

# **BACHELOR OF PHYSIOTHERAPY (BPT) (4 ½ Year Degree Course)**

## **REGULATION & CURRICULUM**



### **KADI SARVA VISHWAVIDYALAYA CHANCHALBEN MAFATLAL PATEL COLLEGE OF PHYSIOTHERAPY**

Civil Hospital Compound, Sector 12, Gandhinagar.

### The Emblem



The overall objective of the Physiotherapy Program is to prepare students to practice art of physiotherapy. The educational goals of the curriculum reflect the knowledge, skills and behaviours expected of program graduates. It prepares graduates to work in health care settings such as hospitals, outpatient clinics, private practice, rehabilitation centers, patients' homes, schools, extended care facilities, sports venues, aged care centers, industrial and commercial premises, nursing homes, psychiatric centers and educational institutions.

## **OUR VISION**

- To train General & Specialized Physiotherapy professionals.
- To meet Regional, National & Global physiotherapy skilled manpower and service needs.
- To induce technology of relevance into physiotherapy practice.
- Total Quality Management in Physiotherapy Education, Service & Research.
- To foster Global Competencies, including value system among learners.
- Promote excellent Physiotherapy Education and service Research systems for Community development

## **Motto**

“Kar Bhala Hoga Bhala”

## **MISSION**

- Learner centered Physiotherapy Education.
- Promote Community oriented Physiotherapy & Extension service through strong Community relationship.
- Promote Research of relevance to Community.
- Enhance referral service centre for Physiotherapy.
- Develop strategic future oriented planning.
- Enhance inter organizational linkage.
- Excellent physiotherapy education & service research systems for community development.

## **EDUCATIONAL GOALS:**

The graduates of this program will be prepared to:

- communicate effectively
- demonstrate professional behaviours
- demonstrate sensitivity to cultural and individual differences demonstrate effective clinical decision making skills
- effectively educate others
- demonstrate commitment to personal and professional growth
- effectively determine client needs based on elements of patient/client management
- efficiently and effectively develop and implement an appropriate plan of care and intervention
- actively participate in management, consultative, and research activities

## **Course Overview & objectives:**

### Objectives of the Bachelor of Physiotherapy course are:

The graduates of the Kadi Sarva Vishwavidyalaya (University) physiotherapy program will be expected to:

- Demonstrate knowledge of the theoretical basis of physiotherapy.
- To provide graduates with an integrated knowledge of physical, biological, Medical and behavioural sciences.
- To provide graduates with the clinical knowledge, skills and attitudes necessary for the competent assessment, prevention, treatment and rehabilitation of patients with physical disorders and disabilities.
- To provide graduates with a capacity for problem solving and self-directed learning and the motivation for life-long independent learning.
- To provide graduates with a capacity to communicate effectively with patients, colleagues and members of other health professions in diverse cultural and geographical settings.
- Integrate knowledge of basic sciences and physiotherapy in order to modify treatment approaches that reflect the breadth and scope of physiotherapy practice.
- Integrate the use of basic principles of research in critical analysis of concepts and findings generated by self and others.
- Actively recognize the rights and dignity of individuals in planning and administering programs of care.
- To provide graduates with an understanding of professional responsibility and ethical principles in relation to individuals and the community, both locally and internationally.
- To provide graduates with an appreciation of the dynamics of their profession by fostering a willingness to adapt practice to reflect advances in medical and physiotherapy Science as well as changes to current health care and social policies

### Curriculum For The Physiotherapist Professional Degree Include:

- Screening: To determine when patients/clients need further examination or consultation by a physiotherapist or referral to another health care professional.
- Examination: Examine patients/clients by obtaining a history from them and from other sources.
- Evaluation: Evaluate data from the examination (history, systems review, and tests and measures) to make clinical judgments regarding patients/clients.
- Diagnosis: Determine a diagnosis that guides future patient/client management.  
Prognosis: Determine patient/client prognosis.
- Plan of Care: Collaborate with patients/clients, family members, payers, other professionals, and other individuals to determine a plan of care that is acceptable, realistic, culturally competent, and patient-centered.

- Intervention: Provide physiotherapy interventions to achieve patient/client goals and outcomes. Interventions include: a. Therapeutic Exercise, b. Functional Training in Self-Care and Home Management, c. Functional Training in Work (Job/School/Play), Community, and Leisure Integration or Reintegration, d. Manual Therapy Techniques (including Mobilization/ Manipulation Thrust & Non thrust Techniques), e. Prescription, Application, and, as Appropriate, f. Integumentary Repair and Protection Techniques, g. Electrotherapeutic Modalities, h. Provide effective culturally competent instruction to patients/clients and others to achieve goals and outcomes.
- Prevention, Health Promotion, Fitness, and Wellness: Provide culturally competent physical therapy services for prevention, health promotion, fitness, and wellness to individuals, groups, and communities. Apply principles of prevention to defined population groups.

### **GOALS AND OBJECTIVES OF INSTITUTION:**

- To cater physiotherapy education and reach out to the unreached.
- To acquire adequate knowledge of the basic medical subjects in the practice of Physiotherapy.
- Serve as responsible members in the professional community and are willing and able to assume leadership roles in the communities they serve.
- To inculcate moral and ethical values in students.
- To prepare physiotherapist to meet the health care needs of the society nationally and internationally.
- To develop creative thinking and scientific interest among students.
- To prepare our graduates to exercise leadership for making contribution in their respective disciplines.
- To establish and maintain this institution as a center of excellence in physiotherapy education.
- To provide administrative, academic and support services that create an environment conducive to teaching, learning and student success.
- To set high standards of comprehensive professional education by developing the intellectual strength of students and guiding them towards professional excellence.
- Identify researchable problems, advocate and participate in research and incorporate research finding into clinical practice.
- To produce graduates of international standards committed to professionalism.
- To enhance faculty for development and sustenance of physiotherapy as an established method of health care

**R. PHYSIO-1: Duration of course:**

Every student shall undergo a period of certified study extending over four academic years divided into 1 year each from the date of commencement of study for the subjects comprising P.T. curriculum to the date of completion of final B.P.T. examination successfully and followed by 6 months compulsory rotating internship.

**R. PHYSIO-2: Medium of instruction & eligibility criteria:**

English shall be the medium of instruction for all the subjects of study and for the exams of B.P.T.

Eligibility as per admission committee for professional medical educational courses.

**R. PHYSIO-3: Essentialities for qualifying to appear in university examinations**

Candidates appearing for final examination at the end of each academic year should have,

- (a) Attended 75% of the minimum prescribed teaching hours as per R. PHYSIO-9 (Lectures and practical including clinics, seminars, group discussions, tutorials, demonstrations etc.)
- (b) Secured at least 50% marks of internal assessment in each subject for theory & practical individually..

**R. PHYSIO-4: Criteria for passing:**

A candidate to be declared to have passed any B.P.T Examination should have

- 1) Obtained at least 50% marks in aggregate including both University Examination and Internal Assessment, where in candidate should have compulsorily scored at least 50% marks in Internal Assessment out of 20 marks and 10 marks in respective subjects [i.e. Internal Examination 50% + Attendance 25% + Assignment 25%] in both theory and practical separately.
- 2)
  - a. A candidate who has appeared for 1<sup>st</sup> year BPT examination and was not successful in clearing all subjects is eligible to be promoted to 2<sup>nd</sup> year BPT.
  - b. A candidate who has appeared for 2<sup>nd</sup> year BPT examination and was not successful in clearing all subjects is eligible to be promoted to 3<sup>rd</sup> year BPT.
  - c. A candidate who has appeared for 3<sup>rd</sup> year BPT examination and was not successful in clearing all subjects is eligible to be promoted to 4<sup>th</sup> year BPT.
- 3)
  - a. A candidate who has appeared in 2<sup>nd</sup> year BPT examination but not cleared 1<sup>st</sup> year BPT is not eligible for promotion to 3<sup>rd</sup> year.
  - b. Similarly a candidate who has appeared for 3<sup>rd</sup> year BPT examination but not cleared 2<sup>nd</sup> year BPT examination is not eligible for promotion to 4<sup>th</sup> year.

- 4) If the student fail to pass either in theory or practical exam of any subject, he/she has to appear for both theory as well as practical exam of that subject in next subsequent exam.

**R. PHYSIO-5: Definition of Trial:**

First trial is deemed to take place when the candidate is due to appear for the examination irrespective of his/her actual appearance, provided that non-appearance is not a result of reasons beyond his/her control. Similarly 2nd, 3rd, etc, trials relating to subsequent examination.

**R. PHYSIO-6:**

(A) Exemption:

Candidates who have passed in any of the subject/subjects will be excused for appearing in that subject/subjects at a subsequent examination. But they should not be declared to have passed the whole examination until they have passed in all subjects in the particular examination.

(B) University examinations will be held twice during the year that is one regular and one supplementary examination.

**R. PHYSIO-7:**

**(A) Awards of Degree:**

Those students who have passed the 4 year BPT examinations are eligible for award of degree of Bachelor of Physiotherapy based upon successful completion of 6 month compulsory rotatory internship.

The degree award and class will be based upon the marks or percentage obtained in 4<sup>th</sup> year B. Physiotherapy examination.

**Declaration of Class:**

1. A candidate having 75% and more marks would be declared First class with Distinction.
2. A candidate having 60% to <75% marks would be declared First class.
3. A candidate having 50% to <60% marks would be declared Second class.
4. A candidate passing university examination in more than 1 attempt shall be declared in pass class irrespective of the % of marks secured

**R. Physio-8: Compulsory Rotating Internship:**

In order to qualify for B.P.T. degree every student after passing final B.P.T. exam shall do compulsory rotating internship for a period of 6 months in a physiotherapy institution/center.

The college authorities shall do the posting of the successful candidates for internship within 15 days of declaration of result of final B.P.T. exam

During training of internship 75% presence is compulsory, failing which an intern will have to repeat the term (training).

**R. PHYSIO-9: Course of study and exams:****F.Y. B.P.T.**

University exams of F.Y.B.P.T. shall be held at the end of the session.

SUBJECTS	TEACHING HOURS		
	THEORY	PRACTICAL	TOTAL
HUMAN ANATOMY	125	175	300
HUMAN PHYSIOLOGY	110	130	240
BIOCHEMISTRY	60	-	60
EXERCISE THERAPY – I	135	150	285
ELECTRO THERAPY – I	105	125	230
INTRODUCTION TO PHYSIOTHERAPY *	20	-	20
ENGLISH *	60		60
COMPUTER SCIENCE *	60	40	100
TOTAL HRS (THEORY & PRACTICAL) REVISION, PRELIM EXAMS			110
GRAND TOTAL			1405
* SUBJECTS ARE NOT FOR UNIVERSITY EXAMINATION			

**EXAMS:**

NO.	SUBJECTS	MARKS				TOTAL
		THEORY		PRACTICAL		
		EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	
1	HUMAN ANATOMY	80	20	80	20	200
2	HUMAN PHYSIOLOGY	80	20	80	20	200
3	BIOCHEMISTRY	40	10	-	-	50
4	EXERCISE THERAPY – I	80	20	80	20	200
5	ELECTRO THERAPY – I	80	20	80	20	200



**S.Y. B.P.T**

University exams of 2<sup>nd</sup> year B.P.T shall be held at the end of the session.

SUBJECTS	TEACHING HOURS		
	THEORY	PRACTICAL	TOTAL
PATHOLOGY	50	-	50
MICROBIOLOGY	50	-	50
PHARMACOLOGY	60	-	60
EXERCISE THERAPY – II & KINESIOLOGY	150	150	300
ELECTROTHERAPY – II	100	120	220
PSYCHOLOGY AND SOCIOLOGY	100	-	100
RESEARCH METHODOLOGY & BIostatISTICS	50	-	50
CLINICAL TRAINING	-	575	575
TOTAL			1405

**EXAMS:**

NO.	SUBJECTS	MARKS				TOTAL
		THEORY		PRACTICAL		
		EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	
1	PATHOLOGY & MICROBIOLOGY	40	10	---	---	50
2	PHARMACOLOGY	40	10	---	---	50
3	EXERCISE THERAPY- II & KINESIOLOGY	80	20	80	20	200
4	ELECTROTHERAPY – II	80	20	80	20	200
5	PSYCHOLOGY & SOCIOLOGY	80	20	---	---	100
6	RESEARCH METHODOLOGY & BIostatISTICS	40	10	---	---	50

**T.Y. B.P.T**

University exams of 3<sup>rd</sup> year B.P.T shall be held at the end of the session.

SUBJECTS	TEACHING HOURS		
	THEORY	PRACTICAL	TOTAL
ORTHOPAEDICS	120		120
NEUROLOGY & PAEDIATRICS	110		110
MEDICINE & DERMATOLOGY	110		110
GENERAL SURGERY AND OBSTETRICS & GYNAECOLOGY	120		120
PHYSICAL & FUNCTIONAL DIAGNOSIS	110	140	250
COMMUNITY MEDICINE	60		60
PSYCHIATRY*	20		20
CLINICAL TRAINING	615	-	615
TOTAL HOURS			1405

**EXAMS:**

PAPER NO.	SUBJECTS	MARKS				TOTAL
		THEORY		PRACTICAL		
		EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	
1	ORTHOPAEDICS	80	20	---	---	100
2	NEUROLOGY & PAEDIATRICS	80	20	---	---	100
3	MEDICINE & DERMATOLOGY	80	20	---	---	100
4	GENERAL SURGERY AND OBSTETRICS & GYNAECOLOGY	80	20	---	---	100
5	PHYSICAL & FUNCTIONAL DIAGNOSIS	80	20	80	20	200
6	COMMUNITY MEDICINE	40	10	---	---	50

**FINAL. B.P.T:**

University exams of 4<sup>TH</sup> year B.P.T shall be held at the end of the session.

SUBJECTS	TEACHING HOURS		
	THEORY	PRACTICAL	TOTAL
PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS	80	60	140
PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS	80	60	140
PHYSIOTHERAPY IN CARDIOPULMONARY CONDITION	80	60	140
PHYSIOTHERAPY IN MEDICAL & SURGICAL CONDITIONS	50	50	100
COMMUNITY PHYSIOTHERAPY & REHABILITATION	60	40	100
PRINCIPLES OF ETHICS AND ADMINISTRATION*			50
CLINICS			750
EDUCATIONAL TOUR & INSTITUTIONAL VISITS			
SEMINAR PRESENTATION, CASE PRESENTATION & CLINICAL DISCUSSION			
<b>TOTAL</b>			<b>1420</b>

**EXAMS:**

NO.	SUBJECTS	MARKS				TOTAL
		THEORY		PRACTICAL		
		EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	
1	PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS	80	20	80	20	200
2	PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS	80	20	80	20	200
3	PHYSIOTHERAPY IN CARDIO-PULMONARY CONDITIONS	80	20	80	20	200
4	PHYSIOTHERAPY IN MEDICAL & SURGICAL CONDITIONS	80	20	80	20	200
5	COMMUNITY PHYSIOTHERAPY & REHABILITATION	40	10	40	10	100

## FIRST YEAR - BPT

**Transcript hours : 1405 Hours**

Subjects -

1. Introduction to Physiotherapy----- 20 hrs
2. Human Anatomy-----300 hrs
3. Human Physiology-----240 hrs
4. Biochemistry- ----- 60 hrs
5. Exercise Therapy I-----285 hrs
6. Electro Therapy I----- 230 hrs
- \*7. English----- 60 hrs
- \*\*8. Computer Science ----- 100 hrs
- Total hrs (theory & practical) revision, prelim exams ----- 110 hrs

\* First year college exam Theory only

\*\* First year college exam Practical only

Clinical assignments should include Observation with the senior clinical staff of the Therapeutic Gymnasium [Fundamentals of Exercise therapy] & Electro Therapy sections at the O.P.D set up. The student should maintain a Journal. The student should get all the documents duly signed by the section In-Charge with his/her assessment remarks at the end of each respective assignment.

### INTRODUCTION TO PHYSIOTHERAPY

[20hrs]

#### Objective-

By the end of the 20 hours of introduction, the candidate will-

1. Acquire the geographical orientation of the various concerned sections of the college & the clinical training areas.
2. Get the overall idea about the graduate program & its scope in the professional practice.
3. Learn the Bed-side manners, General Ethical code & discipline of the Department.

## HUMAN ANATOMY

**Didactic — 125 Hrs**

**Practical /Laboratory - 175 Hrs**

**Goal** - To provide the student with the necessary anatomical knowledge & skills to practice as a qualified Physiotherapist.

### **Objectives-**

#### **1. MUSCULO- SKELETAL**

- a) The student should be able to identify and describe anatomical aspects of muscle, bones & joints & to understand and analyze movements.
- b) To understand the anatomical basis of various clinical conditions e.g. Trauma, deformities, pertaining to limbs & spine.
- c) To be able to localize various surface landmarks.

#### **2. NEURO ANATOMY**

- a) To identify and describe various parts of Central Nervous System (C.N.S) - Fore-brain, Midbrain, Hind-brain, Brainstem, courses of cranial nerves; functional components - course distribution – Anatomical bases of clinical lesions.
- b) To describe the source and course of spinal tracts.
- c) To describe blood circulation of C.N.S. & spine.
- d) Be able to identify the components of various Trans-sections.

#### **3. THORAX**

- a) To identify and describe various components and contents of the Thorax- with special emphasis to tracheobronchial tree, & cardio- pulmonary system.

#### **4. CIRCULATORY**

- a) Be able to identify and describe the source, course of major arterial, venous and lymphatic system, with special emphasis to extremities, Spine and Thorax.

#### **5. PSYCHO-MOTOR.**

To be able to

- a) Demonstrate the movements of various joints.
- b) Distinguish cranial & peripheral nerves
- c) Distinguish major arteries, veins and Lymphatic with special emphases to extremities and spine.

## Syllabus-

### General Introduction:

#### Section I

15 hrs

1. Histology - Cell, tissues of the body, epithelium, connective tissue cartilage, bone, lymph, muscle, nerve etc.
2. Osteology - Formation, function, growth and repair of bones.
3. General Embryology - Ovum, spermatozoa, fertilization, differentiation, development of various systems and fetal circulation.

#### Section-II

50 hrs

Systems of Human body (a brief Outline):

1. Cardio Vascular System – Arteries, capillaries, veins, heart, lymphatic system. **14 hrs**
2. Respiratory System –Anatomy of upper and lower respiratory tract including nose, larynx, trachea, bronchi, pleura and lungs. **8 hrs**
3. Urogenital System –Anatomy of Urinary system, male and female reproductive system (special emphasis to female system). **4 hrs**
4. Axial skeleton and Arthrology. **10 hrs**
5. Sensory Organs. **9 hrs**
6. Digestive System –Anatomy of the gastro-intestinal tract. **5 hrs**

#### Section-III

##### Neuro-anatomy:

55 hrs

1. Peripheral Nerves
2. Neuromuscular Junction, Sensory End Organs
3. Spinal Cord Segments & Areas
4. Brainstem
5. Cerebellum
6. Inferior colliculi
7. Superior colliculi
8. Diencephalon
9. Hypothalamus
10. Epithalamus
11. Thalamus
12. Cerebral hemispheres
13. Corpus striatum
14. Rhinencephalon
15. Lateral ventricles
16. Meninges
17. Bloody supply of the brain

18. Internal Capsule
19. Visual radiation
20. Auditory radiation
21. Thalamocortical radiations
22. Pyramidal systems
23. Extra-pyramidal systems
24. Sympathetic system
25. Para-sympathetic system
26. Cranial nerves
27. CSF

#### **Section-IV**

##### **UPPER EXTREMITY**

**55 hrs**

##### **Osteology**

Outline the anatomical features, attachments, ossification and side determination of the bones of U/L : Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges

##### **Myology**

- Fascia and Muscles of front and back of upper arm: origin, insertion, nerve supply and action.
- Muscles of front and back of forearm: origin, insertion, nerve supply and action.
- Mention the small muscles of hand with their origin, insertion, nerve supply and action.
- Identify the nerves of upper limb and mention their position course, relations and distribution.
- Detail explanation of joints of upper limb: shoulder girdle, Shoulder joint, Elbow, Wrist and joints of hand.
- Indicate the blood vessels of upper limb and mention their position course, relations, distribution and main branches.
- Lymphatic drainage of upper limb
- Applied anatomy of all structures of U/L

#### **Section – V**

##### **TRUNK-THORAX & ABDOMEN**

**20 hrs**

##### **Osteology**

- Vertebral columns: Identify the parts of typical vertebra and state the main features, Attachments and ossification.
- Intervertebral disc and mention its part.
- Ribs: Parts and main features of typical & atypical rib and define true, false and floating ribs.
- Sternum: State the parts and anatomical features.

## Myology

- Fascia and muscles of back
- Fascia and muscles connecting U/L with vertebral column: origin, insertion, nerve supply, action.
- Intercostal muscles and diaphragm : origin, insertion, nerve supply and action.
- List layers of anterior Abdominal wall and mention its origin, insertion, nerve supply and action of these muscles.
- Fascia and muscles of posterior Abdominal Wall: origin, insertion, nerve supply and action.

## Joints of Thorax

- Identify the various joints and explain in detail: Manubriosternal joint, Costovertebral joint, Costotransverse joint, Costochondral joint, Chondrosternal joints, Intervertebral joint
- Movements of vertebral column
- Respiratory movements

Mention the course and branches and nerves, blood vessels and lymphatic drainage of trunk-thorax-abdomen.

- Lumbar Plexus: Position, formation and branches.
- Rectus sheath: formation and contents.
- Contents of vertebral canal
- Intercostal space and its contents
- Diaphragm-structures passing through it.
- Applied Anatomy of structures of trunk – thorax – abdomen

## Section – VI

### PELVIS

**20 hrs**

- Features of pubic symphysis and sacroiliac joints.
- Muscles of pelvic floor and mention their attachments, action and nerve supply.
- Difference between male and female pelvis.
- Main features of subdivision, boundaries, walls and floor of pelvis.
- Urogenital diaphragm (outlines only)
  - Applied anatomy of lumbar plexus
  - Lymphatic drainage
  - Nerve supply
  - Sacral Plexus
- Mention the blood vessels of the region with course, variations, distribution and main branches.



## Section – VII

### LOWER EXTREMITY

50 hrs

#### *Osteology*

- Hip bone, femur, Tibia, Fibula, Patella, and bones of the foot

#### **Myology**-, -Origin, Insertion, Nerve Supply, Action of the following:

- Fascia and muscles in anterior of thigh
- Fascia and muscles of medial & lateral side of thigh
- Fascia and muscles of posterior of thigh
- Fascia and muscles of gluteal region
- Fascia and muscles of front of leg and dorsum of foot
- Fascia and muscles of lateral side of leg
- Fascia and muscles of back of leg and sole of foot
- Detailed explanation of joints of Lower Limb: Pelvic Girdle, Hip, joint, Knee joint, Ankle joint, joints of foot.
- Identify the nerves of Lower Limb and mention their position course, relations, distribution
- Indicate the blood vessels of Lower Limb a mention their position course, Relation, distribution and main branches
- Lymphatic drainage of Lower Limb
- Explain femoral triangle and subsartorial canal
- Popliteal fossa
- Anatomy of structures of Lower Limb

## Section VIII

### HEAD, NECK AND FACE

25hrs

(Special emphasis on myology and osteology)

- Muscles & Vessels of neck ,Facial muscles & orbit, Temporo-Mandibular (T.M)joint, cervical vertebrae & Skull, Endocrine glands, Cranial nerves, Triangles of neck Lateral wall of nose Larynx, Pharynx Salivary glands

## Section-IX

### RADIOLOGICAL ANATOMY:

10hrs

- Radiographic appearance of Musculoskeletal system of Upper limb, Lower limb, Spine.

