

तार : विश्वविद्यालय  
Gram : UNIVERSITY



टेलीफोन : कार्यालय : 2320496  
कुलसचिव : निवास : 2321214  
फैक्स : 0510 : 2321667

# बुन्देलखण्ड विश्वविद्यालय, झाँसी BUNDELKHAND UNIVERSITY, JHANSI

झाँसी (उ.प्र.) 284128

संदर्भ...BU/BPT/2022/126

दिनांक...8-6-22

## The Minutes of Meeting of BOS

In reference to the BOS of department of .....  
.....PHYSIOTHERAPY....., Institute of ...REHABILITATION.....  
.....SCIENCE..... held on 8-6-22 regarding the  
revision of syllabus in tune with CBCS/NEP-2020 and subsequent  
approval from Academic Council. This is to certify that the syllabus is  
100% revised.

  
Registrar  
Bundelkhand University  
JHANSI

  
HOD/Coordinator  
Bundelkhand University  
Jhansi

\* As per the norms of State Medical Faculty,  
Lucknow CBCS/NEP 2020 is not applicable.

**BUNDELKHAND UNIVERSITY**  
**INSTITUTE OF REHABILITATION SCIENCES**

**ORDINANCE**

**FOR**



**DEPARTMENT OF PHYSIOTHERAPY**

**BPT**

**FOUR AND HALF YEAR COURSE**

**(2022-2023)**

## **BACHELOR OF PHYSIOTHERAPY**

**VISION :** TRANSFORMING SOCIETY BY OPTIMIZING REHABILITATION TO IMPROVE THE QUALITY OF LIVING.

**MISSION :** TO ENHANCE KNOWLEDGE, SKILLS & RIGHT ATTITUDE OF STUDENTS NECESSARY FOR COMPETENT HEALTH EDUCATION, DIAGNOSIS, PREVENTION, TREATMENT, RECOVERY & REHABILITATION OF PATIENT FROM DISABILITY & DISEASE.

**COURSE OUTCOME :** IT HELPS IN MAKING POSITIVE CHANGES TO THE HEALTH & LIFE STYLE OF THE PEOPLE SUITABLE OF ALL AGES. PHYSIOTHERAPY AIDS IN THE TREATMENT & REHABILITATION PEOPLE WITH AN ARRAY OF HEALTH PROBLEMS RANGING RIGHT FROM PHYSICAL MENTAL SPORTS RELATED INURIE PROBLEMS.

**PROGRAMME OUTCOME :** AFTER SUCESSFUL COMPLETETION OF PHYSIOTHERAPY COURSE AN INDIVIDUAL WILL BE ABLE TO - KNOWLEDEGE , LEARNING SKILL , PROFESSIONAL ETHICS , SOCIAL AWARENESS , ANALYTIC SKILLS , LIFE LONG LEARNINGS IN THE FIELD OF PHYSIOTHERAPY.

**PRPGRAMME SPECIFIC OUTCOME :** Demonstrate sufficient understanding of knowledge in Physiotherapy.

- ❖ Able to integrate theoretical knowledge with clinical assessment.
- ❖ Develop the ability to collect history, perform relevant clinical assessment and frame
- ❖ appropriate electrotherapeutic and exercise therapy management for the patients.
- ❖ Demonstrate clinical decision making ability and provide appropriate patient care.
- ❖ Develop effective communication with patients, family, colleagues and students.
- ❖ Promote health education and improved quality of life through the practice of the profession.
- ❖ To carry out research and publications towards upliftment of the field of Physiotherapy.
- ❖ Actively engage in lifelong learning activities.
- ❖ Work effectively in various inter professional collaborative settings like hospitals,
- ❖ Rehabilitation Centres, Special Schools, Educational Institutions, Health and Fitness
- ❖ Centers, Geriatric Centers, Ergonomic Consultant in Corporate Sectors, Private
- ❖ Consultation, Home Care Services, Industrial Sectors, Sports Management, Fitness

# **BACHELOR OF PHYSIOTHERAPY**

## **1. Nomenclature of Course.**

Bachelor of Physiotherapy (B.P.T.)

Total Seat – 40

## **2. Aim of the Course:**

To prepare highly skilled & efficient Physiotherapists who have a thorough knowledge of the theoretical & practical aspects of the field.

## **3. Objective of Course**

During the comprehensive academic program the basic and clinical science are integrated to:

- 3.1 Develop knowledge, skills and attitude necessary for competent health education, diagnosis, prevention, treatment, recovery and rehabilitation of patients from trauma and disease.
- 3.2 Focus on development of clinical and research aptitude
- 3.3 Train them to practice the profession of physiotherapy in a competent and ethical manner towards those who need such service with autonomy, quality care, assurance and humanitarian approach and compassion.

## **4. Eligibility Criteria**

- 4.1 A candidate seeking admission to the B.P.T. Program must have passed SSC/ Intermediate or equivalent (recognized by University) or 10+2 system of education with Biology, Physics and Chemistry, securing at least 50% marks for general category and 45% for SC/ST/OBC in PCB
- 4.2 The Candidate must have completed 17 years at the time of admission maximum age limit is 27.

## **5. Admission**

5.1 Admission to B.P.T. will be made as per the rules prescribed by the Academic council of the **Bundelkhand** University from time to time.

5.2 The remaining vacant seats in second year bachelor of Physiotherapy B.P.T. Course shall be allotted to the students seeking transfer /migration or holding diploma with minimum of 50% marks in aggregate from the recognized institute affiliated with state medical faculty / IAP (Indian Association of Physiotherapy)

## **6. Duration of the course**

6.1 The duration of the Bachelor of Physiotherapy course shall be four and half years, including compulsory internship of six months.

6.2 A candidate, who has failed in the 1<sup>st</sup> year two consecutive time shall not be allowed to continue studies further. However a candidate who has not appeared or has not been permitted to appear in the examination may be allowed to appear for one more year on the approval of the Vice-Chancellor.

6.3 The maximum time period allowed for a candidate to complete BPT course from date of admission for BPT pursuing student is 8 years and 7 years for lateral entry diploma students. Students undergoing six month rotatory internship should complete the internship within nine (09) months from date of commencement of internship for being eligible to be awarded internship completion and course completion certificate. If candidate at any stage of his/her study is found unable to complete internship within the said time, he/she shall will have to continue six month internship again.

6.4 Students will not be allowed to do private practice, part time job or any other job during the entire period of the study

## **7. Attendance:**

7.1 The attendance of students shall be recorded from the date of his/her registration in the class.

7.2 Each student is normally required to attend all the lectures, tutorials, lab and seminar in every subject, and also the curricular and co curricular activities. However for each subject a minimum attendance of 75% shall be necessary. The Dean/ Head of the concern faculty may

however condone the absence, on medical reasons, further, up to a maximum of 60% of the total attendance.

7.3 A student who fails to achieve the prescribe minimum attendance as per the provisions of article 7.2 above, shall not be allowed to appear at the annual examinations and shall be deemed to have been detained. The list of students to be detained shall be forwarded by Deans/HOD to V. C. through P.V.C. for necessary action. However, under very special circumstances, the head of the concerned faculty will review and forward those genuine cases which, however fall below reasonable and prescribed attendance level with their recommendation through P.V.C. to V. C. for a final decision.

7.4 The Academic cell shall consolidate the attendance record for the lectures and practical etc. Attendance on account of participation in prescribes functions of N.C.C., N.S.S. Inter University sports or Educational Tours, shall be credited to aggregate, provided the attendance record, duly countersigned by the lecture in charge is sent to the academic cell within 15 days of the function / Activities, etc.

7.5 If a student is found to be continuously absent from the classes without proper application and sanction for a period of 30 days or his / her attendance is less than 30% the lecturer in charge shall report it to the Head of Department/Dean for striking off the name of such student from rolls such a student may, however apply for readmission within 10 days from the date of issue of the notice of striking off the name. The request may considered by the Dean for readmission such a student shall however not be readmitted after the prescribed period. The readmission shall be effected on payment of prescribe readmission fees.

7.6 The statement of attendance of students shall be displayed on the notice board of the faculty twice in each semester in courses following semester system and quarterly in each year in case of courses following annual system respectively, The record of the same shall be kept in academic section for that purpose of record Notice displayed on the notice board shall be deemed to be a proper notification for individual.

7.7 Notwithstanding any of the above provisions, under very special circumstances the Vice Chancellor in consultation with Dean of various faculties, shall have the power to amend or condone all are any of the above said clauses or the prescribe percentage in the interest of the academics and the University.

## **8. The Curriculum**

Mode of curriculum delivery and execution shall include classroom, teaching, assignments, tests, lab work, project, case studies, seminar participation in relevant event etc.

## **9. Medium of instruction,**

Medium of instruction shall be English

## **10. Internal Assessment**

10.1 There should be two internal examinations, which will carry weightage in the total **Internal Assessment** marks. Internal examinations marks shall be notified within 15 days of the test.

10.2 Besides internal examinations there could be two periodic test in each subject in each academic year. These tests could be in the form of quizzes, symposium, seminars assignments and theory. These will carry weightage in the total marks of the terminal test , which will be notified within 15 days of the test.

10.3 Classroom performance will also carry weightage in the total marks. These marks shall be notified at the end of the academic year.

10.4 Dates of the Internal Assessment will be announced at the beginning of the academic year.

10.5 The Head of the Department shall consolidate the marks taking in to account the classroom performance, before forwarding it to the controller of examination at the conclusion of the academic year.

10.7 In the case of readmission, the candidate shall have to go through the internal assessment process afresh and shall retain nothing of the previous year.

## **11. Migration from any other University:**

11.1 Admission of the candidate on migration from any other University to this University shall ordinarily be not permitted. In special case only, as approved by the V. C. on the recommendation of Admission Committee, the migration case may be considered.

## 12. Examination

Annual examination of theory and practical shall be conducted at the end of each session as outlined below.

a	Mode:	Theory papers	Written only
		Lab Hours	Written, Demonstration and Viva Voce
		Viva – Voce	Viva – Voce
b	Duration	Theory	3 hours
		Practical	One hour
C	Examiner	Theory	01 (either internal or external from the panel)
		Practical	02 (1 internal and 1external) from the panel  Panel to be prepared by the Board of Studies and approved by the Vice Chancellor.
d	Moderation of theory paper		Moderation of theory papers will be done as per the rules and regulation of the University.
e	Supplementary Examination: The University shall hold a supplementary examination normally two month after the declaration of annual examination results for the candidates who fail in maximum four or 50% of all subjects.		

## 13. Criteria for passing

13.1 The minimum passing marks in each theory subject separately shall be 50%. Including sessional marks (either students failed or absent in sessional exam)

13.2 The minimum pass marks in Practical/ Research Project and Viva- Voce marks shall be 50%, students has to secure 50% marks in internal practical separately

13.3 A candidate in order to pass must secure over all 50% marks in aggregate of a particular academic year.

13.4 A candidate failed in more than 50% subjects OR more than 4 subjects in current academic year shall be declared failed.



13.5 A Student in First Year, Second Year and Third Academic Year Shall not be allowed to give more than three supplementary exams for that academic year. If the students fail in the third supplementary exam he / she shall not be allowed to sit any exam till he/ she clear previous year examination.

13.6 A student of final year with supplementary paper of any previous & third year shall not be allowed for any reason to sit in the final year main examination No consideration shall be given to such students..

#### **14. Promotion**

14.1 A candidate has to pass in theory and in practical examination separately to be promoted to next Academic year.

14.2 A candidate shall not be promoted to next Academic year if he/she fails in more than 4 subjects. