3. Injuries at and around joints of upper and lower extremity, arthroscopic and surgical intervention O.T. treatment.
4. Occupational Therapy management of Erb's Palsy, brachial plexus palsy and peripheral nerve injuries.
5. Injuries and pathological conditions of vertebral column and spinal cord, spinal orthosis and O.T. Management.
6. Poliomyelitis and cerebral palsy. Reconstructive surgeries including limb lengthening procedures and orthotic mangement.
7. Arthritis, Surgical and rehabilitation programme. .
8. Cumulative trauma disorder and application of ergonomic principles in management of orthopaedic condition.
9. Metabolic disease of bone like Rickets, Osteomalacia, Osteoporosis, gout, and O.T. Management.

Recommended Books:

1. Occupational Therapy practice skills for physical dysfunction – Lorraine Pedretti, Barbara Zoltan. 3rd and 4th Edn.
2. Occupational Therapy for Physical Dysfunctions – Trombly, 3rd and 4th Edn.
3. Occupational Therapy and Physical Dysfunctions – Principles, Skills and Practice – Ann Turner, Foster, Johnson – 4th Edn.
4. Therapeutic exercise – Foundations and Techniques – Kisher/Colby-3rd Edn.
5. Therapeutic Exercise – Basmajiian – 5th Edn.

OCCUPATIONAL THERAPY IN NEUROLOGICAL AND DEVELOPMENTAL CONDITIONS --- [150 hrs]

Course Objectives:

At the end of 4th year student will be able to fulfill with 75% accuracy in the following objectives as measured by written, oral and clinical evaluation:

1. Practically apply basic principles of Neurophysiological theories to the evaluation and treatment of neurological conditions such as stroke, traumatic head injury, brain tumors, cortical lesions, Parkinson's disease, chorea, Athetosis, Cerebellar ataxia, Multiple Sclerosis, Motor Neurone Disease, Brain functions, Human Immuno-deficinety virus. Syringomyelia, Transverse myelitis, Tabes dorsalis, spinal cord tumours, Peripheral neuropathies, Myopathy, Myasthenia gravis, Cerebral palsy, neural tube defects.
2. Understand normal physiology of swallowing, describe disease process resulting into dysphagia, state guidelines for assessment & treatment of patients with dysphagia.
3. Demonstrate appropriate evaluation procedure and neurophysiological technique for patients with conditions commonly referred from neurology.
4. Analyse and apply therapeutic activities using neuro-developmental, sensory integrative and neuro-physiological approaches appropriately.
5. Discus Psychological factors affecting selection of treatment media.
6. Outline the principles and goals in design, indications and fitting of hand splints, prostheses, calipers, other orthoses.
7. Identity areas of abnormal and delayed development in children from birth to 5 yrs.
8. Outline the principles and goals in therapeutic approaches and techniques in the treatment plan appropriate to a child's condition and stage of development.

Course Contents:

1. Neurophysiological principles applied to therapeutic procedures in the treatment of pyramidal, extrapyramidal, cerebellar and lower motor neuron lesions.
2. Current neurophysiological theories and their application in O.T. in the various neurological problems in children, adolescents and adults including defects and Injuries to the brain and spinal cord.
3. Cognitomotor perceptual skills: Evaluation, Scales used, training and models of cognitive rehabilitation.
4. Preventive, curative and rehabilitative Occupational Therapy for common neurological conditions, such as stroke, traumatic head injury, brain tumors, cortical lesions, Parkinson's disease, chorea, Athetosis, Cerebellar ataxia, Multiple Sclerosis, Motor Neurone Disease, Brain functions, Human Immuno-deficinety virus. Syringomyelia, Transverse myelitis, Tabes dorsalis, spinal cord tumours, Peripheral neuropathies, Myopathy, Myasthenia gravis.
5. Management of dysphagia normal physiology of swallowing, describe disease process resulting into dysphagia, state guidelines for assessment & treatment of patients with dysphagia.
6. Occupational Therapy for Developmental Disabilities:
   i. Occupational Therapy with neonates and infants.
   ii. Cerebral Palsy: Classification, aetiology and O.T. approaches including neurodevelopmental therapy, preschool training, O.T. in the school system, Home Care Programme.
   iii. Common Genetic Disorders: Neural Tube Defects.
   iv. Sensory Integrative therapy.