### SURFACE ANATOMY

- a) Bony landmarks of HNF, upper extremity, lower extremity, spine
- b) Demonstration of muscles – HNF, superior extremity, inferior extremity
- c) Demonstration of movements of joints
- d) Palpation of peripheral arteries & nerves

**TEXT BOOKS**

1. Williams & Warwick, Gray's Anatomy-Churchill Livingstone.
2. Inderbir Singh, Textbook of Anatomy with colour Atlas-Vol. 1,2, 3 Jaypee Brothers
3. B.D. Chaurasia, Human Anatomy-Volume 1,2,3 CBS Publishers & Distributors.
4. Cunningham Manual of Practical Anatomy Vol.I,II,III, Churchill Livingstone.
5. Inderbir Singh, A Textbook on Human NeuroAnatomy, Jaypee Brothers.

**REFERENCE BOOKS**

1. Gray's Anatomy
2. McMinn's Last's Anatomy-Regional and applied,Churchill Livingstone.
3. Snell-Clinical Anatomy-Lippincott

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination.
- Theory : 80 Marks    Internal Assessment : 20 Marks    Total : 100 Marks
- Practical : 80 Marks    Internal Assessment : 20 Marks    Total : 100 Marks

**THEORY-Pattern of Paper setting :                      (Time : 3 Hours)**

### SECTION-1

<b>Q: 1] MCQS</b>		<b>(10 x 1)</b>	<b>10 Marks</b>
1 to 6) Upper limb -	6		
7 to 9) Brain -	3		
10) Head & Neck -	1		
<b>Q: 2] Write Answers Shortly</b>	<b>(Five out of Six)</b>	<b>(5 x 2)</b>	<b>10 Marks</b>
1 - 2) Upper limb			
3) Lower limb			
4) Brain			
5) General anatomy & Organs			
6) Histology			
<b>Q: 3] Write Short Notes</b>	<b>(Four out of Five)</b>	<b>(4 x 5)</b>	<b>20 Marks</b>
1) Upper limb			
2) Lower limb			
3) General anatomy			
4) Histology			
5) Organs			

### SECTION – 2

<b>Q: 4] MCQS</b>		<b>(10 x 1)</b>	<b>10 Marks</b>
1 to 6) Lower limb -	6		
7) Histology	1		
8) General Anatomy	1		
9 & 10) Organs -	2		
<b>Q: 5] Long answer questions</b>	<b>(Three out of Four)</b>	<b>(10 x 3)</b>	<b>30 Marks</b>
1) Upper limb & Thorax			
2) Lower limb & Abdomen			
3) Brain, Head and neck			
4) Miscellaneous			

**Practical Examination:**

**80 Marks**

**1) Spots – 10 Spots - (10 x 2)**

**20 Marks**

Spots based on-

- |    |                                    |     |
|----|------------------------------------|-----|
| a) | Bones                              | - 3 |
| b) | Organs                             | - 2 |
| c) | Head face neck                     | - 1 |
| d) | Upper limb                         | - 1 |
| e) | Lower limb                         | - 1 |
| f) | Brain                              | - 1 |
| g) | Histology – 2 Slides – 1 mark each | - 2 |

**2) Viva -**

**55 Marks**

- |    |                     |          |
|----|---------------------|----------|
| a) | Bones and radiology | 30 Marks |
| b) | Soft parts          | 25 Marks |

**3) Journal**

**05 Marks**

**INTERNAL ASSESSMENT ( I.A.)**

- One internal & one preliminary examination of 80 marks each in Theory & Practical. Internal Marks to be calculated out of 20 each in Theory & Practical.
- Student will be eligible to appear for University examination if he/she gets minimum 50% marks.

## HUMAN PHYSIOLOGY

**DIDACTIC - 110 Hrs**

**PRACTICAL/LABORATORY - 130 Hrs**

**Objectives:** At the end of the course, the candidate will-

1. Acquire the knowledge of the relative contribution of each organ system in maintenance of the milieu interior [Homeostasis].
2. Be able to describe physiological functions of various systems, with special reference to Musculoskeletal, Neuromotor, Cardio-respiratory, Female urogenital function, and alterations in function with ageing.
3. Analyze physiological responses & adaptation to environmental stresses- with special emphasis on physical activity & temperature.
4. Acquire the skill of basic clinical examination, with special emphasis to Peripheral and Central Nervous system, Cardiovascular and Respiratory system, & Exercise tolerance/ Ergography.

### Syllabus

#### General Physiology

**4hrs**

- The cell & cell organelles – structure & functions
- Homeostasis, biofeedback mechanisms
- Transport across cell membrane
- Outline of membrane potential & action potential

#### Nerve muscle

**10 hrs**

- Muscle – classification, structure, sarcomere & properties of muscles
- Myoneural junction & transmission Molecular basis of muscle contraction. Motor unit Structure, Properties & Classification of nerves
- Propagation of nerve impulse. Degeneration and regeneration of nerve.
- Applied aspects – Myasthenia gravis, Rigor mortis
- Reaction of degeneration
- Muscle disorders

#### Haematology

**6hrs**

- Composition and functions of blood
- Red blood cell – morphology, formation, normal count, functions, physiological and pathological variation.
- White blood cell – morphology, classification, properties, functions, physiological & chemistry, fate and functions.
- Haemoglobin - basic chemistry, fate and functions.

- Immunity - definition, classification, concept of antigen & antibody & pathological variation
- Haemostasis - steps, role of platelets ,blood groups-A,B,O,AB, and Rh system, anemias, ESR & PCV
- Plasma proteins anticoagulants blood transfusion, Haemophilia, Thrombocytopenia

### **Cardiovascular system**

**16hrs**

- General organization and properties of cardiac muscle
- Origin and conduction of cardiac impulse
- Cardiac cycle and heart sounds ,Normal heart rate, bradycardia, tachycardia, Normal ECG
- Cardiac output- normal values, physiological variations, factors affecting cardiac output and regulation
- Blood pressure – normal values, measurement, determinants, short term and long term regulation
- Regional circulation- Coronary, muscular, cerebral
- Functions of Lymph
- Pressure and volume changes during cardiac cycle
- Pathophysiology of circulatory shock and edema
- Hypertension, hypotension, Hemodynamics

### **Respiratory system**

**12 hrs**

- General organization of respiratory system
- Mechanics of respiration – Inspiratory and expiratory muscles, intra pleural pressure, lung & thoracic compliance, surfactant, lung volumes & capacities.
- Diffusion of gases ,Transport of respiratory gases
- Regulation of respiration
- Outline of hypoxia (types & physiological changes) Acclimatization to high altitude.
- Dead space, Ventilation/ perfusion ratio, Maximum breathing capacity & breathing reserve, Pulmonary function tests.
- Artificial respiration, Asphyxia, cyanosis (types and physiological changes)

### **Digestive System**

**5hrs**

- General organization , Mastication and deglutition
- Saliva – composition, functions and regulation of salivary secretion
- Gastric secretion– composition, mechanism, phases of secretion, regulation and functions.
- Outline of gastric emptying and peristalsis

- Pancreatic secretion – composition, regulation and functions.
- Liver and gall bladder – composition and functions of bile Movements and functions of small and large intestine, Defecation reflex, constipation, diarrhea
- Jaundice ,Peptic ulcer

**Renal Physiology**

**5hrs**

- General introduction, structure and functions of kidney
- Formation of urine- filtration, reabsorption and secretion , Physiology of micturition
- Renal circulation , Plasma clearance test ,Neurogenic bladder Autogenic bladder

**Body Temperature regulation**

**2hrs**

- Normal body temperature & its regulation Hypothermia, hyperthermia
- Skin-structure and functions

**Endocrine system**

**7hrs**

- Introduction - General organization of endocrine glands
- Releasing hormones from hypothalamus
- Anterior & Posterior pituitary hormones – physiological actions, regulation & disorders Thyroid Hormones – physiological actions, regulation & disorders
- Parathyroid Hormones – physiological actions, regulation & disorders
- Adrenal cortex & medulla– physiological actions, regulation & disorders  
Pancreatic hormones – physiological actions, regulation & disorders
- Mechanism of hormone action

**Reproductive System**

**8 hrs**

- Functional anatomy of reproductive system , Puberty, changes in males and females, menarche, menopause
- Spermatogenesis - stages and regulation, Physiological actions of testosterone
- Menstrual cycle & ovarian cycles– phases and hormonal regulation, ovulation  
Physiology of pregnancy
- lactation – initiation, maintenance and control, Functions of placenta
- Pregnancy tests ,Sex chromosomes ,Precocious and delayed puberty

**Central Nervous System**

**30hrs**

- General organization of nervous system
- Receptors – definition, classification and functions
- Synapse – definition, physiological anatomy, synaptic transmission Reflexes – classification, properties and functions

- Spinal cord – ascending and descending tract and functions
- Ascending tracts – sensations carried, pathways and functions
- Descending tract –Origin, course and termination and functions
- Pain sensation – types of pain, pathways for conduction of pain, referred pain, central analgesia system
- Posture & equilibrium, Vestibular apparatus
- Thalamus – Functions
- Hypothalamus – functions
- Cerebellum – functions, effects of lesion
- Basal ganglia – functions, effects of lesion, Parkinsonism, Muscle tone
- Cerebral cortex – Gross anatomy and division, functions of each lobe
- Autonomic nervous system – Organization & functions of parasympathetic, sympathetic system and functions
- CSF – Composition, formation, circulation, functions & Blood brain barrier- Applied aspects
- Differences between Upper Motor Neuron and Lower Motor Neuron lesions Synthesis of neurotransmitters
- Limbic system and its functions Effects of spinal transection
- Decerebrate and decorticate rigidity ,Thalamic syndrome
- Ascending and descending reticular activating system , Speech, memory and learning,

## **Special Senses**

**5hrs**

### **Vision**

- Vision – Structure of eye ball, retina, refractory errors, Accommodation, visual pathway, Pupillary reflexes , Light and dark adaptation Photochemistry of vision

### **Ear**

- Functional anatomy of ear , Functions of middle ear, Functional anatomy of cochlea &functions of inner ear Audiometry Auditory pathway , Physics of sound ,Theories of hearing

### **Taste & smell**

- Functional anatomy, factor affecting.

## **TEXT BOOKS**

1. Essentials of Medical Physiology – K.Sembulingam & Prema Sembulingam

## **REFERENCE BOOKS**

1. Principles of Anatomy & Physiology – Tortora.
2. Textbook of Medical Physiology – Indu Khuran
3. Concise Medical Physiology – Sujit K. Chaudhri
4. Text book on Medical Physiology-By Guyton



## **Lecture demonstrations & Practicals (L.Ds)**

### **A) LECTURE DEMONSTRATION**

**80hrs**

1) Haematology:

**40hrs**

Hb, RBC, WBC, Blood groups, BT & CT, ESR, TLC, DLC

2) Graphs: Properties of muscles

**20hrs**

a) Skeletal muscle

SMC, effect of temperature, velocity of nerve conduction, fatigue, tetanus, all or none law & effect of load.

b) Cardiac muscle

Normal cardiogram, effect of speed, temperature, Stannius ligature, all or none law & incomplete tetanus, Nervous regulation of heart, vagal escape. Effect of drugs (adrenaline & acetylcholine)

3) Other L.Ds.

**20hrs**

a) Physical fitness- Cardiopulmonary efficiency tests

b) Stethography

c) Spirometry

d) Ergography

e) Perimetry

### **B) PRACTICALS (CLINICAL PHYSIOLOGY)**

**50hrs**

- a) Clinical examination of arterial pulse.
- b) Determination of arterial blood pressure.
- c) Clinical examination of cardiovascular system.
- d) Clinical examination of respiratory system.
- e) Clinical examination of higher functions.
- f) Clinical examination of sensory system.
- g) Clinical examination of motor system –I.
- h) Clinical examination of motor system –II
- i) Clinical examination of all cranial nerves.

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination.
- Theory : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks
- Practical : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks

**THEORY-Pattern of Paper setting :                      (Time : 3 Hours)**

<b>SECTION-1</b>				
<b>Q: 1] MCQs</b>			<b>(10 x 1)</b>	<b>10 Marks</b>
1-2)	General Physiology	- 2		
3-4)	Muscle-Nerve	- 2		
5-6)	Blood	- 2		
7-8)	CVS	- 2		
9-10)	RS	- 2		
<b>Q: 2] Write Answers Shortly</b>		<b>(Five out of Six)</b>	<b>(5 x 2)</b>	<b>10 Marks</b>
1)	Gen. Physiology			
2)	Muscle			
3)	Nerve			
4)	Respiratory system			
5)	Digestive			
6)	Renal			
<b>Q: 3] Write Short Notes</b>		<b>(Four out of Five)</b>	<b>(4 x 5)</b>	<b>20 Marks</b>
1)	Respiratory system			
2)	Special senses			
3)	Endocrine			
4)	Reproductive			
5)	CNS			
<b>SECTION-2</b>				
<b>Q: 4] MCQs</b>			<b>(10 x 1)</b>	<b>10 Marks</b>
1-3)	END/Reproductive	- 3		
4-7 )	CNS	- 4		
8)	Digestive	- 1		
9)	Renal	- 1		
10)	Special senses	- 1		
<b>Q: 5] Long Answer Questions</b>		<b>(Three out of Four)</b>	<b>(10 x 3)</b>	<b>30 Marks</b>
1)	Muscle – Nerve Physiology			
2)	CNS			
3)	Blood			
4)	CVS			

**PRACTICAL EXAMINATION : 80 Marks**

<b>1] Spots</b>	<b>[5 x 3]</b>	<b>15 marks</b>
1) Haematology		
2) Skeletal muscle experimental graphs		
3) Cardiac muscle experimental graphs		
4) Human experiments including perimetry, ergography, stethography & spirometry		
5) Clinical: BP apparatus, tuning fork, knee hammer & Weber's compass		
<b>2] Clinical exam</b>	<b>[4 x 10]</b>	<b>40 marks</b>
i. CVS – pulse examination, BP recording, chest examination- inspection, palpation, percussion, auscultation –		<b>10 marks</b>
ii. Respiratory system - chest examination- inspection, palpation, percussion, auscultation		<b>10 marks</b>
iii. Haematology		<b>10 marks</b>
iv. Nervous system		<b>10 marks</b>
i. Sensory motor examination – superficial & deep sensations, muscle tone, grading of muscle power, nutrition of muscle		
ii. Reflexes, cranial nerves- emphasis on taste, smell, hearing, vision & trigeminal		
<b>3] Demo table viva /Charts/Graphs</b>		<b>20 marks</b>
<b>4] Lab. Journal</b>		<b>05 marks</b>

**INTERNAL ASSESSMENT ( I.A.)**

- One internal & one preliminary examination of 80 marks each in Theory & Practical. Internal Marks to be calculated out of 20 each in Theory & Practical.
- Student will be eligible to appear for University examination if he/she gets minimum 50% marks.

## BIOCHEMISTRY

### Didactic only : 60 hours

**Objectives-** at the end of the course, the candidate will –

1. Be able to describe structures & functions of cell in brief.
2. Be able to describe normal functions of different components of food, Enzymes,
3. Define Basal metabolic rate & factors affecting the same [in brief], with special reference to obesity.
4. Be able to discuss nutritional aspects of carbohydrates, lipids, proteins & vitamins & their metabolism with special reference to obesity.
5. Define enzymes; discuss in brief, factors affecting enzyme activity.
6. Describe in details biochemical aspects of muscle contraction.
7. Acquire knowledge in brief about the Clinical biochemistry, with special reference to Liver & renal function test, Blood study for Lipid profile, metabolism of fat, Carbohydrates, proteins, bone minerals, and electrolyte balance.

### SYLLABUS:

#### 1. CELL BIOLOGY

3 hrs

Membrane, structure & function Junction of intracellular organelle in brief- [no structural details needed]

#### 2. CARBOHYDRATES

8 hrs

- Metabolism-Digestion and absorption of carbohydrates, Glycolysis- aerobic, anaerobic & its regulation
- Krebs cycle & its regulation
- Glycogenesis, glycogenolysis & their regulation, role of liver in muscle glycogen Glyconeogenesis, significance of H.M.P. shunt
- Hormonal regulation of blood sugar levels, Important metabolic disorders of glycogen, lactose intolerance, Diabetes mellitus.
- Clinical biochemistry: Relevance of blood levels of glucose, Glycosuria

#### 3. PROTEINS

8 hrs

- Chemistry-definition-function-classification of Amino acids- protein structure -effect of temperature on proteins- denaturation-coagulation; isoelectric pH & its importance
- Metabolism-Digestion & absorption-Decarboxylation-Deamination-Trans-methylation-transamination & their importance-Detoxification of ammonia including urea cycle.

- Clinical biochemistry: Relevance of blood levels of urea, & uric acid, Protein in urine

**4. LIPIDS** **8 hrs**

- Chemistry-definition-classification-[including fatty acids with examples] - function
- Metabolism-Digestion and absorption of lipids— $\beta$  oxidation of saturated fatty acids and its energetics and regulation of fat metabolism in adipose tissue- Ketone bodies formation & utilization—cholesterol and its importance[no biosynthesis needed]- classification, sources & function of lipoproteins-
- Lipo-proteinemia atherosclerosis.
- Clinical Biochemistry – Lipid profile -Triglyceride, cholesterol /HDL /LDL/ VLDL etc, Liver function test & Renal function test.
- Phospholipid synthesis

**5. NUCLEIC ACIDS** **3 hrs**

- D.N.A./R.N.A.-definition-structure and function-types- Genetic code - catabolism of purine –gout

**6. ENZYMES** **4 hrs**

- Definition-Co-Enzymes, affecting enzymes action modern Classification, factors Iso-enzymes
- Clinical and therapeutic use of enzymes:
- Clinical relevance: Enzymes-Amylase, CPK, LDH, iso-enzymes Inhibitors and types of inhibitors

**7. VITAMINS** **7 hrs**

- Water and fat soluble-definition-classification of it Individual vitamins-sources-Co-enzyme forms- function RDA, absorption and transport, deficiency and toxicity

**8. BIOLOGICAL OXIDATION** **2 hrs**

- Oxidative phosphorylation & ETC in brief.

**9. MINERALS** **5 hrs**

- Phosphate, calcium and iron [in detail]
- Magnesium, Fluoride, Zinc, Copper, Selenium Molybdenum, Iodine-sources, absorption, transport-excretion, functions and deficiency
- Clinical Biochemistry-Relevance of blood levels of Ca, phosphate & Iron

**10. ACID – BASE BALANCE, WATER & ELECTROLYTE** **5 hrs**

- Body water, pH-osmolarity Extra and Intra cellular fluid.

[KSV]

- Buffers-pH, buffer system in blood.
- Role of kidneys & lungs in acid-base balance.
- Water- electrolyte balance - imbalance-dehydration.

### **11. MUSCLE CONTRACTION**

**3 hrs**

- Contractile elements
- Biochemical events during contraction
- Energy metabolism in skeletal & cardiac muscle

### **12. CONNECTIVE TISSUE**

**3 hrs**

- Biochemistry of connective tissue-collagen – Glycoprotein –proteoglycans

### **13. NUTRITION**

**4 hrs**

- Importance of nutrition
- Basal metabolic rate – definition – normal values-factors affecting BMR
- energy requirement with – age/sex/ thermogenesis – specific dynamic action of food,- energy expenditure for various activities
- Composition of food, balanced Diet, dietary recommendations, nutritional supplementation – nutritional value of carbohydrates/proteins/fats & Fibers, Nitrogen balance & its significance, Protein energy malnutrition –Kwashiorkor & Marasmus

### **TEXT-BOOKS**

1. Biochemistry-by-Dr Satyanarayan
2. Text book of Biochemistry for Medical students by-Dr.Vasudevan/ Shrikumar

### **SCHEME OF EXAMINATION- [THEORY ONLY]**

- Student should get minimum 50% marks for passing the examination.
- Theory : 40 Marks    Internal Assessment : 10 Marks    Total : 50 Marks

**THEORY-Pattern of Paper setting :                    (Time : 2 Hours)**

<b>SECTION-1</b>			
<b>Q: 1] MCQs</b>		<b>(10 x 1)</b>	<b>10 Marks</b>
<b>Q: 2] Write Answers Shortly</b>	<b>(Five out of Six)</b>	<b>(5 x 2)</b>	<b>10 Marks</b>
<b>Q: 3] Write Short Note</b>	<b>(Two out of Three)</b>	<b>(2 x 5)</b>	<b>10 Marks</b>
<b>Q: 4] Long Answer Questions</b>	<b>(One out of Two)</b>	<b>(1 x 10)</b>	<b>10 Marks</b>

#### **INTERNAL ASSESSMENT ( I.A.)**

- One Internal & one preliminary examination of 40 marks each.
- Internal marks will be calculated out of 10 marks each.
- Student will be eligible to appear for University examination if he/ she gets minimum 50% marks.

## EXERCISE THERAPY - I

**DIDACTIC-135 Hrs**

**PRACTICAL -150 Hrs**

**Objectives:**

At the end of the year the student will be able to

1. Understand the basic mechanical principles and effect of exercise, therapeutic modality in the restoration of physical function.
2. Describe and acquire the skills of application and demonstration of the use of various tools of the therapeutic gymnasium and various starting and derived positions.
3. Describe the physiological and therapeutic effect of various movements and demonstrate in various anatomical planes.
4. Acquire the skills of application of various massage manipulations and describe the physiological effects, therapeutic uses, merits – demerits of the same.
5. Demonstrate and acquire the skill of relaxation.

**General Mechanical Principles:**

**30 hrs**

1. Mechanical principles applied in Physiotherapy like force, momentum, torque etc.
2. Momentum action and reaction, friction, rotation about a pivot, angle or pull of muscle.
3. Gravity: Definition, line of gravity, center of gravity.
4. Equilibrium: supporting base, stability and uses.
5. Work, energy and power.
6. Lever: Definition, orders of lever, examples in human body, levers at home and work; levers in Physiotherapy.
7. Springs: Properties of springs, springs in series and parallel.
8. Mechanics of muscle: Group action of muscles, types of contraction, muscle work.

**Exercise therapy-1:**

- |  |              |
|--|--------------|
| 1. Introduction to Physical Therapy.   | <b>2hrs</b>  |
| 2. Basic of exercise : Physiological effects and Therapeutic uses of exercises<br>Psychogenic aspects of exercises, Pharmacological effects of exercises | <b>4hrs</b>  |
| 3. Use of apparatus in Exercise Therapy.   | <b>5hrs</b>  |
| 4. Joint movements : Terminology, angle of motion, axis and planes of movement, levers.  | <b>6hrs</b>  |
| 5. Fundamental starting positions, derived positions : effects and uses and muscle work for all positions.   | <b>12hrs</b> |
| 6. Measurement of joint movements/ Goniometry : principles of goniometry, types (Bubble and gravity goniometers), method for measuring each movement.    | <b>24hrs</b> |



7. Classification of movements: **20hrs**  
 Active movements: Definition, types, effects and uses techniques.  
 Passive movements: Definition, types, effects and uses, techniques of relaxed  
 Passive movements and comparison of both movements.
8. Causes for restriction of range of motion : Distinguish between skin, muscle,  
 capsular contractures, End feel. **6hrs**
9. Group work : Criteria for selection of patients, advantages and disadvantages of  
 group therapy / class exercise. **6hrs**
10. Posture : Definition, types, factors influencing posture, posture training,  
 physiological deviations. **8hrs**
11. Free exercises : Classification, techniques, therapeutic effects of free exercises,  
 application for shoulder, neck, hip and knee joints. **18hrs**
12. Suspension therapy **24hrs**  
 Definition and concepts of suspension, Points of suspension, Weight & pulleys and  
 application of pulleys for suspension, Application of suspension therapy either to  
 increase the Joint range or muscle power
13. Resisted Exercises **15hrs**  
 Techniques and types of resistance, SET system (Heavy resisted exercises,  
 Oxford method, Delorme method, McQueen’s method) Application of  
 resistance to increase power and endurance, Progress of exercises : Free,  
 resisted-assisted-with use of apparatus.
14. Mat Exercises **14hrs**  
 Principles : Equilibrium / balancing exercises, Transfer activities, Indications and  
 contraindications
15. Evaluation methods **12hrs**  
 principles – techniques – merits/demerits, Individual and group muscles  
 Limb length and girth, Posture and gait
16. Locomotion **15hrs**  
 Normal gait, gait training, Training with supportive aids: principles, selection of aid,  
 pre-crutch training, Crutch walking, progression. Walking on slopes, Stair case  
 climbing, transport with walking aids
17. Breathing exercises **18hrs**  
 Mechanism of breathing, muscles of respiration, Diaphragmatic and segmental  
 breathing , Principles and techniques, Therapeutic effects, Exercises for bronchial  
 hygiene, coughing and huffing,
18. Home programme

19. Assessment of sensation, reflex testing, blood pressure, pulse rate, chest expansion and respiratory rate in normal persons & in abnormals. **10hrs**
20. Maintenance of record – range of motion, resistance. **2hrs**
21. Trick movements & Pelvic tilt. **2hrs**

**Soft Tissue Manipulation – Massage Mobilization: 30hrs**

1. Introduction – brief history, definition, classification
2. Physiological effects and therapeutic uses
3. Indications – contraindications
4. Preparation of patient, basic points to be considered during the treatment
5. Specific techniques, effects and uses of each manipulation
6. Massage techniques for upper and lower limbs, neck and back.
7. Massage for edema, scar, tendonitis, fibrosis (tight fascias)
8. Practice of soft tissue manipulation in subjects.
9. Mobilization of soft tissues, joints and fluid collection.
10. Myofascial release & cyriax manipulation

**TEXT BOOKS**

1. Principles of Exercise Therapy – Dena Gardiner
2. Massage, manipulation & traction---Sydney Litch
3. Massage- Hollis
4. Suspension Therapy in Rehabilitation—Margaret Hollis
5. Biomechanics--Cynthia Norkins
6. Hydrotherapy - Duffield
7. Measurement of joint motion - Cynthia Norkins
8. Therapeutic Exercise – Colby Kisner.

**REFERENCE BOOKS**

1. Clinical Kinesiology - Brunnstrom

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination.
- Theory : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks
- Practical : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks

**THEORY-Pattern of Paper setting :                      (Time : 3 Hours)**

### SECTION-1

Q: 1] MCQS	(10 x 1)	10 Marks
Q: 2] Write Answers Shortly	(Five out of Six)      (5 x 2)	10 Marks
Q: 3] Write Short Notes	(Four out of Five)      (4 x 5)	20 Marks

### SECTION-2

Q: 4] MCQs	(10 x 1)	10 Marks
Q: 5] Long Answer Questions	(Three out of Four)      (3 x 10)	30 Marks

### PRACTICAL EXAMINATION :

<b>A] Long case-</b>	<b>35 marks</b>
1) based on Massage	<b>15marks</b>
2) based on Goniometry/Passive movement/Suspension therapy/MAT exercises	<b>20marks</b>
<b>B] Short Case – Any two of the following</b>	<b>20 marks</b>
• Breathing exercises/Limb length/ Girth Measurement/Group Exercises/ Active movements/Resisted movements/ Blood Pressure, Pulse Rate	
• Respiratory rate / Chest excursion & Expansion, /Starting & derived Positions / Sensation & Reflex Testing/Endfeel/posture/gait/Free exercises.	
<b>C] Spots-Based on Therapeutic Gymnasium</b>	<b>20 marks</b>
<b>D] Journal</b>	<b>05 marks</b>

### INTERNAL ASSESSMENT (I.A.)

- One internal & one preliminary examination of 80 marks each in Theory & Practical. Internal Marks to be calculated out of 20 each in Theory & Practical.
- Student will be eligible to appear for University examination if he/she gets minimum 50% marks.

## ELECTROTHERAPY – I

**DIDACTIC-110 Hrs**

**PRACTICAL -120 Hrs**

The broad goal of the teaching of undergraduate students in Fundamentals of Electro Therapy aims at providing comprehensive knowledge of the physics, principles & Laws of Electricity & Electro-magnetic spectrum, understand the fundamental principles and uses of various modalities based on the type of energy utilized by each. Analyze the relationship between wavelength and frequency for electromagnetic energy. To acquire skills required to practice and use superficial thermal agents.

### **OBJECTIVES:**

#### **A – Knowledge:**

**At the end of the course, the student should be able to:**

- Understand the physics, principles & Laws of Electricity & Electro-magnetic spectrum
- Describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc
- Describe the mains electrical supply, Electric shock & precautions, Basic electrical components & their functions
- Explain the various ways electrical energy can be used to produce a therapeutic effect.
- Enumerate types of currents & describe production of High Frequency, Medium Frequency & Low Frequency electrical currents.
- Describe various types of electrodes used in therapeutics, describe electrical skin resistance & significance of various media used to reduce skin resistance
- Acquire knowledge of various superficial thermal agents, their physiological & therapeutic effects, Merits & Demerits.
- Describe effects of environmental & man-made electro- magnetic field at the cellular level & risk factors on prolonged exposure

#### **A. Skills**

**At the end of the course the students shall be able to:**

- a. Describe the panel diagrams of the electro-physical agents used in physiotherapy practice.
- b. Describe and identify various types of currents used in Physiotherapeutic practice.
- c. Identify various types of electrodes used in therapeutics and demonstrate various media used to reduce skin resistance
- d. Acquire the skill of Application of the superficial thermal agents on models, for the purpose of Physiotherapy Treatment

## **B. Integration**

From the integrated teaching of other basic sciences, students shall be able to comprehend the fundamentals of electrotherapy and electro-physical agents and thus interpret the various ways superficial thermal agents can be used to produce a therapeutic effect.

### **Syllabus-**

- |   |               |
|---|---------------|
| <b>1] Physics and Basic Electrical Components</b>   | <b>40 hrs</b> |
| <ul style="list-style-type: none"><li>• Conductors &amp; Insulators, Static Electricity- Electric Field, Potential difference &amp; Capacitance.</li><li>• Current Electricity – E.M.F., Ohm’s Law, Thermal Effects of Electrical Currents.</li><li>• Magnetism – Properties of Magnet, Electromagnetic Induction, Law</li><li>• Rheostat- Types, Potentiometer, Ammeter, Oscilloscope, Transformer -Types, Capacitor, Inductor, Thermionic Valves, Transistors,</li><li>• Mains Supply – Fuse, Plug, Switch, Wiring of the house, Dynamo.</li><li>• Shock – Types, Effects, Precaution &amp; Treatment</li></ul> |               |
| <b>2] Cellular Biophysics</b>   | <b>10 hrs</b> |
| <ul style="list-style-type: none"><li>• Reception &amp; Emission of E.M.F. signals</li></ul>  |               |
| <b>3] E.M. spectrum</b>   | <b>10 hrs</b> |
| <ul style="list-style-type: none"><li>• Wavelength, Velocity &amp; Frequency. Laws governing Radiation.</li></ul>   |               |
| <b>4] Fundamentals of Low frequency currents</b>  | <b>35 hrs</b> |
| <ul style="list-style-type: none"><li>• Types of Currents- applications in brief Characteristics of Currents – Pulse- Types of Pulses, Phase, Waveform, Inter pulse interval &amp; Frequency, Polarity testing, Types of electrodes, Galvanic Skin Resistance –Significance &amp; Methods to reduce GSR</li></ul>   |               |
| <b>5] Fundamentals of Medium frequency currents</b>   | <b>10 hrs</b> |
| <ul style="list-style-type: none"><li>• Physical Principles, Components of Panel, Testing of Apparatus- Interferential Therapy, Russian currents</li></ul>  |               |
| <b>6] Fundamentals of High frequency currents</b>   | <b>55 hrs</b> |
| <ul style="list-style-type: none"><li>• Pulse Generator, Circuit of Short Wave Diathermy &amp; Ultrasound Machine</li><li>• Physical Principles, Components of Panel, Testing of Apparatus– Continuous &amp; Pulsed Short Wave Diathermy, Ultrasound, Ultra Violet Rays, LASER (Only Physical Principles &amp; Types)</li><li>• Hazards of environmental currents</li></ul>   |               |

**7] Biophysics of Superficial heat**

**70 hrs**

- Physical principles, components of panel, Physiological effects, Therapeutic Effects /uses, Merits & Demerits, Indications & contra-indications, Skills of Application in-
- Paraffin wax bath, Whirl Pool,
- Contrast bath
- Hydro-collator / Hot packs Infra Red
- Home remedies

**PRACTICALS**

- 1] Panel diagrams-Identification of components, Testing mains supply & Machines
- 2] Skills of application of superficial thermal agent.

**TEXT BOOKS**

1. Clayton's Electro therapy – Kitchen-3RD Ed
2. Clayton's Electro therapy – Kitchen-10th Ed

**REFERENCE BOOK**

1. Clinical Electro Therapy-by Nelson & Currier
2. Electro therapy explained –by Low & Reed
3. Electrotherapy: Evidence Based Practice- Kitchen



## ENGLISH

### (COLLEGE SUBJECT)

**Didactic = 60 hrs**

#### OBJECTIVES

At the end of the course the students are able to:-

1. Develop good vocabulary skills for better communication
2. Effectively communicates with teachers, patients and public
3. Understands methods of writing and drafting letters in English

#### SYLLABUS:

#### GRAMMAR AND VOCABULARY

**40 hrs**

1. Reading Comprehension
2. Verb Forms
3. Right Words (Synonyms, Antonyms, Homonyms and One- Word Substitutes)
4. Detection of Errors
5. Reported Speech
6. Transformation
7. Tenses
8. Punctuation
9. Phrases and Idioms
10. Precise writing
11. Essay

#### COMMUNICATION AND COMPOSITION

**20 hrs**

1. Resume Writing
2. Letter writing and e-Correspondence
3. Note-Making
4. Report Writing
5. Expansion of Proverbs and Ideas
6. Description of Pictures

**Reference:** Jagdish Chander, 'Creative English', Oxford University Press, New Delhi.

#### EXAMINATION SCHEME [Theory only]

**\*Not In University Exam**

SECTION-1			
<b>Q:1] MCQs</b>		<b>(10 x 1)</b>	<b>10 Marks</b>
<b>Q:2] Write Short Note</b>	<b>(Four out of Five)</b>	<b>(4 x 5)</b>	<b>20 Marks</b>
<b>Q:3] Long Answer Questions</b>	<b>(Two out of Three)</b>	<b>(2 x 10)</b>	<b>20 Marks</b>



## COMPUTER SCIENCE

**(COLLEGE SUBJECT)**

**DIDACTIC – 60 Hrs**

**PRACTICALS – 40 Hrs**

**OBJECTIVES: At the end of the course the students are able to:-**

- 1 Develop good skills for better communication.
- 2 Effectively use Microsoft Office to communicate with patients while rendering care.
- 3 To utilize PowerPoint presentations and Picture management for effective teaching and learning.
- 4 To learn the use of computer for basic statistics using excel.
- 5 To learn the use of Internet services for Research.
- 6 Documentation.

**Syllabus:**

1. Introduction of Computer application for Physiotherapy practice.
2. Introduction of use of computers in teaching, learning, research.
3. Windows, MS office, Word, Excel, Power Point.
4. Internet, Literature search.
5. Introduction to Statistical packages.
6. Introduction to Hospital management information system software

\*Not In University Exam

**SCHEME OF EXAMINATION -\*\*[COLLEGE EXAMINATION]**

PRACTICALS = 50 MARKS

Passing in the subject is mandatory

## SECOND YEAR – BPT

### Subjects & Transcript Hours : 1405 Hours

1.	Pathology and Microbiology	
	A. Pathology-----	50hrs
	B. Microbiology-----	50hrs
2.	Pharmacology-----	60hrs
3.	Exercise therapy II & kinesiology-----	300hrs
4.	Electrotherapy - II-----	220hrs
5.	Psychology and Sociology-----	100hrs
6.	Research Methodology & Biostatistics -----	50 hrs
7.	Supervised Clinical practice-----	575hrs

(To practice clinical skills under the supervision of senior clinical staff at the O.P.D. setup & to maintain Register/Logbook-in which the prescribed Case Histories & written assignments are to be documented & to obtain the signature from the respective section In-charge at the end of the assignment).

## PATHOLOGY AND MICROBIOLOGY

### PATHOLOGY

(Didactic – 50 Hrs)

#### Objectives

At the end of the course, the student will be able to-

- 1) Acquire the knowledge of concepts of cell injury & changes produced thereby in different tissues & organs-capacity of the body in healing process.
- 2) Recall the etio-pathogenesis, the pathological effects & the clinico-pathological correlation of common infectious & non-infectious diseases.
- 3) Acquire the knowledge of concepts of neoplasia with reference to the Etiology, gross & microscopic features, diagnosis & prognosis in different tissues & organs of the body.
- 4) Correlate normal & altered morphology of different organ systems in different diseases needed for understanding disease process & their clinical significance (with special emphasis to Neuro-musculoskeletal & cardio-respiratory systems).
- 5) Acquire knowledge of common Immunological disorders & their resultant effects on the human body.
- 6) Understand in brief about the Hematological diseases & investigations necessary to diagnose them & determine their prognosis.

#### Syllabus: -

##### 1) Cell injury-

5hrs

- a) Causes, mechanism & toxic injuries with special reference to Physical, Chemical & ionizing radiation.
- b) Reversible injury (degeneration) – types – morphology, swelling, hyaline, fatty changes.
- c) Intra-cellular accumulation-hyaline mucin & pigment disorders.
- d) Irreversible cell injury-types of necrosis-apoptosis
- e) Extra-cellular accumulation-amyloidosis, calcification—metastasis & dystrophic – Pathogenesis, morphology

##### 2) Inflammation & Repair:

4hrs

- a) Acute inflammation – features, causes, vascular & cellular events, Morphologic variations, Inflammatory cells & mediators,
- b) Chronic inflammation:-causes, types, non-specific & granulomatous—with examples
- c) Wound healing by primary & secondary union factors promoting & delaying healing process, Healing at various sites - including-bones, nerve & muscle
- d) Regeneration & repair

**3) Immuno–pathology– (basic concepts)-**

**3hrs**

- a) Immune system:- organization-cells-antibodies – regulation of immune Responses, Organ transplantation
- b) Hyper-sensitivity, Secondary immune deficiency including HIV

**4) Circulatory disturbances-**

**4hrs**

- a) Edema-pathogenesis – types - transudates /exudates,
- b) Chronic venous congestion-lung, liver, spleen
- c) Thrombosis–Mechanism and Morphology
- d) Embolism–types-clinical effects,
- e) Infarction–types–common sites
- f) Gangrenes–types– etiopathogenesis
- g) Shock–Pathogenesis, types, morphologic changes

**5) Growth Disturbance-**

**3hrs**

- a) Atrophy-malformation, agenesis, dysplasia
- b) Neoplasia classification, histo-pathogenesis, biologic behavior, difference between benign & malignant tumor
- c) Malignant neoplasms -grades-stages-local & distal spread
- d) Precancerous lesions & carcinoma in situ
- e) Tumor & host interactions–systemic effects-metastatic or direct spread of tumors affecting bones, spinal cord, leading to paraplegia, etc

**6) Cardiovascular system**

**3hrs**

- a) Atherosclerosis -Ischemic heart diseases – myocardial infarction–Pathogenesis / Pathology
- b) Hypertension, Congestive Cardiac Failure, Pericarditis, Cardiomyopathy
- c) Rheumatic Heart Disease, Infective endocarditis , Peripheral vascular diseases

**7) Respiratory system**

**3hrs**

- a) COPD , Pneumonia (lobar, broncho, viral),
- b) T.B. Primary, secondary–morphologic space
- c) Pleuritis, complications, Lung collapse-atelectasis

**8) Neuropathology**

**5 hrs**

- a) Reaction of nervous tissue to injury-infection & ischemia
- b) Pyogenic meningitis, TBM, Viral
- c) Cerebrovascular disease, atherosclerosis, Thrombosis, embolism, aneurysm, hypoxia, infarction & hemorrhage.

- d) Effects of Hypotension on CNS
- e) Coma
- f) Poliomyelitis, Leprosy, Demyelinating diseases, Parkinsonism, Cerebral palsy, metachromatic leuco-dystrophy, Dementia, Hemiplegia, paraplegia, Wilson's disease
- g) Space Occupying Lesions (SOL) - (in brief)
- h) Peripheral nerve injury

**9) Diseases of muscle 2hrs**

- a) Muscular dystrophy, hypertrophy, Pseudo-hypertrophy, atrophy
- b) Myositis ossificans, necrosis, regeneration, Myotonia, muscle biopsy.

**10) Neuromuscular junction 2hrs**

- a) Myasthenia gravis, myasthenic syndrome, nerve biopsy

**11) Bone & Joints 4hrs**

- a) Fracture healing, Osteomyelitis, rickets, Osteo-malacia, Bone Tumors, Osteoporosis, Spondylosis, Prolapse Interverbral Disc, Scoliosis, Haem-arthritis, Gout, T.B., Arthritis – degenerative, inflammatory, RA, Ankylosing spondylitis, Tenosynovitis.

**12) Haematology 3hrs**

- a) T.C./D.C./PBS, Eosinophilia, E.S.R., Anaemia, Bleeding and coagulation disorders
- b) Disorders of haemoglobin structure and synthesis
- c) Lymphoid and myeloid neoplasmas.

**13) Miscellaneous 9hrs**

- a) Endocrine—Hyperthyroidism—Diabetes
- b) Hepatic diseases- Cirrhosis—emphasis to systemic effects of Portal Hypertension, Hepatitis.
- c) Deficiency disorders – Vitamins A, B, C, D
- d) Urinary – commonly encountered in various nephritis nephritic syndrome, common urinary tract infections.
- e) G.I. system—Gastric / duodenal ulcer, enteric fever enteritis, Gastritis (Related to consumption of NSAID)
- g) Skin-Scleroderma, Psoriasis, Leprosy, Autoimmune disorder.

**TEXTBOOKS –**

1. Textbook of Pathology-by Harsh Mohan
2. A Hand book of medical laboratory technology – V.H.Talib

**MICROBIOLOGY****(Didactic–50Hrs)**

**Objectives:** At the end of the course, the candidate will have sound knowledge of the agents responsible for causing human infections, pertaining to C.N.S.,C.V.S. Musculo - skeletal & Respiratory system.

**Syllabus:-****General Bacteriology: 10 hrs**

1. Introduction, historical background, classification of micro – organisms
2. Morphology of bacteria
3. Staining of bacteria
4. Sterilization
5. Cultivation and culture media

**Systemic Bacteriology: 10 hrs**

1. Gram-Positive cocci – Streptococci, Pneumococci, Staphylococci
2. Gram-Negative Cocci – Gono and Meningo cocci
3. Gram-Positive Bacilli
4. Gram-Negative Bacilli-Typhoid, Cholera, Dysentery
5. Aerobic-Diphtheria, T.B., Leprosy
6. Anaerobic-Tetanus, Gas Gangrene, Botulism

**Immunology: 10 hrs**

1. Immunity, Antigens
2. Antibodies, Ag-Ab Reaction
3. Agglutination, precipitation
4. Hypersensitivity reactions

**General Virology: 10 hrs**

1. Poliomyelitis
2. Rabies, Herpes Simplex, Rubella
3. Demonstration of test in: diagnosis of AIDS, Hepatitis and Syphilis
4. Introduction general properties of viruses, structure, classification, cultivation

**Parasitology: 5 hrs**

1. Malaria
2. Amoebiasis
3. Round worm and loop worm

**Mycology: 5 hrs**

1. Candidiasis
2. Ring worm
3. Scabies

**TEXTBOOKS**

Textbooks of Microbiology–by R.Ananthnarayan & C.K.Jayram Panikar

## SCHEME OF EXAMINATION

- Pathology/ Microbiology [Theory only]
  - Student should get minimum 50% marks for passing the examination
  - Pathology : 20 Marks, Microbiology : 20 Marks
  - Internal Assessment : 10 Marks Total : 50 Marks
- # Emphasis to be given to topics related to Musculoskeletal / Neurological / Cardio-vascular/Respiratory conditions & Wound / Ulcers

**THEORY-Pattern of Paper setting : (Time : 2 Hours)**

### Section-1 (Pathology)

- |  |                |                 |
|--|----------------|-----------------|
| <b>Q: 1) Write Answer in short (Five out of Six)</b> | <b>(5 x 2)</b> | <b>10 marks</b> |
| <b>Q: 2) Write Short Notes (Two out of Three)</b>    | <b>(2 x 5)</b> | <b>10 marks</b> |

### Section-2 (Microbiology)

- |  |                |                 |
|--|----------------|-----------------|
| <b>Q: 3) Write Answer in short (Five out of Six)</b> | <b>(5 x 2)</b> | <b>10 marks</b> |
| <b>Q: 4) Write Short Notes (Two out Three)</b>       | <b>(2 x 5)</b> | <b>10 marks</b> |

#### INTERNAL ASSESSMENT:

- One internal & one Preliminary examination to be conducted of 40 marks each.
- Internal Marks to be calculated out of 10 marks.
- Student will be eligible to appear for University examination if he / she gets minimum 50 % marks.

## PHARMACOLOGY

### [DIDACTIC – 60 hrs]

#### Objectives:

At the end of the course, student will be able to–

- 1] Describe Pharmacological effects of commonly used drugs by patients referred for Physiotherapy, list their adverse reactions, precautions to be taken & contra indications, Formulation & route of administration.
- 2] Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice-versa
- 3] Indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency & safety for individual needs.
- 4] Get the awareness of other essential & commonly used drugs by patients -The bases for their use & common as well as serious adverse reactions.

#### Syllabus:

##### 1) General Pharmacology

8 hrs

- a) Introduction to pharmacology, drug development.
- b) Routes of Administration.
- c) Pharmacokinetics - Absorption and distribution of drugs.
- d) Pharmacokinetics – Drug Bio-transformation & drug excretion.
- e) Pharmacodynamics – Dose response relationship.
- f) Adverse drug reactions.
- g) Factors modifying drug action.

##### 2) Drugs acting on Central Nervous System

8 hrs

- a) Alcohol
- b) Sedatives and Hypnotics
- c) Anti-epileptic drugs
- d) General Anaesthetics
- e) Opioid Analgesics
- f) NSAIDS
- g) Antipyretics
- h) Drug Therapy in Parkinsonism
- i) Anti-psychotics, antidepressants

##### 3) Drugs acting on Peripheral Nervous System

4 hrs

- a) Skeletal muscle relaxants.
- b) Local Anaesthetics.



- 4) Drugs acting on CVS and blood** **6 hrs**
- a) Anti-hypertensives, B-blockers, Calcium channel blockers, ACE Inhibitors.
  - b) Treatment of Angina
  - c) Treatment of Congestive cardiac failure
  - d) Haematinics and erythropoietin
  - e) Drugs affecting coagulation, bleeding, thrombosis.
  - f) Treatment of Shock.
- 5) Drugs acting on Respiratory system** **4hrs**
- a) For upper respiratory tract infections, Sinusitis – cough, laryngitis, Pharyngitis.
  - b) Drugs for treatment of bronchial asthma, COPD
- 6) Drugs acting on Autonomic Nervous System** **8hrs**
- a) Introduction to ANS and Cholinergic agonists–I
  - b) Cholinergic agonists–II
  - c) Cholinergic antagonists
  - d) Adrenergic agonists–I
  - e) Adrenergic agonists–II
  - f) Adrenergic antagonists
- 7) Endocrinology** **5 hrs**
- a) Introduction to Endocrinology, Thyroid hormones and Antithyroid drugs.  
Oestrogen and Progesterone
  - b) Treatments of diabetes mellitus
  - c) Corticosteroids
- 8) Drugs acting on Kidney** **2 hrs**
- a) Diuretics
- 9) Chemotherapy** **8 hrs**
- a) General principles of chemotherapy.
  - b) Sulfonamides & Fluoro quinolones.
  - c) Beta–Lactam antibiotics–I (Penicillins)
  - d) Beta–Lactam antibiotics–II (Cephalosporins)
  - e) Macrolides & aminoglycides
  - f) Tetracyclines & chloramphenicol (Broad spectrum antibiotics)
  - g) Anti-Tuberculosis drugs
  - h) Anti–Leprosy drugs

**10) Drugs used in Gastrointestinal Disorders**

**4 hrs**

- a) Peptic Ulcer
- b) Antiemetics
- c) Laxatives
- d) Antidiarrhoeal drugs

**11) Miscellaneous Topics**

**3 hrs**

- a) Vaccines & Sera
- b) Dermatological–Scabies–Psoriasis–Local Antifungals c)
- c) Vitamins & Calcium Metabolism, Phosphorus, Magnesium
- d) Irritants, Counter-irritants, Plasters, Poultices and pastes.

**TEXTBOOKS –**

- 1)Essentials of Medical Pharmacology–K.D.Tripathi
- 2)Pharmacology and Pharmaco therapeutics R.S.Satoskar

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination.
- Theory : 40 Marks    Internal Assessment : 10 Marks    Total : 50 Marks

**THEORY-Pattern of Paper setting :                    (Time : 2 Hours)**

### Section-1

<b>Q:1) M.C.Q</b>	<b>(10 x 1)</b>	<b>10 marks</b>
<b>Q:2) Write Answer shortly (Five out of Six)</b>	<b>(5 x 2)</b>	<b>10 marks</b>
<b>Q:3) Write Short Notes (Two out of Three)</b>	<b>(2 x 5)</b>	<b>10 marks</b>
<b>Q:4) Long Answer Question (One out Two)</b>	<b>(1 x 10)</b>	<b>10 marks</b>

### INTERNAL ASSESSMENT

- One internal & one preliminary examination to be conducted of 40 marks each.
- Internal Marks to be calculated out of 10 marks.
- Student will be eligible to appear for University examination if he / she gets minimum 50 % marks

## EXERCISE THERAPY- II & KINESIOLOGY

**Theory: 150 hours**

**Practical: 150 hours**

**Total: 300 hours**

### Objectives:

At the end of the course the candidate will be able to

1. Describe the biophysical properties of connective tissue and the effect of biomedical loading and factors which influence the muscle strength and mobility of articular and periarticular soft tissue.
2. Acquire the skill of assessment of isolated and group muscle strength subjectively and objectively.
3. Analyze normal human posture and its associated problems, its management.
4. Analyze the various normal musculoskeletal movements during breathing, gait and daily living activities and in terms of biomechanical and physiological principles.
5. Describe and demonstrate various therapeutic exercises with its technique: including chest P.T. on self and also acquire the skill of application on model.
6. To demonstrate general fitness, exercise and shall gain fitness for oneself

### EXERCISE THERAPY- II:

1. Passive movements: Definition, types, technique, effects and uses, CPM unit, comparison of active with passive movements for all joints of upper limb, lower limb, neck and trunk. **10 hrs**
2. Stretching: Definitions related to stretching, types of contractures and differentiation properties of soft tissues affecting elongation and aims of stretching, manual and mechanical stretching, cycle mechanical stretching, indications and aims of stretching, principles and contraindications, MFR (Myofascial Release) **25hrs**
3. Traction: types, effects, principles of application for cervical and lumbar spine, traction to soft tissues of joints – gliding movements **5hrs**
4. Mobilization: causes of restriction of R.O.M., prevention of restrictions, techniques of mobilization of various joints of limbs to mobilize joint R.O.M. through functional diagonal patterns, joint mobilization; manipulation-definition, types; joint shapes, types of motion; stretching, glides, compression, traction, indications, contraindications, precautions and conditions for special precautions . **25hrs**
5. M.M.T.: need of M.M.T., uses, fundamental principles, anatomical and physiological basis, Oxford scale of muscle gradation, principles of isolation, substitution, stabilization, grading procedure for muscles of extremities, neck and trunk. Voluntary control of

- movements gradation by Bobath, Brunnstrom. **30 hrs**
6. Posture, types, factors influencing posture, regulation of posture and posture mechanism, pelvic tilt and postural deviations of spine and its treatment **10hrs**
  7. Strengthening of muscles(PRE): Principles involved to prevent muscle wasting, Rood's technique of initiating muscle contraction, progressive strengthening of muscles (loads assisted and resisted exercises), use of equipments, re-education of muscles and restoration of functions, practice of strengthening of muscles of limbs, neck, trunk and face, emphasis on hand and foot muscles, quadriceps, glutei, triceps, deltoid and face muscles, use of manual & mechanical resistance, contraindications, isometric exercises , isokinetic exercises regime, plyometrics, MET(Muscle Energy Techniques) **25hrs**
  8. Proprioceptive Neuromuscular Facilitation: Introduction, responses of NM mechanism, basis techniques of PNF patterns of arm, leg, neck, head and trunk (emphasis on straight patterns), specific techniques of emphasis-repeated contractions – slow reversal, contract and relax, hold and relax, rhythmic stabilization, inhibitory techniques, Bobath Rood's and Kabat. **20hrs**
  9. Crawling Exercises : principles, types, effects & uses. **4hrs**
  10. Relaxation: muscle tone, postural tone, general and local relaxation techniques of relaxation **10hrs**
  11. Neuromuscular co-ordination: Factors governing co-ordination, principles of re-education, Frenkel's exercises and its techniques **15hrs**
  12. Functional Re-education: Mat activities for re-education of hemiplegics, paraplegics and cerebral palsy, walking re-education in neurological and orthopaedic conditions. **15hrs**
  13. Aerobic exercises: Physiological effects and therapeutic uses, fitness testing, stress testing for healthy and convalescent individuals. **15hrs**
  14. Breathing exercises: Mechanisms of normal breathing, muscles of respiration, changes in thoracic cage during the process of respiration, segmental and diaphragmatic breathing exercises, pursed lip breathing, FET, breathing mechanisms and postural drainage, assistive measures, techniques, indications and contraindications **25hrs**
  15. Hydrotherapy: physiological properties of water and hydrodynamics, physiological and applications of Bad Ragaz Technique, indications and contraindications. **6hrs**

## KINESIOLOGY

### Didactic: 60 hours

- 1. Mechanics of joint motion: 4 hrs**
  - a) Structure and types of joints and types of movements
  
- 2. Mechanics of muscular action: 4 hrs**
  - a) Classification of muscles, line of pull, types of contractions, role of muscles and tendons, action of two joint motions, non customary action
  
- 3. Skilled Movements: 3 hrs**
  - a) Rope climbing, cycling, running, ballistic and volitional movements
  
- 4. Impetus: 1 hrs**
  - a) Impetus to external objects and receiving impetus
  
- 5. Locomotion: 7 hrs**
  - a) Normal gait analysis: definition of gait, phases of normal gait, normal gait with kinetic and kinematics, abnormal pathological gaits, gait training
  
- 6. Biomechanics of joints: 21 hrs**
  - a) Kinetics, kinematics of joint – hip , knee, ankle, foot, shoulder, elbow, wrist and hand  
patho-mechanics of joint – hip , knee, ankle, foot, shoulder, elbow, wrist and hand
  
- 7. Biomechanics of spinal column: 4 hrs**
  - a) Spinal curves, articulations, non contractile soft tissue of column, IV disc, ligaments, intrinsic equilibrium, movements of spinal column and muscle mechanics
  
- 8. Mechanics of pelvic complex: 4 hrs**
  - a) Pelvis at rest, in standing body and in motion, patho-mechanics of pelvis
  
- 9. Mechanics of thorax: 4 hrs**
  - a) Movements between ribs and vertebrae, sternum and ribs, patho-mechanics of respiration
  
- 10. Postural strain and occupational hazards: 4 hrs**
  - a) Correct use of body mechanics at home, at school and work, recreation, particular application for patients, physiotherapists and other staff.

**11. Kinetics and kinematics of ADL**

**4 hrs**

- a) Supine to sitting, Sitting to standing, Squatting, Climbing up and down, pushing, pulling, overhead activities, walking, running, jogging

**TEXTBOOKS**

1. Progressive resisted exercises—by Margaret Hollis,
2. Therapeutic Exercise by Carolyn Kisner
3. Joint Structure & Function by Cynthia Norkins
4. PNF—Knott and Voss
5. Principles of Exercise therapy—Dena M. Gardiner

**REFERENCEBOOKS**

1. Muscle testing by Daniel Kendall
2. Orthopaedic evaluation—Magee (only for assessment of posture)
3. Clinical Kinesiology—Brunnstroms.

**SCHEME OF EXMINATION**

- Student should get minimum 50% marks for passing the examination.
- Theory : 80 Marks     Internal Assessment : 20 Marks     Total : 100 Marks
- Practical : 80 Marks     Internal Assessment : 20 Marks     Total : 100 Marks

**THEORY-Pattern of Paper setting :                            (Time : 3 Hours)**

**SECTION-1**

<b>Q:1] MCQS</b>		<b>(10 x 1)</b>	<b>10 Marks</b>
1 to 7 ) Exercise therapy-2			
8 to 10 ) Kinesiology			
<b>Q: 2] Write Answers in short</b>	<b>(Five out of Six)</b>	<b>(5 x 2)</b>	<b>10 Marks</b>
1 to 5 ) Exercise therapy-2			
6 ) Kinesiology			
<b>Q:3] Write Short Notes</b>	<b>(Four out of Five)</b>	<b>(4 x 5)</b>	<b>20 Marks</b>
1 to 4 ) Exercise therapy-2			
5 ) Kinesiology			

**SECTION-2**

<b>Q:4 ] MCQs</b>		<b>(10 x 1)</b>	<b>10 Marks</b>
1 to 7 ) Exercise therapy-2			
8 to 10 ) Kinesiology			
<b>Q:5] Long Answer Questions</b>	<b>(Three out of Four)</b>	<b>(10 x 3)</b>	<b>30 Marks</b>
1 to 3 ) Exercise therapy-2			
4 ) Kinesiology			

**PRACTICAL EXAMINATION :**

- |   |                           |                 |
|---|---------------------------|-----------------|
| <b>A] Long case</b>   | <b>(Any One)</b>          | <b>35 marks</b> |
| Based on MMT / Strengthening / Stretching/ Mobilization   |                           |                 |
| <b>B] Short Case I &amp; II</b>   | <b>(Each of 20 marks)</b> | <b>40 marks</b> |
| Short Case I based on PNF/ Posture/ Gait/ Aerobic Ex./ Biomechanics of joints                         |                           |                 |
| Short Case II based on Co-ordination/ Functional Re-education/ Breathing exercises/ Postural drainage |                           |                 |
| <b>C] Journal</b>   |                           | <b>05 marks</b> |

**INTERNAL ASSESSMENT–**

- One internal & one preliminary examination to be conducted of 80 marks each in Theory & Practical. Internal Marks to be calculated out of 20 each in theory & practical.
- Student will be eligible to appear for University examination if he/ she gets minimum 50% marks.



## ELECTROTHERAPY - II

**Didactic – 100 hours**

**Practical – 120 hours**

**Objectives:**

At the end of the course, the candidate will be able to –

1. Describe the Physiological effects, Therapeutic uses, Merits/Demerits, Indications & Contraindications of various Low, Medium & High Frequency currents.
2. Describe the Physiological effects & therapeutic uses of various therapeutic ions & topical pharmaco-therapeutic agents to be used for the application of Iontophoresis & Phonophoresis
3. Acquire the skill of Application of the Electrotherapy modes on models, for the purpose of Treatment
4. Acquire an ability to select the appropriate mode as per the tissue specific & area specific application and dosimetry of each modality.

**Syllabus-**

**1] Direct current (Constant) –**

**20hrs**

- Polarity Testing, Physiological & Therapeutic Effects Of D.C. & Safety measures, Cathodal /Anodal Galvanism, Iontophoresis using various ions & pharmaco therapeutic drugs- Effects & concentration of Ions, Tap water Iontophoresis

**2] Low Frequency Currents-**

**60hrs**

- **Faradic-type Current:** Physiological & Therapeutic Effects, Techniques of Application, Faradism under pressure, Faradic Foot Bath, Functional Electrical Stimulation.
- **Interrupted Direct Current**– Pulse Duration & Type of Pulse, Physiological & Therapeutic Effects/ Uses of Interrupted D.C., Technique of Application, Definition & Stimulation of Motor Points on Models
- **T.E.N.S.-** Types, Physiological Effects & Uses, Techniques of Application, Contra Indications, Pain Suppression System
- **High Voltage Pulse Galvanic Currents** - Physiological Effects & Uses, Techniques of Application, Contraindications
- **Diadynamic currents** - Physiological Effects & Uses, Techniques of Application, Contra Indications
- **Micro-currents-** Definition, Physiological Effects & Uses

**3] Medium Frequency Currents-**

**25hrs**

- Electro Physiological Effects & Uses, Contraindications, Techniques of Application, Endovac attachment, Advantage of I.F.T. over low frequency currents & Russian current

- 4] Electro Magnetic Fields- 30 hrs**
- Production of Heat, S.W.D.-Continuous/Pulsed, Physiological Effects & therapeutic effects, Contraindications, Techniques of Application, Types of Electrodes.
  - Microwave Diathermy, Long Wave Diathermy, PEME, Fluido therapy
- 5] Therapeutic Ultra Sound-pulsed/continuous, Physiological Effects & therapeutic effects, 25hrs**
- Contraindications, Techniques of Application, Dosimetry
- 6] Ultra Violet Rays 20hrs**
- Types of UVR, Physiological & Therapeutic Effects, Contra Indications, Test dose, Local & General Applications
- 7] Laser 15hrs**
- Properties, Types of Cold Laser, Physiological & Therapeutic Effects, Contraindications
- 8] Cryotherapy 8hrs**
- 9] Care of wound 9hrs**
- Application of Electro-Physical Agents like Therapeutic currents, Ultrasound, U.V.R. & LASER, etc.
- 10] Bio-Feedback-method: Introduction and principles 5hrs**
- 11] Combination Therapy 3hrs**

#### **PRACTICAL**

- Skills of application to be practiced on models-in Low Frequency (including Micro current), Medium Frequency, SWD, Ultra Sonic, Ultra Violet Rays, Laser, Cryotherapy & care of wound

#### **TEXT BOOKS**

- 1] Clayton's Electro therapy – Kitchen-3RD Ed
- 2] Clayton's Electro therapy – Kitchen-10th Ed
- 3] Electro therapy explained –by Low & Reed

#### **REFERENCE BOOK**

- 1] Clinical Electro Therapy-by Nelson & Carrier
- 2] Electrotherapy: Evidence Based Practice- Kitchen



## PSYCHOLOGY & SOCIOLOGY

### (Didactic – 100 Hours)

#### Objective:

At the end of the course, the candidate will

1. Be able to define the term Psychology & its importance in the Health delivery System & will gain knowledge of Psychological maturation during human Development & growth & alterations during aging process.
2. Be able to understand the importance of psychological status of the person in Health & disease, environmental & emotional influence on the mind & personality.
3. Acquire the Knowledge as to how to deal with the patients.
4. Socioeconomic and cultural differences.
5. Socioeconomic and cultural issues related to morbidity owing to the physical disability and handicaps.

#### Syllabus:-

### A. PSYCHOLOGY

(Didactic 60 hrs.)

#### Section-I : General Psychology

##### 1. Introduction to Psychology

5 Hrs

- Definition and nature of Psychology, Fields & subfields of psychology.
- Schools of thoughts – Structuralism, functionalism, Behaviourism, Gestalt, Psycho-analytic Theory

##### 2. Developmental Psychology

6 Hrs

- Definition & its Theories-Physiological and psychological changes during Infancy, Early & Late childhood, adolescent stage, Puberty, adulthood & old age

##### 3. Emotions – nature & relationship with autonomic nervous system-

4 Hrs

- Theories of emotions-James Lange theory, Schachter Singer theory, Cannon, Bard theory

##### 4. Motivation-

5 Hrs

- Maslow's hierarchy of motives, Theories of motivation; Conflict & Frustration – Types of conflicts, Common Defense mechanism, stress

##### 5. Attention & perception: Nature of attention, Nature of perception

4 Hrs

- Principle of grouping

##### 6. Memory-Definition and nature, types of memory and forgetting cause

3 Hrs

**7. Learning** - Definition and theories, conditioning, Role of learning in Human life–Conditioning **3 Hrs**

**8. Abnormal Psychology** - Difference between normal & Abnormal, Causes Of abnormality **3 Hrs**

**9. Attitude:** Nature, beliefs including prejudice, Attitude change **3 Hrs**

**10. Thinking and intelligence:**

- learning problem solving, development of conceptual thinking in children, language and thinking, measurement of intelligence, influences on intelligence, extent and consequence of Individual difference. **4 Hrs**

**11. Tests:** Wescher scales, Stanford Binet intelligence scale, Bender and Gestalt-other, Projective test, anxiety scale. **2 Hrs**

**12. Interpersonal behavior** - experimental analysis, social interaction, studies of the interview situation, behaviour in formal and informal groups, group and norms and rules. Leadership in formal and informal groups, group morale. **3 Hrs**

**Section–II Health Psychology **15 Hrs****

1. Psychological Reactions of a Patient: Psychological reactions of A patient during admission and treatment anxiety, shock, denial, suspicion, questioning, loneliness, regression, shame, guilt, rejection, fear, withdrawal, depression, ego centricity, concern about small matters, narrowed interests, emotional overreactions, perpetual changes, confusion, disorientation, hallucinations, delusions, illusions, anger, hostility, loss of hope.
2. Reactions to Loss: Reactions to loss, death and bereavement shock and disbelief, development of awareness, restitution, resolution. Stages of acceptance as proposed by Kubler–Ross.  
Stress: Physiological and Psychological relation to health and sickness: psychosomatic, professional stress burnout.
3. Compliance: Nature, factors, contributing to non–compliance, improving compliance.
4. Behavior: Application of various conditioning and learning principles to modify patient behaviors.
5. Personality Styles: Different personality styles of patients, Nature of personality, Structure and dynamic, theories of personality, measurement of personality, culture and personality patterns.

**Textbooks**

1. Morgan C.T. & King R.A. Introduction to Psychology– [Tata McGraw-Hill publication]
- 2 Hurlock, E.B(2005). Developmental Psychology – A life span Approach. Tata McGraw Hill Publication, New Delhi
3. Feldman, R.S. (1997). Understanding Psychology, Tata McGraw Hill Publication.

## **B.SOCIOLOGY**

**(Didactic - 40 hours)**

- 1.** Introduction–Definition & Relevance with Physiotherapy. **2hrs**
- 2.** Sociology & Health–Social factors affecting Health Status, Social Consciousness & Perception of Illness, Decision Making in taking Treatment. **3hrs**
- 3.** Socialization–Definition, Influence of Social Factors, on Personality, Socialization in the Hospital & Rehabilitation of the patients. **3hrs**
- 4.** Social groups - Concepts, Role of Primary & Secondary Groups in the Hospital & Rehabilitation Setting, Influence of formal & informal groups of Health & Diseases.**5hrs**
- 5.** Community Role of Rural & Urban communities in Public Health, Role of community in determining Beliefs, Practices & Home Remedies in Treatment. **3hrs**
- 6.** Social Security, Social Legislation & Social problems of the Disabled - Consequences of the following social problems in relation to disability, remedies to prevent these problems a] Population Explosion, b] Poverty & Unemployment c] Prostitution, d] alcoholism, e] beggary, f] problems of women in employment g] Juvenile delinquency **7hrs**
- 7.** Family - Influence on human personality, Individual Health, Family & Nutrition Effects of Sickness on Family Psycho somatic Diseases & Family **3hrs**
- 8.** Culture - Components Impact on Human Behaviour Cultural, Meaning of Sickness Response to Sickness & Choice of Treatment, as Social consciousness in moulding the Perception Of Reality, Culture induced Symptoms & Diseases, Sub-Culture. **6hrs**
- 9.** Caste systems - Features of Modern Cast Systems & its Trends, Social change factors – Human Adaptation, Stress, Deviance, Health Programme, Role of Social Planning in the improvement of Health & in Rehabilitation. **3hrs**
- 10.** Social Control – Definition, Role of norms, Folkways, Customs, Morals, Religion, Law & other means of social controls in the regulation of Human Behaviour, Social Deviance & Disease. **4hrs**
- 11.** Role of medical social worker & social problems. **1hrs**

### **Textbooks**

- 1] Sachdeva & Bhushan-An introduction to sociology–Allahabad; kitabmahalltd.1974

## SCHEME OF EXMINATION

- Student should get minimum 50% marks for passing the examination
- Theory : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks

**THEORY-Pattern of Paper setting :                      (Time : 3 Hours)**

### **Section-1    Psychology**

<b>Q:1) M.C.Q</b>		<b>(10 x 1)</b>	<b>10 marks</b>
<b>Q:2) Write Answer shortly</b>	<b>(Five out of Six)</b>	<b>(5 x 2)</b>	<b>10 marks</b>
<b>Q:3) Write Short Notes</b>	<b>(Two out of Three)</b>	<b>(2 x 5)</b>	<b>10 marks</b>
<b>Q:4) Long Answer Question</b>	<b>(One out of Two)</b>	<b>(1 x 10)</b>	<b>10 marks</b>

### **Section-2    Sociology**

<b>Q:5) M.C.Q</b>		<b>(10 x 1)</b>	<b>10 marks</b>
<b>Q:6) Write Answer shortly</b>	<b>(Five out of Six)</b>	<b>(5 x 2)</b>	<b>10 marks</b>
<b>Q:7) Write Short Notes</b>	<b>(Two out of Three)</b>	<b>(2 x 5)</b>	<b>10 marks</b>
<b>Q:8) Long Answer Question</b>	<b>(One out of Two)</b>	<b>(1 x 10)</b>	<b>10 marks</b>

### **INTERNAL ASSESSMENT (I.A.)**

- One internal & one preliminary examination of 80 marks each. Internal Marks to be calculated out of 20 each.
- Student will be eligible to appear for University examination if he/she gets minimum 50% marks.

## RESEARCH METHODOLOGY & BIOSTATISTICS

### [Didactic: 50 hours]

Objective – At the end of the course, the candidate shall

- 1] Gain knowledge of the basic concepts of Biostatistics & its need for professional Practice & research.
- 2] Be able to describe an Over – view.
  - a] Ethnography & Anthropology
  - b] Design & Methodology of an Experiment or Survey
  - c] Demography & vital statistics d] Sampling & interpretation of Data.

### **Biostatistics:**

**30hrs**

1. Introduction to biostatistics, why statistics?
2. Data: What is data? Quantitative and qualitative data, presentation of data with practical exercises.
3. Measures of central tendency: mean, median, mode, arithmetic and geometric mean.
4. Sampling: Why sampling? Methods of sampling and concepts of sample size
5. Measures of variability
6. Standard deviation, coefficient of variation, normal distribution
7. Measures of variability, standard error and its significance, limitations.
8. Statistical tests, X<sup>2</sup> test, standard error of proportions, difference of proportions
9. Mean and difference of mean
10. concept of Z, X<sup>2</sup> and t
11. Values, coefficient of correlation

### **Research Methodology:**

**20 hrs**

1. What is research? Why research?
2. Types of epidemiological studies and measurements of various indications
3. Possible errors that may generate due to study design and how to overcome them
4. How and what to read from journals?

### **Text Books**

1. B. K. Mahajan – Methods in Biostatistics
5. Methods in Bio-Statistics , 1997: B.K. Mahajan
6. Biostatistics : A manual of Statistics Methods: K. Visweswara Rao



### **SCHEME OF EXAMINATION**

- Student should get minimum 50% marks for passing the examination.
- Theory : 40 Marks    Internal Assessment : 10 Marks    Total : 50 Marks

**THEORY-Pattern of Paper setting :                    (Time : 2 Hours)**

#### **Section-1**

<b>Q:1) M.C.Q</b>	<b>(10 x 1)</b>	<b>10 marks</b>
<b>Q:2) Write Answer shortly (Five out of Six)</b>	<b>(5 x 2)</b>	<b>10 marks</b>
<b>Q:3) Write Short Notes (Two out of Three)</b>	<b>(2 x 5)</b>	<b>10 marks</b>
<b>Q:4) Long Answer Question (One out of Two)</b>	<b>(1 x 10)</b>	<b>10 marks</b>

#### **INTERNAL ASSESSMENT**

- One Internal & one preliminary examination of 40 marks each in Theory & Practical.
- Internal marks will be calculated out of 10 marks each in Theory & Practical.
- Student will be eligible to appear for University examination if he/ she gets minimum 50% marks.

## THIRD YEAR BPT

### Subjects-

#### Transcript Hours: 1405

1]	Orthopaedics .....	120 hrs
2]	Neurology and Paediatrics .....	110 hrs
	Neurology .....	80 hrs
	Paediatrics .....	30 hrs
3]	Medicine and Dermatology .....	110 hrs
	Cardio-Vascular & Pulmonary Medicine .....	60 hrs
	General Medicine, Rheumatology & Gerontology .....	30 hrs
	Dermatology .....	20 hrs
4]	General Surgery and Obstetrics & Gynecology.....	120 hrs
	General Surgery .....	80 hrs
	Obstetrics & Gynecology.....	40 hrs
5]	Physical and Functional Diagnosis .....	250 hrs
6]	Community Medicine.....	60 hrs
*7]	Psychiatry .....	20 hrs
	* College exam theory only	
8]	Supervised Physiotherapy Practice .....	615 hrs

To evaluate /assess & to practice Physiotherapy skills at the acute care/Indoor as well as O.P.D. set up under the supervision of Senior Physiotherapist. A register /Log book to be maintained & to document the Evaluation /Functional analysis & Functional diagnosis reports of minimum 3 cases per assignments & signature to be obtained from respective section In-charge at the end of each assignment.

## ORTHOPAEDICS

### Didactic – 120 hours

#### Objectives

At the end of the course, the candidate will

- 1] Be able to discuss the Pathophysiology, clinical manifestations & conservative/ Surgical management of various traumatic & non traumatic of the Musculoskeletal Conditions
- 2] Gain the skill of clinical examination & interpretation of the Pre-operative cases & all the post- operative cases
- 3] Will be able to read & interpret
  - a] Salient features of the X-ray of the spine & Extremities
  - b] Pathological/ biochemical studies pertaining to Orthopedic Conditions
- 4] Will be able to correlate the radiological findings with the clinical findings

#### Syllabus

##### 1. Introduction

4 Hrs

- Introduction to orthopaedics.
- Clinical examination in an Orthopaedic patient.
- Common investigative procedures.
- Radiological and Imaging techniques in Orthopaedics.
- Splints & traction procedures

##### 2. Traumatology

6 Hrs

- Fracture: definition, types, signs and symptoms.
- Fracture healing.
- Complications of fractures.
- Conservative and surgical approaches.
- Principles of management – reduction (open/closed, immobilization etc).
- Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative).

##### 3. Fractures and Dislocations of Upper Limb

20 hrs

Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:

- Fractures of clavicle and scapula.
- Fractures of greater tuberosity and neck of humerus.
- Fracture shaft of humerus.
- Supracondylar fracture of humerus.

- Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles.
- Fractures of ulna and radius.
- Fracture of forearm – Monteggia, Galeazzi fracture – dislocation.
- Chauffeur's fracture.
- Colle's fracture.
- Smith's fracture.
- Scaphoid fracture.
- Fracture of the metacarpals.
- Bennett's fracture.
- Fracture of the phalanges. (Proximal and middle.)

#### **Dislocations of Upper Limb:**

- Anterior dislocation of shoulder – mechanism of injury, clinical features, complications, conservative management, surgical management.
- Recurrent dislocation of shoulder.
- Posterior dislocation of shoulder – mechanism of injury, clinical features and management.
- Posterior dislocation of elbow – mechanism of injury, clinical features, complications & management.

#### **4. Fracture of Spine & Rib cage**

**10 hrs**

- Fracture of Cervical Spine - Mechanism of injury, clinical feature, complications (quadriplegia);
- Management- immobilization (collar, cast, brace, traction);
- Management for stabilization, management of complication (bladder and bowel, quadriplegia).
- Clay Shoveller's fracture.
- Hangman's fracture.
- Fracture of Odontoid.
- Fracture of Atlas.
- Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, and management— conservative and surgical of common fractures around thoracic and lumbar regions.
- Fracture of coccyx.
- Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.

#### **5. Fractures and Dislocations of Lower Limb**

**15 hrs**

- Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:

- Fracture of pelvis.
  - Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical.
  - Fractures of Trochanters.
  - Fracture shaft femur—clinical features, mechanism of injury, complications, management - conservative and surgical.
  - Supracondylar fracture of femur.
  - Fractures of the Condyles of femur.
  - Fracture patella.
  - Fractures of Tibial condyles.
  - Both bones fracture of tibia and fibula.
  - Dupuytren’s fracture
  - Maisonneuve’s fracture.
  - Pott’s fracture – mechanism of injury, management.
  - Bimalleolar fracture , Trimalleolar fracture
  - Fracture calcaneum – mechanism of injury, complications and management.
  - Fracture of talus.
  - Fracture of metatarsals—stress fractures Jone’s fracture.
  - Fracture of phalanges.
  - Dislocations of Lower Limb
- Mechanism of injury, clinical features, complications, management of the following dislocations of lower limb.
- Anterior dislocation of hip.
  - Posterior dislocation of hip.
  - Central dislocation of hip.
  - Dislocation of patella. Recurrent dislocation of patella.

**6. Diseases of Bones and Joints**

**10 hrs**

Causes, Clinical features, Complications, Management- medical and surgical of the following conditions - Infective: Osteomyelitis, TB Spine and other major joints

- Bone tumors: classification, clinical features, management
- Perthes disease, Slipped Capital Femoral Epiphysis , Avascular Necrosis
- Metabolic: Osteoporosis, Osteopenia, Osteomalacia, Rickets

**7. Peripheral nerve injuries:**

**5 Hrs**

- Mechanism, Clinical Features, Management and Complications

**8. Deformities –**

**7 Hrs**

- Clinical Features, Complications, Medical and Surgical Management of the Following Congenital and Acquired Deformities.

➤ Congenital Deformities

- CTEV.
- CDH.
- Torticollis.
- Scoliosis.
- Flat foot.
- Vertical talus.
- Hand anomalies- syndactyly, polydactyly and ectrodactyly.
- Arthrogryposis multiplex congenital (amyoplasia congenita).
- Limb deficiencies- Amelia and Phocomelia.
- Klippel feil syndrome.
- Osteogenesis imperfect (fragile ossium).
- Cervical rib.
- Acquired Deformities
- Acquired Torticollis.
- Scoliosis, Kyphosis, Lordosis.
- Genu varum, Genu valgum, Genu recurvatum
- Coxa vara.
- Pes cavus, Pes Planus
- Hallux rigidus. Hallux valgus. Hammer toe. Metatarsalgia.

**9. Inflammatory and Degenerative Conditions**

**6 hrs**

Causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions :

- Osteoarthritis.
- Rheumatoid arthritis.
- Ankylosing spondylitis
- Gouty arthritis.
- Psoriatic arthritis.
- Hemophilic arthritis.
- Still's disease (Juvenile Rheumatoid Arthritis).
- Charcot's joints.
- Connective Tissue Disorders
- Systemic Lupus Erythematosus
- Scleroderma
- Dermatomyositis
- Mixed connective tissue Disease (MCTD)

**10. Soft Tissue Injuries**

**6 Hrs**

- a) Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis.

b) Mechanism of injury, clinical features, managements conservative and surgical of the following soft tissue injuries:

- Meniscal injuries of knee.
- Ligamentous injuries of knee.
- Ankle Sprain
- Wrist sprain
- Strains- quadriceps, hamstrings, calf, biceps, triceps etc.
- Contusions- quadriceps, gluteal, calf, deltoid etc.
- Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc.

### **11. Regional Conditions**

**7 Hrs**

Definition, Clinical features and management of the following regional conditions:

- Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotatorcuff tendinitis. Subacromial Bursitis.
- Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis(student's elbow ). Triceps Tendinitis.
- Wrist and Hand: De Quervain's Tenosynovitis. Ganglion, Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture.
- Pelvis and Hip : IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis.
- Knee: Osteochondritis Dissecans. Prepatellar and Supra patellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome(Hoffa's syndrome).
- Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma

### **12. Amputations**

**4 hrs**

- Definition, Levels of amputation of both lower limb and upper limbs, Indications, Complications , Management

### **13. Hand Injuries**

**3 hrs**

Mechanism of injury, clinical features, and management of the following:

- Crush injuries, Flexor and extensor injuries, and Burn injuries of hand.

### **14. Cervical and Lumbar Pathology**

**7 Hrs**

- Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following :

- Prolapsed intervertebral disc (PIVD)
- Spinal Canal Stenosis.

- Spondylosis (cervical and lumbar)
- Spondylolysis.
- Spondylolisthesis.
- Lumbago/ Lumbosacral strain
- Sacralisation. Lumbarisation.
- Coccydynia.
- Hemivertebra.

**15. Re-constructive surgeries in Polio & cerebral palsy (bone & soft tissues) 3 Hrs**

**16. Syndromes 3 hrs**

Causes, Clinical features, complications, management- conservative and surgical of the Following :

- Cervico brachial syndrome
- Thoracic outlet syndrome
- Vertebro- basilar syndrome
- Scalenus syndrome
- Costo clavicular syndrome
- Levator scapulae syndrome
- Piriformis syndrome.

**17. Orthopedic Surgeries 4 hrs**

Indications, Classification, Types, Principles of management of the following Surgeries :

- Arthrodesis
- Arthroplasty (partial and total replacement)
- Osteotomy
- External fixators
- Spinal stabilization surgeries (Harrington's, Luque rod, Steffiplating) etc.

**TEXT BOOKS:**

- 1] Outline of Fractures - John Crawford Adams.
- 2] Outline of Orthopedics.— John Crawford Adams.
- 3] Text book of Orthopedics.— Maheswari.
- 4] Textbook of Orthopedics and Traumatology— M.N.Natarajan
- 5] Text book of Orthopedics - John Ebnezar

**Reference**

- 1] Apley's textbook of Orthopedics



## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination
- Theory : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks

**Theory Examination Pattern**      **(Time : 3 hours)**

### SECTION-1

<b>Q:1] MCQs</b>		<b>(10 x 1)</b>	<b>10 Marks</b>
<b>Q:2] Write Answers Shortly</b>	<b>(Five out of Six )</b>	<b>(5 x 2)</b>	<b>10 Marks</b>
<b>Q:3] Write Short Notes</b>	<b>(Four out of Five)</b>	<b>(4 x 5)</b>	<b>20 Marks</b>

### SECTION-2

<b>Q:4] MCQs</b>		<b>(10 x 1)</b>	<b>10 Marks</b>
<b>Q:5] Long Answer Questions</b>	<b>(Three out of Four)</b>	<b>(10 x 3)</b>	<b>30 Marks</b>

### INTERNAL ASSESSMENT

- One internal & one preliminary examination of 80 marks.
- Internal Assessment to be calculated out of 20.
- Student will be eligible to appear for University examination if he/ she gets minimum 50% marks.

## NEUROLOGY & PAEDIATRICS

### [Didactic –110 hours]

#### Objectives:

At the end of the course, the candidate will

- 1] Be able to describe Etiology, Pathophysiology, Signs & Symptoms & Management of the various Neurological and Paediatric conditions.
- 2] Acquire skill of clinical examination of Neurological System.
- 3] Acquire knowledge in brief about intra-uterine development of the fetus
- 4] Be able to describe normal development & growth of a child, importance of Immunization & breast-feeding & psychological Aspect of development.
- 5] Acquire skill of clinical examination of a neonate /child with Respect to neurological, Musculoskeletal, Respiratory & Cardiovascular conditions.

### SECTION - I : NEUROLOGY

(Didactic : 80 Hours)

#### Syllabus:-

1. Circulation of the Brain & Spinal cord **2 Hrs**
2. Neurological Investigations **4 Hrs**  
X-Ray, CT, MRI, Evoked Potentials, LP, CSF, EMG, NCV, EEG
3. Cerebro – vascular accidents **4 Hrs**  
Define: Stroke, TIA, RIA, and Stroke in evolution, Lacunar infarct.  
Risk Factors, Causes, Investigations, Differential Diagnosis, Management - Medical & Surgical, Complications
4. Movement Disorders **6 Hrs**  
Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders :
  - Parkinson’s disease, Wilson’s disease
  - Dystonia , Chorea , Ballismus, , Athetosis , Tics, Myoclonus
5. Polyneuropathy **4 Hrs**
  - Classification of Polyneuropathies
  - Causes, clinical features, management of GBS, Diabetic and Alcoholic Neuropathy
6. Disorders & Diseases of muscle **4 Hrs**
  - Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counseling.
  - Classification, etiology, signs & symptoms of Muscular dystrophy and Myotonic dystrophy

- 7. Motor neuron diseases** **4 Hrs**  
Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders:
- Amyotrophic lateral sclerosis
  - Spinal muscular atrophy
  - Hereditary bulbar palsy
  - Neuro myotonia
  - Post-irradiation lumbosacral poly radiculopathy.
- 8. Multiple Sclerosis** **3 Hrs**  
Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications.
- 9. Infections of brain and spinal cord** **7 Hrs**  
Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders:
- Meningitis, Encephalitis , Poliomyelitis and Post-polio syndrome
  - Leprosy, Tetanus , Neurosyphilis, Herpes, HIV infection
- 10. Higher cortical, neuropsychological and neurobehavioral disorders** **4 Hrs**
- Physiological nature of Epilepsy, classification, clinical features, investigations, medical & surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizures, and Epilepsy syndromes in adult.
  - Classification and clinical features of Dementia, Alzheimer’s disease.
  - Causes & investigations of Coma, criteria for diagnosis of Brain death.
- 11. Cerebellar & Co-ordination disorders** **3 Hrs**
- Congenital Ataxia, Friedrich’s Ataxia, Tabes dorsalis
- 12. Disorders of lower cranial nerves & Special Senses** **6 Hrs**  
Etiology, clinical features, investigations, and management of following disorders
- Trigeminal neuralgia
  - Lesions in facial nerve: Facial palsy, Bell’s palsy, Hemi facial spasm
  - Glossopharyngeal neuralgia , Lesions of Vagus, Spinal accessory nerve, Hypoglossal nerve , Disorders of special senses
- 13. Disorders of Myoneural Junction** **3 Hrs**  
Etiology, classification, signs & symptoms, investigations, management, of following Disorders:
- Myasthenia gravis , Eaton-Lambert syndrome , Botulism

- 14. Spinal cord Disorders** **5 Hrs**  
 Functions of tracts Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders:
- Spinal Cord Injury ,
  - Epidural abscess, Transverse myelitis, Spina bifida,
  - Conus medullaris syndrome , Bowel & Bladder Dysfunction
- 15. Head injury** **3 Hrs**
- Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.
- 16. Brain tumors and spinal tumors** **3 Hrs**
- Classification, clinical features, investigations, medical and surgical management.
- 17. Disorders of Anterior Horn Cell** **1 Hrs**
- 18. Dysfunction of Autonomus Nervous System** **2 Hrs**
- 19. Cerebrospinal Fluid** **2 Hrs**
- i) Formation & Absorption
  - ii) Status in Various Disorders
- 20. Introduction, Indications & Complications of following Neurosurgeries.** **10 Hrs**
- Outline of surgical disorders of brain & Head injuries
  - General survey of diseases of spine and spinal cord, Paraplegia
  - C/F and management of the following:
    - Congenital and childhood disorders – Hydrocephalus and Spina bifida
    - Trauma – broad localization, First aid and management of sequel of Head injury and spinal cord injury
    - Diseases of the spinal cord-Craniovertebral junction anomalies, Syringomyelia, Cervical and lumbar disc diseases, tumors
    - Peripheral nerve disorders – peripheral nerve injuries, localization and Management, entrapment neuropathies
    - Intracranial tumors – broad classification, signs and symptoms
    - Preoperative assessment and indications and contraindications for Neurosurgery
    - Management of pain, Electrical stimulation of brain and spinal cord
    - Miscellaneous -Micro vascular decompression surgery

**TEXT BOOKS:**

1. Davidson's Principles and Practice of Medicine
2. Textbook of Neurology- Victor Adams
3. Brains Clinical Neurology.
4. Illustrated Neurology & Neurosurgery: Lindsay
5. Brains Diseases of Nervous System
6. Physiotherapy in Neurology conditions : Glady Samuel Raj

## PAEDIATRICS

### SECTION – II

(Didactic- 30 hours)

#### Syllabus

1. **Normal development & growth, normal intrauterine development of fetus** **3 Hrs**
2. **Breast feeding and immunization** **1 Hr**
3. **Prenatal, Perinatal and Postnatal problems and management** **1 Hr**  
(Birth injuries): Neck, shoulder dystocia, Brachial plexus injury, Fractures
4. **Congenital abnormalities and management** **3 Hrs**
5. **Problems and management of LBW infants** **2 Hrs**
6. **Developmental Delay:** **2 Hrs**
  - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications
7. **Respiratory conditions of childhood:** **3 Hrs**
  - Pneumonias in children – Bacterial & Tubercular, Empyema, Asthma, Bronchiolitis, & Wheezy baby , bronchiectasis.
8. **Orthopedic and Neurological disorders in childhood, Clinical features and management** **8 hrs**
  - Cerebral palsy
  - Meningitis
  - Encephalitis
  - Hydrocephalus,
  - Ataxia
  - Arnold-chiari malformation,
  - Basilar impression & Cerebral malformations
  - Dandy walker syndrome
  - Down’s syndrome
  - Floppy infant
  - GBS
  - Poliomyelitis
  - Epilepsy
  - Still’s diseases
  - Neural tube defects in Pediatrics
  - Muscular dystrophies & Neuropathy

<b>9. Sensory disorders – problems resulting from loss of vision and hearing</b>	<b>1 Hr</b>
<b>10. Learning and behavioral problems</b>	<b>3 Hrs</b>
<ul style="list-style-type: none"><li>• Attention Deficit Hyperactivity Disorder</li><li>• Autism,</li><li>• Behaviors disorders : anorexia nervosa, pica, juvenile delinquency, breath holding spells</li><li>• Learning disability : dyslexia</li><li>• Habit disorders.</li></ul>	
<b>11. Nutritional disorders of childhood</b>	<b>2 Hrs</b>
<ul style="list-style-type: none"><li>• Rickets and scurvy, PEM (Kwashiorkar and Marasmus)</li></ul>	
<b>12. Infectious disease –</b>	<b>1 Hr</b>
<ol style="list-style-type: none"><li>1. Congenital &amp; Neonatal, Mental retardation</li><li>2. Acute rheumatic fever</li></ol>	

**Text Books:**

1) Essentials of Paediatrics – by O. P. Ghai - Inter Print publications

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination
- Theory : 80 Marks [Neurology- 56 marks & Paediatrics- 24 marks]
- Internal Assessment : 20 Marks Total : 100 Marks

**Theory Examination Pattern**

**(Time : 3 hours)**

### SECTION-1 (Neurology)

Q:1] MCQS		(10 x 1)	10 Marks
Q:2] Write Answers Shortly	(Three out of Four)	(3 x 2)	06 Marks
Q:3] Write Short Notes	(Four out of Five)	(4 x 5)	20 Marks
Q:4] Long Answer Question	(Two out of Three)	(2 x 10)	20 Marks

### SECTION-2 (Paediatrics)

Q:5] Write Answers Shortly	(Two out of Three)	(2 x 2)	04 Marks
Q:6] Write Short Notes	(Two out of Three)	(2 x 5)	10 Marks
Q:7] Long Answer Question	(One out of Two)	(1 x 10)	10 Marks

### INTERNAL ASSESSMENT

- One internal & one preliminary examination of 80 marks.
- Internal Assessment to be calculated out of 20.
- Student will be eligible to appear for University examination if he/ she gets minimum 50% marks.

## MEDICINE & DERMATOLOGY

### [Didactic - 110 hours]

<b>A] CARDIO-VASCULAR &amp; PULMONARY MEDICINE</b>	<b>Didactic 60 hrs</b>
<b>B] GENERAL MEDICINE, RHEUMATOLOGY &amp; GERONTOLOGY</b>	<b>Didactic 30 hrs</b>
<b>C] DERMATOLOGY</b>	<b>Didactic 20 hrs</b>

**Objective** – At the end of the course, the candidate will

- 1] Be able to describe Etiology, Pathophysiology, Signs & Symptoms & Management of the various Endocrinal, Infectious, urinary, psychiatric, gastrointestinal, Metabolic, Geriatric & Nutrition Deficiency conditions,.
- 2] Be able to describe Etiology, Pathophysiology, Signs & Symptoms, Clinical Evaluation & Management of the various Rheumatological Cardiovascular and Respiratory Conditions.
- 3] Be able to interpret Chest X-ray, Blood gas analysis, P.F.T. findings, Blood investigations done for various medical and Rheumatological conditions.
- 4] Be able to describe the principles of Management at the Medical Intensive Care Unit.
- 5] Be able to describe autoimmune condition involving musculoskeletal system and skin.

### Syllabus

<b>A-CARDIO-VASULAR &amp; RESPIRATORY/ PULMONARYMEDICINE</b>	<b>60 hrs</b>
<b>a) DISEASES OF THE CARDIO-VASULAR SYSTEM</b>	
• Examination of Cardio Vascular System	<b>2 Hrs</b>
• ECG – Normal & Variations due to ischemia & infarction	<b>2 Hrs</b>
• Stress Test	<b>1 Hr</b>
• Definition, Etiology, Clinical Features, Complications, Management of the following	
• Cardio-vascular diseases:	
a) I.H.D.–Myocardial infarction	<b>1 Hrs</b>
b) Valvular Heart Disease – i) Congenital ii) Acquired	<b>2 Hrs</b>
c) Rheumatic Fever & Rheumatic Heart Disease	<b>2 Hrs</b>
d) Infective Endo Carditis	<b>1 Hr</b>
e) Congenital Heart Diseases	<b>2 Hrs</b>
f) Unstable Angina	<b>1 Hr</b>
g) Cardiac tumors	<b>1 Hr</b>
e) Hypertension	<b>1 Hr</b>
f) Cardiac failure	<b>1 Hr</b>



**b) DISEASES OF THE RESPIRATORY SYSTEM**

- Examination of Respiratory System **2 Hrs**
- Introduction of clinical examination–Breath sounds, X ray chest, ABG, PFT **2 Hrs**
- Patterns of Respiratory Diseases: Obstructive & Restrictive **1 Hr**
- Definition, Etiology, Clinical Features, Complications, Management of Diseases of the respiratory system :
  - a) Common Infectious diseases like Tuberculosis, Pneumonia, Lung, Abscess, Bronchiectasis. **6 Hrs**
  - b) Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydro-pneumothorax, Empyema. **6 Hrs**
  - c) Obstructive Lung Diseases like Bronchitis, Emphysema, Bronchial Asthma, Cystic Fibrosis. **3 Hrs**
  - d) Respiratory Failure: Definition, Types, Causes, Clinical Features, Diagnosis and Management **2 Hrs**
  - e) Intensive Medical Unit – Infrastructure & Treatment **10 Hrs**
  - f) Interstitial Lung Diseases **3 Hrs**
  - g) Arrhythmia – classification **2 Hrs**
  - h) Occupational lung diseases like Silicosis Asbestosis, **2 Hrs**
  - i) Pneumoconiosis, Brucellosis, Farmer’s Lung **2 Hrs**
  - j) AIDS **2 Hrs**

**B - GENERAL MEDICINE, RHEUMATOLOGY & GERONTOLOGY (30hrs)****1] General Medicine**

- 1. Diabetes Mellitus** **2 Hrs**  
Etiology and pathogenesis, Clinical manifestations, Management and Complications of diabetes.
- 2. Diseases of Blood** **3 Hrs**  
Anemia : Signs and symptoms – types and management Hemophilia Cause – clinical features severity of disease –management – Complications due to repeated haemorrhages – complications due to therapy
- 3. Disorders of Endocrine system** **3 Hrs**
  - I. Thyroid
  - II. Calcium Metabolism
  - III. Pituitary & Adrenal conditions
  - IV. Obesity
  - V. myxoedema

## 2] Rheumatological Conditions

- Introduction to Rheumatology and Classification **1 Hr**
- Rheumatoid Arthritis , Juvenile RA **3 Hrs**
- Chickengunia, Psoriatic, Gouty Arthritis **2 Hrs**

## 3] Geriatric Conditions

**Osteoporosis** : Causes, Clinical features, Complications, Management- medical and surgical of the following conditions **3 Hrs**

- Ageing Process **1 Hr**
- General Health Care, Wellness Clinic **1 Hr**
- Drug Abuse / Intoxication **1 Hr**

## Miscellaneous

**SLE** **1 Hr**

**GI Disorders** : Peptic Ulcers, Dysentery, Pancreatitis, Diarrhea, Inflammatory Bowel Diseases, Jaundice, Cirrhosis of liver **3 Hrs**

**Infectious Diseases** : Tuberculosis, Malaria, Typhoid, Infective Hepatitis, Tetanus **2 Hrs**

**Urogenital System** : Structure and function of kidneys including physiology of micturition, Acute and chronic renal failure, Glomerular Nephritis, Pyelonephritis **2 Hrs**

**Nutritional deficiencies**: vitamin deficiency, rickets, osteomalacia, protein deficiency **3 Hrs**

**C – DERMATOLOGY****Didactic : 20 hours**

1] Structure, function of normal skin and lesions of skin	<b>1 Hr</b>
2] Acne	<b>1 Hr</b>
3] Pigmentary disorders	<b>2 Hr</b>
a] Localised	
b] Gen. Pigmentary	
4] Papulo-quamous disorders	<b>1 Hr</b>
a] Psoriasis, PR	
b] Lichenplanus, PRP	
5] Topical therapy in Dermatology & Hair disorders	<b>1 Hr</b>
a] Alopecia	
b] Hair deformity	
c] Hirsutism	
6] Vitiligo	<b>1 Hr</b>
7] Leukoderma	<b>1 Hr</b>
8] Leprosy/ lepra reactions	<b>1 Hr</b>

**SKIN INFECTION:**

1] Bacterial (impetigo, boil, carbuncle. Staphylococcal Scalded Skin Syndrome - SSSS) & Viral infections : Warts, Molluscum, Herpes, Hz, HSV	<b>2 Hr</b>
2] Fungal infections	<b>2 Hr</b>
a] Superficial – TC, TV, Dermatophytosis	
b] Deep fungal – Candidiasis	
3] Scabies, Pediculosis	<b>1 Hr</b>
4] Eczema/dermatitis/allergies –	
a] Exogenous	
b] Endogenous	<b>2Hr</b>
5] Sexually Transmitted skin lesions	<b>2 Hr</b>
a] HIV	
b] Syphillis	
c] Chaneroid LGV	
d] G. inguinale	
e] Gonnorrhoea	
6] Herpes zoster	<b>1 Hr</b>
7] Disease related to rheumatology and tropical skin diseases	<b>1 Hr</b>

**Text Book**

- 1) Golwalla – Medicine for students
- 2) Clinical Medicine :- P. J. Mehta
- 3) Dermatology and STDs – Neena khanna

**Reference book**

- 1) Principles & Practice of Medicine – by Davidson
- 2) API - Text book of Medicine

### **SCHEME OF EXAMINATION**

- Student should get minimum 50% marks for passing the examination
- Theory : 80 Marks [Medicine : 56 Marks & Dermatology : 24 Marks]
- Internal Assessment : 20 Marks                      Total : 100 Marks

**Theory Examination Pattern**

**(Time : 3 hours)**

#### **SECTION-1 (Medicine)**

<b>Q:1] MCQS</b>		<b>(10 x 1)</b>	<b>10 Marks</b>
<b>Q:2] Write Answers Shortly</b>	<b>(Three out of Four)</b>	<b>(3 x 2)</b>	<b>06 Marks</b>
<b>Q:3] Write Short Notes</b>	<b>(Four out of Five)</b>	<b>(4 x 5)</b>	<b>20 Marks</b>
<b>Q:4] Long Answer Question</b>	<b>(Two out of Three)</b>	<b>(2 x 10)</b>	<b>20 Marks</b>

#### **SECTION-2 (Dermatology)**

<b>Q:5] Write Answers Shortly</b>	<b>(Two out of Three)</b>	<b>(2 x 2)</b>	<b>04 Marks</b>
<b>Q:6] Write Short Notes</b>	<b>(Two out of Three)</b>	<b>(2 x 5)</b>	<b>10 Marks</b>
<b>Q:7] Long Answer Question</b>	<b>(One out of Two)</b>	<b>(1 x 10)</b>	<b>10 Marks</b>

#### **INTERNAL ASSESSMENT**

- One internal & one preliminary of 80 marks.
- Internal Assessment to be calculated out of 20.
- Student will be eligible to appear for University examination if he/ she gets minimum 50% marks.

## GENERAL SURGERY AND OBSTETRICS & GYNAECOLOGY

[Didactic-120 hours]

### A) SURGERY

**DIDACTIC : 80 HOURS**

#### Objective-

At the end of the course, the candidate will be able to-

- 1) Understand & describe pre operative evaluation various surgical indications in abdominal thoracic, Neurosurgical & Peripheral vascular conditions.
- 2) To understand surgical steps & approaches in short & should be able to describe components of soft tissues cut to reach target tissue & complications.
- 3) To assess post operative complications & its implications in ward treatment, prognosis, morbidity & mortality.
- 4) To describe effects of surgical trauma & Anaesthesia in post operative course.
- 5) Understand classify, clinically assess, evaluate & describe surgical management in brief for:
  - a) Wounds and Ulcers
  - b) Burns
- 6) Be able to read & interpret finding of X-ray chest & Abdomen, CT Scan, USG.

#### SYLLABUS -

##### 1] Infection and inflammation-

**5 Hrs**

- Acute/chronic - signs, symptoms, complications & management, Including Inflammatory fever, bacteremia, septicemia, pyeremia, toxemia.
- Specific types: Cellulitis-sites, lymphangitis, abscess with special reference to hand infection, Carbuncle.
- UTI.

##### 2] Wounds and ulcers, Gangrene –

**7 Hrs**

- Classification, Healing, Management, Cleaning and Contamination.
- Specific Types : Tetanus, Gas gangrene, hospital infection, cross infection with modes of spread and prevention.
- General survey of chronic inflammation: syphilis (reference to other Venereal diseases), leprosy and Actinomycosis.
- Surgical Tuberculosis.
- General survey of Trauma, pathology, clinical features of wound repair - primary, secondary and tertiary wound repair.
- Clean and contaminated wounds and infectious wound, Principles of treatment,
- Factors affecting wound healing, ulcers and gangrene.
- Post operative complications of wound infection, edema.

**3] Abdominal Surgeries:**

**8 Hrs**

- Surgical anatomy of Anterior Abdominal wall and Surgical approaches.
- Various abdominal incisions, abdominal drainage tubes, catheters and Common abdominal surgeries like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy, Nephrectomy, Prostatectomy.
- Post operative complications of abdominal surgery.

**4] Thoracic surgeries**

**8 Hrs**

- Basic anatomy of Chest wall, Trachea and Bronchial tree, Lungs and Bronchopulmonary segments, Pleura and Mediastinum.
- Physiology and mechanics of breathing and use of mechanical breathing – Ventilators (respirators).
- Thoracotomy - Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications.
- Post operative complications of thoracic surgeries.
- Common diseases of esophagus and related conditions causing dysphagia.
- Chest Injuries: evaluation, management.

➤ **Lung surgeries:**

**8 Hrs**

- Common suppurative diseases of the lung: Bronchiectasis and Lung abscess, Bronchogenic Carcinoma
- Common surgeries of chest : Thoracoplasty, Pulmonary dissections, Thoracotomy; Pneumonectomy, Pleurectomy, Lobectomy, Segmentectomy – Indications, Physiological changes and Complications of all surgeries.
- Surgery for Portal hypertensions, Pulmonary T.B.
- Pleurodesis and Decortication of the Lung, Intercostal Drainage System

➤ **Cardiac surgeries**

**8 Hrs**

- Basic anatomy of Heart and Great vessels
- Surgery of Heart and Great vessels.
- Investigation of patients undergoing Cardiac surgery.
- Common diseases of heart requiring surgery both congenital and acquired.
- Cardiac arrest and its management.
- An overview of the Cardio-Pulmonary Bypass Machine
- Extracardiac Operations : Closed Heart surgery, Open Heart surgery.
- Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications
- Common drugs used in cardiac surgery its uses and side effects

- 5] Peripheral vascular diseases** **5 Hrs**
- Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases: Atherosclerosis, Arteriosclerosis, Buerger's disease, Raynaud's disease, Varicose veins & DVT , Thrombosis, Embolism
  - Coronary artery bypass surgery.
- 6] Burns and Plastic Surgery** **8 Hrs**
- Burns- causes, classification, ward management, post burn contractures, various Reconstructive & plastic surgeries
  - Skin grafts/ flaps- pedicle/ Tube /Muscle flap Types, indications with special emphasis to burns/ wounds, ulcers, post surgical, neck, face defects and reconstruction.
  - Hypertrophic scar & Keloid – management
  - Principles of tendon transfers - with special emphasis to hand, foot & facial paralysis
- 7] Surgical Oncology** **5 Hrs**
- Malignancy – spread and its behavior.
  - Cancer – definition, types, Clinical manifestations of cancer, Staging of Cancer.
  - Surgical procedures involved in the management of breast cancer.
- 8] Bariatric Surgeries** **2 Hrs**
- Important Bariatric surgeries and its incisions.
- 9] Emergency Surgical Procedures:** Tracheostomy, Indications: steps, post operative care **3 Hr**
- 10] Surgical trauma:** **3 Hrs**
- Response of body
  - Effect of Anesthesia,
  - Shock & its types.
  - Fluid & electrolyte balance.
  - Total Parenteral Nutrition.
- 11] Common ENT problems** **3 hrs**
- ENT conditions & its management emphasis on Otitis Media, Bell's palsy, sinusitis and rhinitis, facial palsy, Mastoid surgery.
  - Nasogastric tubes.
  - Causes of hearing loss, conservative and surgical intervention including types and availability of hearing aids.

**12] Various eye problems –**

**2 Hrs**

- Common eye disease including Refractory errors, conjunctivitis and trachoma, Glaucoma, Squint and Ptosis.
- Causes, clinical features and treatment of disorders of ocular movement occurring in diseases such as Myasthenia gravis, Progressive Supra nuclear palsy and LMN Diseases.
- Causes, clinical features and treatment and prognosis of inflammatory diseases, vit-A deficiency.
- Emphasis on preventable causes and prophylactic measures.
- Investigative procedures used for testing visual failures.
- Surgeries for III, IV nerve palsy, cataract, Intra ocular lesion.

**13] Auscultation & its interpretation**

**5 Hrs**

With special emphasis to Pulmonary Function, P.F.T., Blood-Gas analysis, Clinical Radiology- X-ray-chest-normal/abnormal, C.T. scan, M.R.I. and angiography etc

**TEXT BOOKS**

1. Under-graduate Surgery by Nan
2. Manipal's Text book of surgery. Rajagopal Shenoy.
3. Clinical & Operative surgery by S. Das
4. T .B. of surgery by S. Das



**SECTION B: - OBSTETRICS & GYNECOLOGY****Didactic = 40 Hours**

<b>1. Anatomy of female genital system and pelvic floor</b>	<b>3 Hrs</b>
<b>2. Menstrual cycle</b> and its Disorders, its hormonal regulation.	<b>3 Hrs</b>
<b>3. Pregnancy</b>	<b>10 Hrs</b>
• Normal Gestations	
• Maternal Physiology in Pregnancy	
• Musculoskeletal disorders in Pregnancy	
• Antenatal Care	
• Prenatal and Perinatal Complications	
• Labour- Stages, Normal & Complications , Pain relief in Labour	
• Post Natal – Puerperium, Lactation	
• Abortion	
• High risk pregnancy , multiple child birth	
• Child birth complications	
• Medical termination of pregnancy	
<b>4. Menopause</b>	<b>3 Hrs</b>
• Physiology, Complications, Effect on Various systems, Management	
<b>5. Urogenital dysfunction</b>	<b>7 Hrs</b>
• Uterine prolapse – classification & management (Conservative /Surgical), Cystocoele, Rectocoele, Enterocoele	
• Urinary Incontinence: Types, Causes, Assessment and Management.	
• Pelvic Inflammatory Diseases	
• Polycystic Ovarian Disease (PCOD)	
• Infection of female genital track including STD.	
<b>6. Surgical Procedures involving child birth</b>	<b>2 Hrs</b>
Caesarian Section, Episiotomy	
<b>7. Definition, Indications, Management of the following surgical procedures.</b>	<b>3 Hrs</b>
• Dilatation and Curettage	
• Hysterectomy – Total, Abdominal & Vaginal Salpingectomy & oophorectomy	
<b>8. Multiple gestations</b>	<b>1 Hr</b>
<b>9. Methods of family planning</b>	<b>3 Hrs</b>
<b>10. Neoplasm of Female reproductive organs – surgical management</b>	<b>2Hrs</b>
<b>11. Sterility – management</b>	<b>3Hrs</b>

**Text Book:**

- 1) Text book of Gynecology – by Dutta – New Central Book Agency
- 2) Text book of Obstetrics - by Dutta – New Central Book Agency

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination
- Theory : 80 Marks ( General Surgery : 56 Marks, Obstetrics & Gynaecology : 24 Marks)
- Internal Assessment : 20 Marks Total : 100 Marks

**Theory Examination Pattern**

**(Time : 3 hours)**

### SECTION-1 (General Surgery)

Q:1] MCQS	(10 x 1)	10 Marks
Q:2] Write Answers Shortly	(three out of four) (3 x 2)	06 Marks
Q:3] Write Short Notes	(four out of five) (4 x 5)	20 Marks
Q:4] Long Answer Question	(two out of three) (2 x 10)	20 Marks

### SECTION-2 (Obstetrics & Gynecology)

Q:5] Write Answers Shortly	(two out of three) (2 x 2)	04 Marks
Q:6] Write Short Notes	(two out of three) (2 x 5)	10 Marks
Q:7] Long Answer Question	(one out of two) (1 x 10)	10 Marks

### INTERNAL ASSESSMENT

- One internal & one preliminary examination of 80 marks.
- Internal Assessment to be calculated out of 20.
- Student will be eligible to appear for University examination if he/ she gets minimum 50% marks.

## PHYSICAL & FUNCTIONAL DIAGNOSIS

### [Didactic - 250 hours]

Didactic : 110 Hour

Practical : 140 Hour

#### Objectives:

This course is aimed at physical diagnosis based on I.C.I.D.H - II definition.

At the end of the course, the candidate will-

- A. Be able to describe the Human development & maturation; with special emphasis to Psychomotor development Maturation & alteration during aging process.
- B. Acquire the skill of detection & objective documentation of the Neuro-musculoskeletal dysfunction such as Pain, Altered muscle power, Mobility, Endurance, Limb length, Posture, Gait, Hand function & A.D.L.; as well as Exercise tolerance [with special emphasis to Cardio-respiratory function] & will arrive at the Physical [Functional] diagnosis in terms of Impairment, activity [ Disability] Participation [Handicaps] with the appropriate clinical reasoning.
- C. Be able to analyze & discuss the Physiological & Biomechanical bases of movement dysfunction & apply the same for functional diagnosis.
- D. Acquire the skills to use on patients, the therapeutic currents, for Electro-diagnosis of sensory, motor, accommodation dysfunction & pain.
- E. Be able to describe the Physiology of nerve impulse, Motor unit, its electro-physiological character, Bases for detection of abnormal EMG, Late responses, Reflexes and Nerve conduction.

#### Syllabus:

##### **1. Electro-Diagnosis:**

**30 hrs**

Bioelectricity - Physiology of generation & propagation of action potential – Volume conduction:

- a) Therapeutic current – as tool for electro-diagnosis – physiological principles – use of alternating & direct current in electro-diagnosis such as SD curves, use of Biofeedback unit for assessment of muscle function.
- b) Principles of Electromyography – Motor unit – Normal characteristics – Activity at rest, Recruitment/frequency pattern at minimal activity, Interference pattern – Abnormal E.M.G. pattern.
- c) Principles of nerve conduction.
- d) Late responses : F-wave, H-reflex.
- e) Electro-physiological principles of assessment of Myoneural junction.
- f) E.M.G. instrumentation: Basic components, Panel diagram, Types of electrodes.

- g) Biofeedback: Introduction, Principles of biofeedback, Therapeutic effects, Indications, Contraindications and Techniques of treatment.

**2. Assessment of Orthopaedic movement Dysfunction: 50 hrs**

- a) General Orthopaedic examination, Muscle strength, Power, Endurance, Flexibility, Limb-length discrepancy, Limb girth, Pelvic inclination, Goniometry, Trick movements, End-feel, Special Tests, Altered Posture & Gait – Functional analysis as per I.C.I.D.H-II norms.
- b) Physical examination of joints in normal & pathomechanical conditions.
- c) Assessment of pelvic floor muscle strength & function.
  - I. Digital evaluation of vagina.
  - II. Perineometer.
  - III. Pad test.
- d) Disability evaluation – Gait & Gait parameters, percentage of Disability ( temporary & permanent)

**3. Assessment of Neuromuscular Dysfunction: 50 hrs**

- a) General neurological examination, Higher functions, Cranial nerves, Altered muscle strength, Power, Balance, Endurance, Tone, Spasticity, Inco-ordination, Abnormal deep & superficial reflexes, Myotomes, Dermatomes, Voluntary control testing, Abnormal movements, Neural control of bladder, Nerve entrapments, Gait and Functional evaluation as per ICIDH-II norms.
- b) Posture and alignment : Biomechanical and neural factors.

**4. Assessment of cardio-pulmonary dysfunction: 50 hrs**

- a) Chest expansion, Abnormal breath sounds, Quality of life questionnaires, Borg scale, Principles of exercise tolerance test – Assessment of vital parameters in simple functional test, 6 minutes walk test, 12 minute walk test, Shuttle walk test, Canadian step test, Treadmill test, Symptom limited test, Breath holding test, Spirometry, Peak-flowmetry, Theoretical bases of Bruce protocol, Astrand Protocol & Step test.

**5. Functional diagnosis: 10hrs**

- a) ICIDH-II, ICF, FIM, STREAM, BBS and Barthel Index.

**6. Interpretation of various Investigations: 4hrs**

- a) Radiological (X-rays, CT scan, MRI).
- b) Routine Biochemical investigations (ABG, blood, CSF, etc).
- c) Electro-diagnostic (EMG, NCV, SDC etc) findings.
- d) PFT analysis.

- 7. Assessment of Pain: 4hrs**  
a) Intensity, Quality, Objective assessment, Documentation.
- 8. Assessment of Hand: 8hrs**  
a) Pinches, Grips, Routine sensory motor evaluation, Stereognosis.
- 9. Sports: 4hrs**  
a) Systemic and Physiological effects.

**Clinical: 40hrs**

1. Electro-diagnostic assessment using short/long pulse direct currents, Alternating currents and Biofeedback for,
  - a) Motor function: Galvanic/Faradic type test, S.D. curves.
2. Identification of abnormal breath sounds, Chest expansion, Pattern of breathing, Respiratory rate, Grades of Dyspnoea, Rate of Perceived exertion.
3. Exercise tolerance & Fitness testing: 6 minutes walk test, Symptom limited test.

**Text Books:**

1. Maitland's book on Manual therapy.
2. Clinical Electrotherapy - Nelson-Currier - Appleton & Lange publication.
3. Clinical Electromyography - by Mishra.
4. Orthopaedic Physical examination - by Magee.
5. Physical Rehabilitation – Susan O'Sullivan.
6. Physiotherapy for Respiratory & Cardiac problems: Jennifer A Paryor, Barbara Webber.

**Reference Books:**

1. Mobilization methods – Kaltenborn.
2. Clinical Electromyography – Kimura.
3. Orthopaedic Physical therapy – Donnatelli.
4. Exercise & Heart – Wenger.
5. Exercise Physiology - Mc Ardle.

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination
- Theory : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks
- Practical : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks

### Theory Examination Pattern (Time : 3 hours)

<b>SECTION-1</b>		
Q:1] MCQs		(10 x 1) <b>10 Marks</b>
Q: 2] Write Answers Shortly	(Five out of Six)	(5 x 2) <b>10 Marks</b>
Q:3] Write Short Notes	(Four out of Five)	(4 x 5) <b>20 Marks</b>
<b>SECTION-2</b>		
Q:4] MCQs		(10 x 1) <b>10 Marks</b>
Q:5] Long Answer Questions	(Three out of Four)	(10 x 3) <b>30 Marks</b>
<b>PRACTICAL - 80 MARKS</b>	<b>I.A. - 20 MARKS</b>	<b>Total - 100 MARKS</b>
<b>Section-A]</b>		<b>[35 MARKS]</b>
1) Elecro diagnosis		15 Marks
-Technique & interpretation of RD test & SD curve		
-EMG & NCV		
2) Orthopaedic Examination		20 Marks
<b>Section-B]</b>		<b>[40 MARKS]</b>
1) Neurological Examination		20 Marks
2) Cardio-Pulmonary Examination		20 Marks
<b>Section-C] Journal</b>		<b>[05 MARKS]</b>

### INTERNAL ASSESSMENT

- One internal & one preliminary examination to be conducted of 80 marks each in Theory & Practical. Internal Marks to be calculated out of 20 each in theory & practical.
- Student will be eligible to appear for University examination if he/ she gets minimum 50% marks.

## COMMUNITY MEDICINE

### Didactic : 60 hours

**Objectives** – At the end of the course, the candidate

- 1] shall be able to understand the contents given in the syllabus of Community Medicine
- 2] Be able to describe the normal & abnormal physiological events during the Puberty Pregnancy, Labour, Puerperium, Pre & Post Menopause.
- 3] Be able to discuss common complications during Pregnancy, Labour, Puerperium & Pre, Peri & Post Menopausal stage & various aspects of Urogenital Dysfunction & the management in brief.
- 4] Acquire the skills of the clinical examination of Pelvic Floor.

### Syllabus:

#### 1. Health & Disease

5 Hrs

- Definitions: National & International, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention Population Medicine. The role of socio-economic and cultural environment in health and disease

#### 2. Epidemiology

3 Hrs

- Definition and scope, Principles of Epidemiology and Epidemiological methods, Uses of Epidemiology

#### 3. Public health administration-

4 Hrs

- An overview of the health administration set up at Central and state levels. The national health programme - highlighting the role of social, economic and cultural factors in the implementation of the national programmes.
- Health problems of vulnerable groups- pregnant and lactating women, infants and pre-school children, occupational groups.

#### 4. Epidemiology of communicable disease:

2 Hrs

- Respiratory infections, Intestinal infections, Arthropod borne infections, Zoonoses, Surface infections, Hospital acquired infections

#### 5. Epidemiology of chronic non-communicable

3 Hrs

- diseases and conditions: Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, obesity, Blindness, Accidents and

Injuries.

- 6. Environment and Health: 3 Hrs**
- Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology.
- 7. Socio-Economical & Cultural Issues related to Morbidity owing to the Physical Disability & Handicaps of Structural / Neuro-motor & Psychosomatic origin: 6 Hrs**
- Health problem in vulnerable groups
    - i] Pregnant & lactating women, Pelvic floor Dysfunction, Urinary incontinence,
    - ii] Pre-term babies with high risk, Infants & Pre-School Children-Brain Damage, during birth injury
- 8. Demography and Family Planning 3 hrs**
- Family planning-objectives of national family planning programme.
  - Family planning methods: A general idea of advantage and dis-advantages of the methods.
- 9. Immunization programmes – children & hospital staff. 2 Hrs**
- 10. Occupational Health: 3 Hrs**
- Occupational hazards, Occupational diseases.
  - Prevention of occupational diseases.
  - Social security and other measures for the protection from Occupational hazard accidents and diseases.
  - Compensation acts.
- 11. Hospital waste management 3 Hrs**
- Sources of hospital waste, Health hazards, Waste management
- 12. Disaster Management 3 Hrs**
- Natural and manmade disasters.
  - Disaster impact and response.
  - Relief phase.
  - Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness
- 13. Health Education 4 Hrs**
- Concepts, aims and objectives Approaches to health education Models of health education Contents of health education, Principles of health education Practice of health education



- 14. Addiction** – Alcoholism, Neuromotor, Psychosomatic disorders and Smoking **2Hrs**
- 15. Environmental Hygiene** including man & his surrounding, Occupational & Industrial hygiene, Village & Town Sanitation. **3 Hrs**
- 16. Overview of Public Health Administration at Central & State levels** – Strategies of Health
- Delivery System for “Millennium Development goals” National health Programme. Brief role of WHO. **2 Hrs**
- 17. Mental Health** **3Hrs**
- Characteristics of a mentally healthy person.
  - Types of mental illness, Causes of mental ill health
  - Preventive aspects
  - Mental health services
  - Alcohol and drug dependence
- 18. Nutrition and Health** **1Hr**
- Nutritional problems in public health Community nutrition programmes
- 19. Health programmes in India** **5 Hrs**
- Vector borne disease control programme,
  - National leprosy eradication programme,
  - National tuberculosis programme,
  - National AIDS control programme,
  - National programme for control of blindness,
  - Iodine deficiency disorders (IDD) programme,
  - Universal Immunization programme,
  - Reproductive and child health programme,
  - National cancer control programme,
  - National mental health programme,
  - National diabetes control programme,
  - National family welfare programme,
  - National sanitation and water supply programme,
  - Minimum needs programme,

**Text Book:**

- 1] K. Park – Park’s Textbook of Preventive & Social Medicine
- 2] P. K. Mahajan & M. C. Gupta – Textbook of Preventive & Social Medicine

### SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination
- Theory : 40 Marks      Internal Assessment : 10 Marks      Total : 50 Marks

#### Theory Examination Pattern

(Time : 2 hours)

<b>SECTION-1</b>			
<b>Q:1] MCQs</b>		<b>(10 x 1)</b>	<b>10 marks</b>
<b>Q:2] Write Answers Shortly</b>	<b>(Five out of Six)</b>	<b>(5 x 2)</b>	<b>10 Marks</b>
<b>Q:3] Write Short Note</b>	<b>(Two out of Three)</b>	<b>(2 x 5)</b>	<b>10 Marks</b>
<b>Q:4] Long Answer Questions</b>	<b>(One out of Two)</b>	<b>(1 x 10)</b>	<b>10 Marks</b>

#### INTERNAL ASSESSMENT

- One internal & one preliminary of 40 marks.
- Internal Assessment to be calculated out of 10.
- Student will be eligible to appear for University examination if he/ she gets minimum 50% marks.

## PSYCHIATRY

(COLLEGE SUBJECT) Didactic- 20 hrs

**Objective** At the end of the course, the candidate will be able to –

- 1] Enumerate various Psychiatry disorders with special emphasis to movement /Pain & ADL – describe the various causative factors & methods of assessment & Management
- 2] Acquire the knowledge in brief, about the pathological & etiological factors, signs /Symptoms & management of various Psychiatric conditions.
- 3] Describe in brief the various treatment modalities commonly used

### Syllabus:

- 1] Psychiatric History, classification and mental status examination **2 Hrs**
- 2] Organic mental disorders (delirium, dementia, organic amnestic syndrome and Other organic mental disorders) **2 Hrs**
- 3] Mood disorders (manic episodes, depressive episodes, bipolar mood disorders) **2 Hrs**
- 4] Neurotic stress related and somatoform disorders (Anxiety disorder, phobic anxiety disorders, obsessive compulsive disorders, adjustment disorders, dissociative disorders, somatoform disorders post-traumatic stress Disorder. **2 Hrs**
- 5] Schizophrenia, delusional disorders and schizoaffective disorders. **2 Hrs**
- 6] Substance use disorders, sexual disorders, sleep disorders and eating disorders. **2 Hrs**
- 7] Child psychiatry, (mental retardation, developmental disorders, attention deficit, hyperkinetic disorder, enuresis, conduct disorders) **2 Hrs**
- 8] Disorders of adult personality and behavior (specific personality disorders, habit And impulse disorders, gender identity disorders) **2 Hrs**
- 9] Stress, psychosomatic disorders, suicide, psychiatric emergencies and their management. **2 Hrs**
- 10] Psychopharmacological management, electroconvulsive therapy and other biological methods of treatment. **2 Hrs**

\*Not In University Exam

### TEXT BOOK

- 1] A short book of Psychiatry – by Ahuja – Jaypee bros –medical publishers
- 2] Shah L.P. Handbook of Psychiatry

## FINAL YEAR - BPT

### Subjects

Transcript hours - 1420

1)	Physiotherapy in Orthopaedic Conditions	140hrs
2)	Physiotherapy in Neurological Conditions	140hrs
3)	Physiotherapy in Cardio-Pulmonary Conditions	140hrs
4)	Physiotherapy in Medical & Surgical Conditions	100 hrs
5)	Community Physiotherapy & Rehabilitation	100 hrs
6)	*Principles of Ethics and Administration	50 hrs
7)	Supervised clinical practice (Inclusive of Educational tour and institutional visits Seminar presentation, case presentation & clinical discussion)	750 hr

\*Not In University Exam

Each Clinical assignment shall be of 70 hours at Indoor & at the Outdoor section (including 20 hours of Project) respectively in each of the subjects mentioned at 1, 2 & 3 above. Clinical assignments in Community P.T. shall be of 140 hours

During each clinical assignment, the student shall functionally diagnose, plan & practice Clinical skills on patients in consultation with the experienced senior staff.

## PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS

**Didactic-80hrs & Clinical-60hrs**

**TOTAL:[140 HOURS]**

### **Objectives:**

This course is formulated on the “Problem based” method. At the end of the course, the candidate will–

1. Be able to identify, discuss & analyze, the Musculoskeletal Dysfunction in terms of Biomechanical, Kinesiology & Biophysical basis & correlate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations & arrive at appropriate Functional diagnosis with clinical reasoning.
2. Be able to plan & Prescribe as well as acquire the skill of executing short & long term Physiotherapy treatment by selecting appropriate modes of Mobilization / Manipulations, Electro-Therapy, Therapeutic exercise & appropriate Ergonomic advice for the relief of pain, restoration/Maintenance of function & rehabilitation for maximum functional independence in A.D.L. at home & workplace.

### **Syllabus-**

Following topics are applicable to all the Musculoskeletal conditions Including the various clinical subjects of Medical Sciences taught in Third year BPT.

1. Evaluation, interpretation of investigations & functional diagnosis (ICF) with appropriate clinical reasoning for planning & Implementation of management techniques.
2. Planning, Prescription, Implementation & Documentation of short term & long-term goals with clinical reasoning.
3. Application of appropriate electrotherapeutic modes for relief of acute & chronic pain & swelling; wound healing, re-education with clinical reasoning.
4. Application of simple therapeutic modes for muscle strength/joint mobility.
5. Application of Advanced therapeutic modes of mobility like Mobilization Techniques (Techniques covered in second year BPT.)(To be applied only on extremities), Friction Massage, Myofascial Release, Muscle Energy Techniques & Neurodynamic Techniques on patients. (Non-thrust mobilization methods only).
6. Application of various taping methods for support & relief of pain.
7. Posture Correction & Gait Training.
8. Application of appropriate Therapeutic exercise using therapeutic gymnastic tool when necessary, for the relief of pain, structural stability, strength/endurance & Functional restoration including gait training/maintenance of functions & for the preventive measures.
9. Prescription of appropriate Orthotic & prosthetic devices & fabrication of simple Temporary splints.

10. Appropriate Home Program & Ergonomic advice for preventive measures & Functional efficiency at home & work place, Advice to Parents & Care Givers.
11. Different Physiotherapeutic techniques for functional restoration / maintenance and prevention of disability.

## **Physiotherapy management for the following conditions**

- 1. Fractures and dislocation of the spine, extremities – classification, management & Complications. 20Hrs**
  - Specific fractures and dislocations
  - PT assessment and management of upper limb fractures and dislocations.
  - PT assessment and management of lower limb fractures and dislocations including pelvis.
  - PT assessment and management of spinal fractures.
  - PT management in complications-early and late-shock, compartment syndrome, VIC, fat embolism, delayed and mal-union, RSD, myositis ossificans, AVN, pressure sores etc.
  - Principles of PT management in fractures-Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period.
  
- 2. Physiotherapy Management of Deformities 8Hrs**
  - Congenital: CTEV, CDH, Torticollis, Pes Planus, Pes Cavus and other common deformities.
  - Acquired: scoliosis, Kyphosis, Coxa vara & valga, Genu varum & valgum, Genu recurvatum, Fixed Flexion Deformity, Deformities of foot.
  
- 3. Infectious diseases of the bone & joints: 4Hrs**
  - Osteomyelitis– acute and chronic Septic arthritis
  - Pyogenic arthritis, TB spine and major joints-knee and hip
  
- 4. Degenerative and Inflammatory conditions 10Hrs**
  - Osteoarthritis-emphasis mainly on knee, hip and hand
  - Chondromalacia Patellae
  - Rheumatoid Arthritis
  - Ankylosing spondylitis
  - Gout
  - Perthes disease
  - Bursitis, Tenosynovitis, Ganglion, Fibrositis, Fibromyalgia, Meralgia paraesthetica.

- 5. Metabolic & hormonal disorders of the bone tissue-Osteoporosis. 4Hrs**
- 6. Management of Peripheral Nerve Injury. 8Hrs**
- 7. Physiotherapy following re-constructive surgeries in Cerebral Palsy, Poliomyelitis & Leprosy. 6Hrs**
- 8. Amputation 12Hrs**
- Definition, levels, indications, types, PT assessment, aims, management pre and post-operatively. PT management with emphasis on stump care and bandaging. Prosthesis Prescription and Training

### **Regional Conditions**

- 9. Spinal conditions 10Hrs**
- PT assessment, aims, and management and home program of the following conditions - Cervical spondylosis, Lumbar spondylosis, Acquired Torticollis, Cervical rib, Inter-vertebral disc prolapse, Spinal canal stenosis, Spondylolisthesis, Spondylolysis, Coccydynia.

### **Soft tissue injuries and Sports Physiotherapy**

- 10. Shoulder joint 10Hrs**
- TOS, RSD, Shoulder instabilities, Adhesive Capsulitis, Subacromial Bursitis, Rotator cuff Tears: Conservative and Post-Surgical PT Management Impingement syndrome (Supraspinatus & Bicipital tendinitis) - conservative and Post-operative (sub-acromial decompression) Physiotherapy management. AC joint injuries-rehabilitation.
- 11. Elbow and forearm 2Hrs**
- Tennis and Golfer's elbow
- 12. Wrist and Hand 6Hrs**
- Wrist sprains. De quervain's tenosynovitis. Trigger and Mallet finger, Repair of ruptured Flexor and Extensor tendons: Postoperative PT management Carpal tunnel syndrome. Hand injury-types and their management.
- 13. Hip 5Hrs**
- Joint surgeries-hemi and total hip replacement-Postoperative PT management

- 14. Knee** **10Hrs**
- ACL, PCL and MCL reconstruction surgeries- Postoperative rehabilitation.
  - Meniscectomy and meniscal repair-Postoperative management. Prepatellar bursitis.
  - Anterior Knee pain: PFPS, Plica syndrome, patellar dysfunction and Hoffa's syndrome etc.-conservative management.
  - TKR-rehabilitation protocol. Patellar tendon ruptures and Patellectomy-rehabilitation.
- 15. Ankle and foot** **5Hrs**
- Ankle instability: Lateral ligament sprain of ankle, Ligamentous tears-Post operative management. TA rupture. Plantar Fascitis, Metatarsalgia, Hammer Toe, Turf Toe, Hallux Valgus.
- 16. Others** **1Hrs**
- a. Hamstring strains
  - b. Quadriceps contusion
- 17. PT Management for** **2Hrs**
- Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation
- 18. Sports Medicine** **7Hrs**
- Introduction & Classification of Sports injury
  - Aetiological Factors, Frequency & Site of injury
  - Prevention of Sports injury
  - Investigations & Assessment in Sports injury
  - Pharmacology in Sports
  - Rehabilitation in Sports
- 19. Orthopedic surgeries** **10Hrs**
- Pre and post-operative PT assessment, goals, precautions and PT Management of following surgeries such as:
- Arthrodesis Osteotomy
  - Total shoulder replacement and Hemi-replacement: Post operative PT management
  - Excision of radial head- Post-operative PT management
  - Radiological positions, angle calculations for Orthopaedic Problems by X ray
  - Biomechanics of Internal fixators & implants.
  - Physiotherapy Management for Tumors of the bone.



### **CLINICAL**

Evaluation & treatment planning: its presentation & documentation of Minimum ten cases in the following heads–

1. Upper Limb (Including hand injury),
2. Lower limb Fractures.
3. Soft tissue lesion(any),
4. Spine Fractures with/without Neurological condition
5. Degenerative arthritis of skeletal joint
6. Musculoskeletal condition of Hand & foot

### **TEXT BOOKS**

1. Cash's Textbook of Orthopedics & Rheumatology for Physiotherapists- Jaypee.
2. Therapeutic exercise–by Kolby & Kisner.
3. Orthopaedics for physiotherapist–Ebenezer.
4. Essentials of Applied Physiotherapy–by Joshi / Kotwal
5. Essential Orthopaedics– By J.Maheshwari

### **REFERENCE BOOK**

1. Orthopedic Physical therapy – by Donatelli.
2. Manual mobilization of extremity joints–by Freddy Kaltenborn, Maitland.
3. Physical Rehabilitation Assessment and Treatment–O'Sullivan Schmitz
4. Clinical Orthopedic Rehabilitation– Brotzman
5. Fracture Rehabilitation-Stanley Hoppenfield
6. Rehabilitation for post surgical orthopaedic patients- Lisa Maxey

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination.
- Theory : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks
- Practical : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks

**THEORY-Pattern of Paper setting :    (Time : 3 Hours)**

### SECTION-1

<b>Q:1] MCQs</b>		<b>(10 x 1)</b>	<b>10 Marks</b>
<b>Q: 2] Write Answers Shortly</b>	<b>(Five out of Six)</b>	<b>(5 x 2)</b>	<b>10 Marks</b>
<b>Q:3] Write Short Notes</b>	<b>(Four out of Five)</b>	<b>(4 x 5)</b>	<b>20 Marks</b>

### SECTION-2

<b>Q:4] MCQs</b>		<b>(10 x 1)</b>	<b>10 Marks</b>
<b>Q:5] Long Answer Questions</b>	<b>(Three out of Four)</b>	<b>(10 x 3)</b>	<b>30 Marks</b>

<b>PRACTICAL EXAM</b>			<b>80 Marks</b>
1] One Long case			40Marks
2] One short case			20 Marks
3] Viva			15 Marks
4] Journal			05 Marks

<b>INTERNAL ASSESSMENT</b>			<b>20 Marks</b>
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- One internal & one preliminary examination of 80 marks each in Theory & Practical. Internal Marks to be calculated out of 20 each in Theory & Practical.
- Student will be eligible to appear for University examination if he/she gets minimum 50% marks.

## PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

**Didactic - 80hrs & Clinical - 60hrs**

**TOTAL : [140 HOURS]**

(ADULT, PAEDIATRIC, PSYCHO–SOMATIC & PSYCHIATRIC CONDITIONS)

**Objectives:** At the end of the course, the candidate will–

- 1) Acquire the knowledge of normal neurodevelopment, with Specific reference to locomotion
- 2) Be able to assess, identify & analyze Neuro-motor & psycho-somatic Dysfunction in terms of alteration in the muscle tone, power, co-ordination, Involuntary movements sensations/ perception etc, E.M.G./N.C.V Studies & arrive at functional diagnosis with clinical reasoning.
- 3) Acquire the skills of application of P.N.F. technique on patients.
- 4) Be able to plan, prescribe & execute short term & long term treatment, with Special reference to relief of Neuropathic & psycho-somatic pain, mat exercises, functional re-education, gait training, postural & functional training for A.D.L., ergonomic advice, & parent’s education in Neuro – paediatric care.
- 5) Be able to prescribe appropriate Orthosis/splints & will be able to fabricate Temporary protective & functional splints.

### Syllabus:-

<b>1. Structure and function of Nervous System</b>	<b>3Hrs</b>
<b>2. Theories of motor control &amp; motor learning</b>	<b>5Hrs</b>
<b>3. Neurological Assessment</b>	<b>10Hrs</b>
<ul style="list-style-type: none"> <li>• Assessment of higher mental function, Cranial Nerves, sensory examination, reflexes, extra pyramidal system, normal development, motor system, co- ordination, functional abilities, neuropathic pain and investigation.</li> </ul>	
<b>4. Functional Diagnosis of Neuromuscular dysfunction</b>	<b>5Hrs</b>
<b>5. Understanding sensory system &amp; Organization of sensory strategies for efficient motor output.</b>	<b>4Hrs</b>
<b>6. Skills of sensory–motor learning &amp; Neuro-musculoskeletal training</b>	<b>4Hrs</b>
<b>7. Application of transfer techniques &amp; functional re-education exercises- Postural exercises &amp; Gait Training Assessment and Management of Neurological Gaits: Hemiplegic Gait , Parkinson Gait, High steppage Gait, Hyper kinetic Gait , Hypo kinetic Gait Waddling Gait, Scissoring Gait, Myopathic Gait</b>	<b>10Hrs</b>

<b>8. Functional training in bladder dysfunction.</b>	<b>2Hrs</b>
<b>9. Application of skills</b> of Co-ordination & Balancing exercises by using techniques based on Neurophysiological principles	<b>8Hrs</b>
<b>10. Principles of Application</b> of Neuro therapeutic skills like PNF, NDT, Brunnstrom, Vojta & Rood's approaches and Contemporary task oriented approach.	<b>9Hrs</b>
<b>11. Principles and methods of using</b> tools of Therapeutic gymnasium such as Vestibularball, tilt board, bolsters, etc. in neurological conditions	<b>3Hrs</b>
<b>12. Evaluation and functional physiotherapy</b> assessment with Appropriate reasoning for planning and implementation of treatment technique for following neurological conditions:	<b>40Hrs</b>
<ul style="list-style-type: none"> <li>• Cerebro-vascular Accidents: Hemiplegia, disorders of cerebral circulation &amp; space occupying lesions such as cortical, Thalamic &amp; Brain-stem lesions</li> <li>• Cranial nerves-emphasis on 7<sup>th</sup> &amp; 8<sup>th</sup> nerves,</li> <li>• Disorders of spinal cord : Spinal Cord Injury, Syringomyelia, Transverse myelitis, Spinal Dysraphism, Sub-acute combined degeneration of spinal cord</li> <li>• Traumatic Head Injury</li> <li>• Infections of Nervous System : Meningitis Encephalitis, Neuro-syphilis, Tabes dorsalis, Poliomyelitis and Post Polio Residual Paralysis, Leprosy</li> <li>• Demyelinating diseases of the nervous system - Multiple sclerosis</li> <li>• Lesions of Extra-pyramidal system &amp; Basal ganglia- Parkinson's Disease, Spasmodic torticollis, Athetosis, Chorea &amp; Dystonia</li> <li>• Degenerative disorders Motor Neuron Diseases, Hereditary Ataxia, Peroneal muscular atrophy, S.M.A</li> <li>• Disorders of peripheral nerves Tumours, Traumatic Nerve Injury, Infective &amp; metabolic lesions of nerves</li> <li>• Disorders of muscles and neuromuscular junction Muscular Dystrophies, Myasthenia Gravis</li> <li>• Polyneuropathy Classification of Polyneuropathies, GBS, Diabetic and Alcoholic Neuropathy</li> <li>• Cerebellar &amp; Co-ordination disorders - Congenital Ataxia, Friedrich's Ataxia</li> </ul>	
<b>13. Psycho-somatic Pain &amp; Paralysis.</b>	<b>1 Hr</b>

**14. Paediatric Neurology**

**25Hrs**

Developmental milestones and Developmental reflexes, Neurodevelopmental screening tests, Evaluation & Management:

- History, Observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, IQ testing, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, Short & Long Term goals Use of various Neurophysiological approaches & Modalities in
  - High Risk babies
  - Minimum brain damage
  - Developmental disorders Cerebral palsy
  - Autism
  - Down's Syndrome
  - Hydrocephalus
  - Chorea
  - Spina bifida and syringomyelia.

**15. Parent/ care takers education about handling of a paralytic patient & Environmental modifications.**

**1Hr**

[Paediatric & Adult]

**16. Lifting techniques, Wheel chair modifications & adaptive Devices**

**1Hr**

**17. Disorders of autonomic nervous system**

**1Hr**

**18. Embryology of nervous system.**

**1Hr**

**19. Fabrication of temporary splints during urgent Requirement with clinical reasoning.**

**1Hr**

**20. Developing a philosophy for caring.**

**1Hr**

**21. Electro Diagnostic findings for Neurological Disorders.**

**5Hrs**

**CLINICAL-**

Evaluation & treatment planning, its presentation & documentation of minimum ten cases in following:

- 1] U.M.N. lesion
- 2] L.M.N. lesion,
- 3] Paediatric Neuro case
- 4] Head injury

**TEXT BOOK-**

- 1) Cash's Textbook for Physiotherapists in Neurological disorders Jaypee bro, Publication
- 2) Practical Physical therapy by Margaret Hollis
- 3) Therapeutic Exercise by Carolyn Kisner & Colby
- 4) Physical Rehabilitation by Susan. B.O` Sullivan
- 5) Neurological Rehabilitation by Darcy Umphred

**REFERENCE BOOK-**

- 1) Therapeutic exercise by Basmajian-5th edn.
- 2) Physical Rehabilitation by Krusen
- 3) Brain's disorders of Nervous system
- 4) "Right in the middle of stroke" by Patricia Devis
- 5) Stroke Rehabilitation by Margaret Johnson
- 6) Treatment of cerebral palsy & motor delay -5<sup>th</sup> edition by Sophie Levitt
- 7) Motor control: translating research in clinical practice : by Shumway Cook
- 8) Proprioceptive Neuro-muscular Facilitation –by Herman Kabat

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination.
- Theory : 80 Marks    Internal Assessment : 20 Marks    Total : 100 Marks
- Practical : 80 Marks    Internal Assessment : 20 Marks    Total : 100 Marks

**THEORY-Pattern of Paper setting :** **(Time : 3 Hours)**

### SECTION-1

Q:1] MCQs	(10 x 1)	10 Marks
Q: 2] Write Answers Shortly	(Five out of Six) (5 x 2)	10 Marks
Q:3] Write Short Notes	(Four out of Five) (4 x 5)	20 Marks

### SECTION-2

Q:4] MCQs	(10 x 1)	10 Marks
Q:5] Long Answer Questions	(Three out of Four) (10 x 3)	30 Marks

### **PRACTICAL EXAM**

1] One Long case	40Marks
2] One short case	20 Marks
3] Viva	15 Marks
4] Journal	05 Marks

### **INTERNAL ASSESSMENT**

**20 Marks**

- One internal & one preliminary examination of 80 marks each in Theory & Practical. Internal Marks to be calculated out of 20 each in Theory & Practical.
- Student will be eligible to appear for University examination if he/she gets minimum 50% marks.

## PHYSIOTHERAPY IN CARDIO-PULMONARY CONDITIONS

Didactic - 80hrs & Clinical - 60hrs

TOTAL: [140 HOURS]

[INCLUDING CARDIO-VASCULAR & RESPIRATORY CONDITIONS]

### Objectives:

At the end of the course the candidate will be able to:

1. Identify, discuss and analyze cardiovascular and pulmonary dysfunction based on path physiological principles and arrive at the appropriate functional diagnosis.
2. Acquire the knowledge of rationale of basis investigative approaches in the medical system and surgical intervention, regimes related to cardiovascular and pulmonary impairments.
3. Execute effective physiotherapeutic measures (with clinical reasoning) and special emphasis on breathing retraining, nebulization, humidification, bronchial hygiene, general mobilization and exercise conditioning.
4. Acquire knowledge of overview of patient's care at the I.C.U., artificial ventilation, suctioning, positioning for bronchial hygiene and continuous monitoring of patient in I.C.U.
5. Acquire the skill of evaluation and interpretation of functional capacity, using simple exercise tolerance test such as 6 minute walk test, symptom limited test.
6. Select strategies for cure, and prevention, adopt restorative and rehabilitative measures for maximum possible functional independence of patient at home, work and in community.
7. Acquire the skill of basic CPR.

### Syllabus:

1. **Review of:** Mechanism of normal respiration, Cardiorespiratory anatomy and Physiology, Relaxation and maintenance of bronchial hygiene in respiratory diseases

**3hrs**

2. **Cardiopulmonary Evaluation Which Includes:**

**20hrs**

1. Pulmonary Function test & Its Interpretation.
2. Chest Imaging & Neck Imaging.
3. ECG Interpretation, Holter monitoring
4. Invasive & non-Invasive blood gas analysis & its Interpretation.
5. Basic laboratory data Interpretation.
6. Special Tests – Stress test, Exercise Tolerance Test
7. Interpretation of the procedures performed – Open heart Surgery, Angiogram, Nuclear Test Catheterization.



8. Analysis of current impairments & effect to function.
9. Analysis of prolonged impairments, functional limitation & disability.
10. Analysis of living environment potential discharge description & social supports.

- 3. Physiotherapy techniques to increase lung volume** **3hrs**  
Positioning, breathing exercises, Neurophysiological facilitation of respiration , Mechanical aids - Incentive spirometry, CPAP, IPPB
- 4. Physiotherapy techniques to decrease the work of breathing** **5hrs**  
Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids: IPPB, CPAP,BIPAP.
- 5. Physiotherapy techniques to clear secretions** **5hrs**  
Hydration, Humidification & Nebulization, Mobilization and breathing exercises, Postural drainage, Manual techniques: Percussion, vibration and shaking, ACBT, Autogenic drainage, Mechanical aids: PEP, Flutter, IPPB, facilitation of cough and huff, suctioning
- 6. Pulmonary and cardiac rehabilitation, fitness programs for cardio respiratory Disorders –** definition, aims and objectives, pathophysiology of diseases, Physiotherapy assessment and principles of rehabilitation **15hrs**
- 7. Clinical examination of cardiovascular disorders, principles and techniques of P.T. in cardiovascular diseases:** **10hrs**
- CCF
  - Myocardial infarction
  - Endocarditis , myocarditis, pericarditis
  - Valvular diseases of heart
  - Congenital heart diseases
- 8. Clinical examination of respiratory diseases, principles and techniques of P.T. in:** **20hrs**
- Chronic bronchitis, Emphysema
  - Asthma , ARDS
  - Cystic fibrosis, Bronchiectasis
  - Pulmonary embolism, Pulmonary T.B.
  - Pleurisy, Empyema
  - Atelectasis
  - Pneumothorax and Broncho-pulmonary fistula
- 9. Evaluation, principles and techniques** of physiotherapy management in traumatic and surgical conditions of chest, lung, pleura and mediastinum **8hrs**

- 10. Cardiothoracic surgery** – incisions, types, indications and contra indications **8hrs**
- 11. Pre and post operative physiotherapy assessment and management in:** **18hrs**
- Lobectomy, pneumonectomy, decortication, thoracoplasty
  - Tracheostomy
  - Mitral valvotomy (mitral stenosis)
  - Aortic incompetence
  - Valve replacement
  - PDA, coarctation of aorta
  - Pericardiectomy in chronic constrictive pericarditis
  - Septal defects, Fallot's tetralogy
  - Bypass surgery
  - Open heart surgery and heart transplant
- 12. Physiotherapy assessment and management of vascular diseases:** **15hrs**
- Venous Disease : Thrombosis, phlebitis and phlebotrombosis, Varicose veins, DVT  
Venous ulcers, Lymphoedema
- Arterial Disease : Burger's disease
- 13. Principles of chest physiotherapy in I.C.U., I.C.C.U. along with effect of anesthesia on cardiopulmonary system. Equipments & Monitoring in I.C.U. and I.C.C.U. Cardiopulmonary Resuscitation** **10hr**

**TEXTBOOK-**

- 1] Cash's Textbook for Physiotherapists in Chest, Heart and vascular diseases  
Jay pee brothers ,Publication
- 2] Cash's Textbook General Medicine and Surgical conditions for Physiotherapists  
Jay pee brothers ,Publication
- 3] Cardiovascular & Pulmonary Physical Therapy by Donna Frown felter.
- 4] Physiotherapy in Respiratory & Cardiac Care by Hough.

**REFERENCE BOOKS:**

- 1] Physical therapy in Respiratory & Cardiovascular Problems by Jennifer A Pryor & Barbara A Webber.
- 2] Essentials of Cardiopulmonary Physiotherapy by Ellen Hillegass.

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination.
- Theory : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks
- Practical : 80 Marks      Internal Assessment : 20 Marks      Total : 100 Marks

**THEORY-Pattern of Paper setting :    (Time : 3 Hours)**

### SECTION-1

Q:1] MCQs		(10 x 1)	10 Marks
Q: 2] Write Answers Shortly	(Five out of Six)	(5 x 2)	10 Marks
Q:3] Write Short Notes	(Four out of Five)	(4 x 5)	20 Marks

### SECTION-2

Q:4] MCQs		(10 x 1)	10 Marks
Q:5] Long Answer Questions	(Three out of Four)	(10 x 3)	30 Marks

<b>PRACTICAL EXAM</b>	<b>80 Marks</b>
1] One Long case	40Marks
2] One short case	20 Marks
3] Viva	15 Marks
4] Journal	05 Marks

**INTERNAL ASSESSMENT 20 Marks**

- One internal & one preliminary examination of 80 marks each in Theory & Practical. Internal Marks to be calculated out of 20 each in Theory & Practical.
- Student will be eligible to appear for University examination if he/she gets minimum 50% marks.

## PHYSIOTHERAPY IN MEDICAL AND SURGICAL CONDITIONS

Didactic - 50hrs & Clinical - 50hrs

TOTAL : [100 HOURS]

### Objectives:

At the end of the course the candidate will be able to:

1. Identify discuss and analyze cardiovascular and pulmonary dysfunctions based on pathophysiological principles and arrive at appropriate functional diagnosis.
2. Acquire knowledge of rationales of basic investigative approaches in the medical system and surgical intervention, regimes in general surgeries (special emphasis on abdominal surgeries)
3. Execute effective physiotherapeutic measures (with appropriate clinical reasoning) and exercise, conditioning in general medical and surgical conditions.
4. Acquire knowledge of the overview of patient's care in the I.C.U. for bronchial hygiene and continuous monitoring of the patient in I.C.U.
5. Select strategies for cure, care and prevention, adopt restorative and rehabilitative measures for maximum possible functional independence of a patient at home, work and in community.
6. Acquire the knowledge of evaluation and physiotherapeutic treatment for obstetric and gynecological conditions
7. Acquire the knowledge of various conditions where physiotherapy plays a vital role in the rehabilitation (psychiatry, dermatology, geriatric and ENT conditions)
8. Evaluate, grade and treat non healing wounds.

### Syllabus:

1. Physiotherapy assessment and management in mother and child care – ante and post natal management, Menopause, Physiotherapy in Labour, Early intervention and stimulation therapy in child care (movement therapy) **10hrs**
2. Physiotherapy assessment & Management in Geriatrics – handling of old patients and their problems. **8hrs**
3. Psychiatry – Physiotherapy in psychiatric conditions. **4hrs**
4. Common Complication to all operations **5hrs**
5. Abdominal incisions. **3hrs**
6. Physiotherapy in pre and postoperative stages. **10hrs**

7. Physiotherapy assessment & Management in Operations of upper G.I.T.- oesophagus, stomach, duodenum **5hrs**
8. Physiotherapy assessment & Management in Operations of large and small intestine – Appendicectomy, cholecystectomy, partial colectomy, ileostomy, hernia & herniotomy, herniorrhaphy, hernioplasty. **10hrs**
9. Physiotherapy assessment & Management in Gynecological operations – hysterectomy, prostatectomy, pelvic repair, caesarian section, nephrectomy and other operations. **10hrs**
10. Physiotherapy assessment & Management in Mastectomy – Simple, radical. **5hrs**
11. Physiotherapy assessment & Management in Burns and its treatment – physiotherapy in burns, skin grafts, and reconstructive surgeries. **8hrs**
12. Physiotherapy assessment & Management in Wounds, local infections, ulcers, pressure sores – UVR, and other electrotherapeutic modalities for healing of wound, hyper granulated scars, relief of pain and mobilization. **8hrs**
13. Physiotherapy assessment & Management in Skin conditions – Acne, psoriasis, alopecia, leucoderma, carbuncles and boils, STD's: AIDS, syphilis, gonorrhoea. **4hrs**
14. Physiotherapy assessment & Management in ENT – sinusitis, non suppurative and chronic suppurative otitis media, osteosclerosis, labyrinthitis, mastoidectomy, chronic rhinitis, laryngectomy, pharyngeal – laryngectomy, facialpalsy. **6hrs**
15. Emergency Care – Basic life support, First aid & emergency care, Biomedical waste management. **4hrs**

**TEXTBOOKS:**

1. Cash's Textbook for Physiotherapists in Chest, Heart and vascular diseases ,Jaypee brothers ,Publication
2. Cash's Textbook General Medicine and Surgical conditions for Physiotherapists, Jaypee brothers ,Publication
3. Therapeutic Exercise –Kisner
4. Tidy's Physiotherapy
5. Geriatric Physical Therapy-Narinder Multani

**REFERENCE BOOKS:**

1. Physiotherapy in Gynaecological obstetrical conditions-Polden
2. Women's health-Sapsford
3. Geriatric Physiotherapy- Andrew Guccione

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination.
- Theory : 80 Marks    Internal Assessment : 20 Marks    Total : 100 Marks
- Practical : 80 Marks    Internal Assessment : 20 Marks    Total : 100 Marks

**THEORY-Pattern of Paper setting :                      (Time : 3 Hours)**

### SECTION-1

Q:1] MCQs		(10 x 1)	10 Marks
Q: 2] Write Answers Shortly	(Five out of Six)	(5 x 2)	10 Marks
Q:3] Write Short Notes	(Four out of Five)	(4 x 5)	20 Marks

### SECTION-2

Q:4] MCQs		(10 x 1)	10 Marks
Q:5] Long Answer Questions	(Three out of Four)	(10 x 3)	30 Marks

**PRACTICAL EXAM 80 Marks**

1] One Long case	40Marks
2] One short case	20 Marks
3] Viva	15 Marks
4] Journal	05 Marks

**INTERNAL ASSESSMENT 20 Marks**

- One internal & one preliminary examination of 80 marks each in Theory & Practical. Internal Marks to be calculated out of 20 each in Theory & Practical.
- Student will be eligible to appear for University examination if he/she gets minimum 50% marks.

## COMMUNITY PHYSIOTHERAPY & REHABILITATION

**DIADACTIC: 60HRS**

**PRACTICAL: 40HRS**

**TOTAL: 100 HOURS**

### Objectives:

At the end of the course the candidate will be able to

1. Understand the role of physiotherapist in multidisciplinary team approach in rehab
2. Understanding the principle of biomechanics and therapeutic application in neurological musculoskeletal dysfunction
3. Design, manufacture and use of bioengineering applications.
4. Describe the general concepts about health and disease: General fitness
5. Describe various national and international health polices – role of IAP to promote physiotherapy as a health delivery system
6. Attain ability of conducting small surveys and collection of anthropometry data, data collection for morbidity assessment.
7. Assess prevalence and incidence of various conditions that increase the morbidity, role of PT in improving morbidity, expected functional & clinical recovery. Reasons for non compliance in specific community, environment, solution strategy of CBR program, concept of team work, role of members in CBR, role of multipurpose health worker.
8. Comprehend the use of various allied therapeutic sciences in health care delivery.

### Syllabus:

#### A]

**15hrs**

1. The philosophy and need of rehabilitation. The principles of physical medicine  
Basic principles of administration and organization
2. The evaluation process and treatment planning
3. Principles of prescription writing.
4. Principles of Nursing rehabilitation, Communication problem, Social problem,  
Vocational problems and placements Occupational therapeutics, Speech pathology and audiology

#### B]

**50hrs**

1. Introduction to Community Based Rehabilitation, Institute Based Rehabilitation, Outreach Based Rehabilitation, Community Approach to Handicapped Development.
2. Definition of impairments, disability, rehabilitation
3. Disability surveys – epidemiological aspects, screening for disabilities and developmental disorders, disability evaluation
4. Disability presentation and rehabilitation

5. Present rehabilitation services.
6. Home exercise program in various PT conditions and parental education program
7. Pediatric disorders – screening including mental retardation
8. Vocational evaluation and goals for the disabled.
9. Contribution of social worker to the rehabilitation.
10. Rural rehabilitation incorporated with primary health centers.
11. Extension services and mobile units.
12. Community awareness and participation in preventing aspects and demands PT services.
13. National district level rehab program
14. Disaster Management:-Definition, Types of classification of Disasters, Stages of progress of Disasters and role of Physiotherapist in Disaster management.
15. Occupational hazards and health promotion.

**C] Bio – Engineering**

**35hrs**

1. Introduction and terminology: prosthesis and orthosis
2. Classification of and difference between prosthesis and orthosis
3. Bio medical principles
4. Designing
5. Materials used for fabrications
6. Psychological aspects
7. Prescription and designing
8. Mobility Aids : Wheel chairs, Crutch, Cane, Walking frame, Walker)
9. Design and construction of adaptive devices

**Prostheses:**

- Purpose, types and biomedical principles
- Upper limb prosthesis , Lower limb prosthesis in detail
- B/K and A/K prosthetic components
- Check out procedures,
- Gait analysis and deviations ,
- Syme’s and partial foot prosthesis ,
- U.L. prosthetic devices: components, terminal devices, hooks, wrist units
- Forearm shoulder harness,
- Suspension control system
- Prosthetic check out procedure



**Orthosis:**

- Purpose, types and biomedical principles, Lower limb orthosis in detail:
- Introduction to HKAFO Orthosis, Pathological gaits
- Biomechanics of lower limb orthotics, components, check out procedure and training with orthosis
- U.L. orthosis, Introduction to writ hand orthosis
- Principles of wrist finger thumb orthosis, opponens splint (short and long), finger splints for correction of contractures, knuckle bender splint, I.P. extension splint with lumbrical bar spring, coil assists
- Introductory demonstration of methods of construction of temporary orthosis for hand and fingers
- Spinal orthosis: introduction of lumbosacral (knight), thoracolumbar (Taylor) orthosis Cervical collar, Milwaukee orthosis

**TEXTBOOKS:**

1. K. Park –Park’s Textbook of Preventive and Social Medicine
2. P.K.Mahajan & M.C.Gupta- Textbook of Preventive and Social Medicine
3. Disability 2000-RCI
4. Textbook of Community Medicine and Community Health-by Bhaskar Rao
5. Community based Rehabilitation of persons with disabilities – S. Pruthvish
6. Textbook of Rehabilitation – S. Sunder

**REFERENCE BOOKS:**

1. Amputations and Prosthetics: A case study approach - Bella May
2. Physical Rehabilitation- Susan O’Sullivan
3. Therapy for Amputees-Barbara Engstrom
4. Lower extremity amputation, Guide to functional outcome-Linda karacoloff

## SCHEME OF EXAMINATION

- Student should get minimum 50% marks for passing the examination.
- Theory : 40 Marks      Internal Assessment : 10 Marks      Total : 50 Marks
- Practical : 40 Marks      Internal Assessment : 10 Marks      Total : 50 Marks

**THEORY-Pattern of Paper setting :                  (Time : 2 Hours)**

### SECTION-1

Q:1] MCQs		<b>(10 x 1)</b>	<b>10 marks</b>
Q:2] Write Answers Shortly	(Five out of Six)	<b>(5 x 2)</b>	<b>10 Marks</b>
Q:3] Write Short Notes	(Two out of Three)	<b>(2 x 5)</b>	<b>10 Marks</b>
Q:4] Long Answer Questions	(One out of Two)	<b>(1 x 10)</b>	<b>10 Marks</b>

**PRACTICAL EXAM** **40 marks**

**Section-1 : Identification & Description of orthosis / prosthesis** **20 Marks**

**Section-2 :Viva** **20 Marks**

**Internal Assessment:**

- One Internal and one preliminary examination of 40 marks each in theory & practical.
- Internal marks will be calculated out of 10 each in theory & practical.
- Student will be eligible to appear for University examination if he/ she gets minimum 50% marks.

## **PRINCIPLES OF ETHICS AND ADMINISTRATION**

**TOTAL 50 HRS (College Subject)**

### **SECTION-1 ETHICS**

**20 HRS**

**Objectives:**

This course is aimed to enable the candidate to acquire the knowledge of ethical code of professional practices, its moral & legal aspects, role of IAP, WHO, WCPT & GSCPT

**Contents:**

1. Concepts of morality, Ethics and legality. Rules of professional conduct and their medico-legal & moral implications. The need of Council Act for Physiotherapy.
2. Constitution and functions of the Indian association of Physiotherapy & GSCPT.
3. Functioning of the World Confederation for Physical Therapy (WCPT) and its branches.
4. Role of WHO and WCPT, IAP, GSCPT.
5. Intellectual Property Rights and Plagiarism.

### **SECTION-II ADMINISTRATION AND MANAGEMENT**

**30 HRS**

**Objectives:**

At the end of the course the student will acquire the knowledge of the basics in Managerial & Management skills and use of Information Technology in professional practice.

**Contents:**

1. Management studies related to local health care organization management and structure, planning delivery with quality assurance and funding of service delivery.
2. Information technology in professional practice.
3. Time management and carrier development in physiotherapy.
4. Administration: Principles based on the Goals and functions- at large hospital setup, domiciliary services, private clinic and academic setup.
5. Facility planning- Academic and Clinical setup.
6. Methods of maintaining records and documentation.
7. Budget planning for physiotherapy services in various setups.
8. Performance analysis: physical structure, reporting system (manpower, status, functions) quantity and quality of services turn over, cost benefit and revenue contribution.

[KSV]

9. Public relations and marketing: reaching media and, marketing of physiotherapy practice and strengthening of brand identity with consumers & other health care professionals.

**ALLIED THERAPEUTICS (BASICS ONLY)**

1. Acupuncture and acupressure : definition, principles techniques, physiological and therapeutic effects, contraindications and dangers
2. Introduction to Naturopathy
3. Magneto therapy
4. Yogasana and their scientific study

**TEXTBOOKS:**

- 1] Alternative Therapies – Swati Bhagat
- 2] Biomedical Ethics-Timms