Recommended Books:

1. Occupational Therapy practice skills for physical dysfunction – Lorraine Pedretti, Barbara Zoltan. 3rd and 4th Edn.
2. Occupational Therapy for Physical Dysfunctions – Trombly, 3rd and 4th Edn.
3. Occupational Therapy and Physical Dysfunctions – Principles, Skills and Practice – Ann Turner, Foster, Johnson – 4th Edn.

OCCUPATIONAL THERAPY IN PSYCHIATRIC CONDITIONS --- [150 hrs]

Course Objectives:

At the end of 4th year student will be able to fulfill with 75% accuracy in the following objectives as measured by written, oral and clinical evaluation:

1. Describe frames of references used in mental health with reference to Occupational Therapy.
2. Explain and formulate the general and specific objectives of Occupational Therapy.
3. Enumerate and select appropriate assessment tools from variety of instruments available for evaluation of psychiatric patients. In addition the student will be able to evaluate the patients commonly referred from psychiatry.
4. Analyse activities and prescribe activities for psychiatric patients.
5. Describe various types of therapeutic media and their application in Psychiatric Occupational Therapy such as behaviour therapy, projective techniques, industrial therapy, Social skills training, group therapy, art therapy, Sensory Integrative therapy, recent advances.
6. Describe & demonstrate current practices used in assessment; treatment planning and implementation, in acute care and long term management of schizophrenic disorders, mood disorders, dementia, generalized anxiety disorders, phobias, conversion and dissociative reactions, obsessive compulsive disorders, substance related disorders, Psychiatric aspects of AIDS, seizure disorders, psychosomatic and personality, disorders, eating disorders, learning disorders, mental retardation and autism.
7. Outline the role of Occupational Therapy as a team member in various psychiatric setups such as therapeutic community, half way homes, day care centers, sheltered workshops, mental institutes psychiatric units of acute care hospitals, child guidance clinics.

Course Contents:

1. Theoretic basis of Occupational Therapy – Frames of references used in Psychiatric Occupational Therapy.
2. General and Specific objectives and prescription of psychiatric Occupational Therapy.
3. Methods of evaluation of psychiatric patient in Occupational Therapy.
4. Activity analysis, meaning of and therapeutic utilization of activities in psychiatric Occupational Therapy.
5. Types of therapeutic media used in psychiatric Occupational Therapy, Behaviour therapy, projective techniques, Industrial activities, arts and creative activities, social skills training, group therapy, Sensory Integrative Therapy, recent advances.
6. Long term and short term Occupational Therapy intervention based on current practices –
   a. Schizophrenic disorders.
   b. Mood disorder
   c. Dementia
   d. Generalised anxiety disorders and Phobias.
   e. Conversion and dissociative reaction
   f. Obsessive compulsive disorders.
   g. Substance related disorders.
   h. Psychiatric aspects of AIDS.
   i. Seizure disorders.
   j. Psychosomatic and personality disorders.
   k. Eating disorders.
   l. Mental retardation.
   m. Learning disorders.
   n. Autism
7. Role of Occupational Therapists as a team member in – Therapeutic community, half way homes, day care centers, sheltered workshops, mental institutes, psychiatric unit of acute care hospitals child guidance clinic.

Recommended Books:

1. H.Hopkins & H. Smiths -Willard and Spackman's Occupational Therapy : 8th edn.
2. M. Wilson - Occupational Therapy in Short Term Psychiatry – 3rd Edn.
3. M. Wilson - Occupational Therapy in Long Term Psychiatry –3rd Edn.
4. G.S. Fidler and J.W. Fidler – Occupational Therapy a communication process. (1st Edn.)
5. K. Reed – Quick reference to Occupational Therapy (Latest)

COMMUNITY BASED OCCUPATIONAL THERAPY & REHABILITATION
[100 hrs]

Course Objectives:

At the end of 4th year student will be able to fulfill with 75% accuracy in the following objectives as measured by written evaluation:

1. CBR:
   - define CBR and explain its MODELS.
   - know how to start a CBR program
   - clearly understand the role of O.T and the contributions of other health professionals
   - differentiate CBR/IBR
2. Community Medicine:
   - understand various concepts of health & disease
   - define health and describe dimensions of health
3. Social Factors and Health:
   - understand concepts in sociology & cultural factors in health & disease
   - explain the social problems of workers especially those disabled.
4. Occupational Health:
   - define occupational health and understand the role of OT in occupational disorders like
   - occupational lung disease.
   - Explain prevention of occupational diseases especially medical and engineering measures.
5. Child Survival & Safe Motherhood Program:
   - understand the role of CSSM as a national program
   - emphasis the role of the following conditions in community setting
   - Congenital orthopedic conditions e.g. CDH, CTEV
   - Neurological Disorders in the New born e.g. CP, spina bifida and AMC
6. Nutrition & health
   - Describe constituents of food, their functions & national nutritional programs.
7. Appreciate and use key terms such as anthropology, ethnography, skill transfer, knowledge, attitude and community education, appropriate technology and multi-purpose health worker.
8. Define impairment, disability, handicap & rehabilitation
9. Describe magnitude of disability problems, its causes & future trends.
10. Define 'Person with disability', understand basic concepts of disability evaluation and certification in India, Have knowledge of 'Indian Disability Act'.
11. Explain prevention & detection of disability & role of O.T.
12. Outline the principles of organization & administration, organizational chart, starting a new rehabilitation centre- procedure, survey, interview & planning.
13. Understand management functions, strategies, budgeting & financial management.
14. Describe role of rehabilitation team workers such as physician, surgeon, occupational therapist, physiotherapist, speech therapist, psychologist social worker, vocational counselor, special education teacher, multipurpose health worker in rehabilitation..
15. Outline the principles and goals in designing prescription, fabrication, check out of orthoses and prosthesis and apply knowledge in designing the necessary alternations required as per the clinical conditions.
16. Understand the adaptation and appropriate teaching methods in wheelchair selection process.
17. Develop innovative low cost aids & appliances in respect to therapeutic equipment & adaptive devices, splints & mobility aids.

Course Content:

1. CBR: Definition, models, structure, process, outcome, role of O.T and the contributions of other health professionals, differentiate CBR/IBR
2. Concepts of health & disease- definition & dimensions of health
3. Social factors and health - concepts in sociology & cultural factors in health & disease, social problems of disabled workers.
4. Occupational health- definition of occupational health, role of OT in occupational disorders like occupational lung disease. Medical and engineering measures in prevention of occupational diseases.
5. Child survival and safe motherhood program- role of CSSM as a national program. Role of orthopedic & neurological conditions in new born such as CDH, CTEV, CP, spina bifida and AMC in community setting
6. Nutrition & health- constituents of food, their functions & national nutritional programs
7. Anthropology, ethnography, skill transfer, knowledge, attitude and community education, appropriate technology
8. Impairment, disability, handicap & rehabilitation- definition. Magnitude of disability problems, its causes & future trends. Definition of 'Person with disability'. Basic concepts of disability evaluation and certification in India, 'Indian Disability Act'. Prevention & detection of disability &. role of O.T. in it.
9. Principles of organization & administration, organizational chart, starting a new rehabilitation centre- procedure, survey, interview & planning.
10. Management functions, strategies, budgeting & financial management.
11. Role of rehabilitation team workers such as physician, surgeon, occupational therapist, physiotherapist, speech therapist, psychologist social worker, vocational counselor, special education teacher, multipurpose health worker in rehabilitation.
12. Adjunctive Therapies:-
    A) Biofeedback, Yoga Therapy, etc.
    B) Prosthesis:
        i. Definition, Aim, Principles and Amputee training and Evaluation.
        ii. Upper Extremity Prosthesis – Types of Amputee, Types and components of prosthetic prescription criteria, checkout, pre-prosthetic and prosthetic training.
        iii. Lower Ext. Prosthesis – Biomechanical consideration, Types and Components of L/E prosthesis, pre and post prosthetic, training and checkout.
        iv. Prosthetic deviation in A/K and B/K Prosthesis.
    C) Orthoses:
        i. Definition, Classification, Indication, Principles, Materials used.
        ii. Orthotic components, terminology used in the upper, spinal and lower limb orthoses.
        iii. Spinal Orthoses – Classification, Principles and indication in with brief description of each.
        iv. Cervical Orthoses – Types, Goals and brief description.
        v. Upper Ext. Orthoses – Types, goals and brief description and fabrication of shoulder, elbow and wrist hand orthoses.
        vi. Lower Ext. Orthoses – Brief description of Hip, Knee and Ankle orthoses and Shoe modification.
13. Wheelchair selection process: Adaptations and appropriate teaching.
14. Develop innovative low cost aids & appliances in respect to therapeutic equipment & adaptive devices, splints & mobility aids.

Recommended Books:

1. Text Book on social and preventive medicine – Park.
2. Disabled Village Children – David Werner.

BIO STATISTICS & RESRARCH METHODOLOGY --- [75 hrs]

Course Objectives:

At the end of 4th year student will be able to fulfill with 75% accuracy in the following objectives as measured by written evaluation:

1) Understand advantages of reviewing literature, sources & methods of research.
2) Distinguish types of studies, understand strategies to eliminate errors/bias selection of sample.
3) Enumerate details needed for writing protocol, know contents of research protocol.
4) Understand what are biomedical ethics, informed consent, functioning of ethical committees.
5) Describe how to collect data & present it
6) Define & explain common statistical terms.
7) Explain the calculations of mean median, with average & percentile calculation.
8) Explain describe impertinent of finding standard deviation, Quartile derivation, variables & calculate them.
9) Describe the meaning of normal distribution & normal curves.
10) Describe various sampling methods & their application.
11) Explain various sampling variability & significance of different sampling
12) Define term probability explain various theorems & various methods, hypothesis in their calculation.
13) Describe significance of calculations & recording difference in mean values.
14) Explain application of Chi-square test.
15) Explain related sampling & importance in finding correlation & regression.
16) Explain various methods of frequency distribution.
17) Describe measure of central value.
18) Explain measurement of different variables.
19) Application of demography & vital statistics.
20) Explain correlation of measures of population & vital Statistics Explain importance of cumulative distribution of norms.

Course Contents:

1. Review of literature
2. Study design
3. Sample size
4. Sampling variability & significance
5. Protocol writing
6. Ethical aspects
7. Data collection & presentation
8. Common statistical terms
9. Measures of location, average & percentiles
10. Variability & its measures
11. Normal distribution & normal curve
12. Probability
13. Significance of difference in mean
14. Chi- Square test
15. Correlation & regression
16. Demography & vital statistics
17. Correlation of measures of population & vital statistics.

Recommended Books:

1. Statistics - Joshi & Chitale
2. A practical approach to PG dissertation-R. Raveendran & B. Gitangali

SCHEME OF EXAMINATION

1) **Advances in OT and Rehabilitation: -** Total Marks – 100.
   Theory = 100 Marks, (University Exam 80 marks + Internal Assessment 20 marks)
2) **OT in Orthopaedic Conditions: -** Total Marks – 200.
   Theory = 100 Marks, (University Exam 80 marks + Internal Assessment 20 marks)
   Clinical= 100 Marks, (University Exam 80 marks + Internal Assessment 20 marks)
3) **OT in Neurological & Developmental Conditions: -** Total marks – 200.
   Theory = 100 Marks, (University Exam 80 marks + Internal Assessment 20 marks)
   Clinical= 100 Marks, (University Exam 80 marks + Internal Assessment 20 marks)
4) **OT in Psychiatric Conditions:** - Total Marks – 200.
   Theory = 100 Marks, (University Exam 80 marks + Internal Assessment 20 marks)
   Clinical= 100 Marks, (University Exam 80 marks + Internal Assessment 20 marks)
5) **Community Based OT & Rehabilitation: -** Total Marks – 100.
   Theory = 100 Marks, (University Exam 80 marks + Internal Assessment 20 marks)
6) **Bio-Statistics & Research Methodology: -** Total Marks – 50.
   Theory = 50 Marks, (University Exam 40 marks + Internal Assessment 10 marks)

A) Distribution of maximum marks for the subject having 100 marks shall be as follows:
University Exam 80 Marks, Internal Assessment 20 Marks

Scheme of Exam to be conducted out of 80 Marks (Theory) as follows:

Section-A: M.C.Q: Single best response ----- [1 X 20] ------ 20 marks
Section-B: L.A.Q: 1) One question ---------- 15 marks
L.A.Q.-2) One question ---------- 15 marks

OR

L.A.Q.- One question ---------- 15 marks
Section-C: S.A.Q.-Short notes Three out of Four [3 X 5] --- 15 marks

And

S.A.Q.- Short notes Five out of Six [5 X 3] ------ 15 marks

B) Distribution of maximum marks for each subject/section having 50 marks shall be as follows:
University Exam 40 Marks, Internal Assessment 10 Marks

Scheme of Exam to be conducted out of 40 Marks (Theory) as follows:

Section-A: M.C.Q: Single best response [1 X 10] ---------- 10 marks
Section-B: L.A.Q. One long question ---------- 15 marks
Section-C: S.A.Q.- Short notes Three out of Four [3 X 5] ---15 marks

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Scheme of Exam to be conducted out of 80 Marks (Clinical) as follows:

One long case: 40 Marks
One short case: 20 Marks
Viva Voce: 20 Marks

Long case to include evaluation, treatment & future planning of a single patient.
Short case to include evaluation of a single patient.

SCHEME OF EXAMINATION - IV B.O.Th

Subject	Theory	I. A.	Total	Clinical	I. A.	Total
Advances in OT & Rehabilitation	80	20	100			
OT in Orthopaedic Conditions	80	20	100	80	20	100
OT in Neurological & Developmental Conditions	80	20	100	80	20	100
OT in Psychiatric Conditions	80	20	100	80	20	100
Community Based OT & Rehabilitation	80	20	100			
Biostatistics & Research Methodology	40	10	050			

INTERNSHIP

TOTAL HOURS 1014 (26 Weeks)

1. Occupational Therapy in Musculo skeletal conditions (143 hrs)
2. Occupational Therapy in Medicine and Neurosciences (143 hrs)
3. Occupational Therapy in Mental Health (143 hrs)
4. Community Based Occupational Therapy (143 hrs)
5. Occupational Therapy in Surgical conditions (074 hrs)
6. Occupational Therapy in developmental disabilities (074 hrs)
7. Elective (any two)
   a. Occupational Therapy in plastic surgery and hand (074 hrs)
   b. Paediatric surgery and S.I. (074 hrs)
   c. Occupational Therapy in Cardiovascular & thoracic surgery (074 hrs)
8. Project (077 hrs)

INTERNSHIP CERTIFIACTION

EVALUATION:

1. Attitude: The student shall put up not less than 95% attendance during each clinical assignment. Students' performance shall be graded (1-5 grade) by the respective clinic incharge at the end of each assignment. The candidate shall repeat the assignment if he gets grade less than 3.
2. Project: Each candidate shall submit his project duly completed and will undergo viva at the end of Internship

The student shall be granted internship completion certificate by the principal after getting satisfactory grade in all the clinical units and successful submission of the project.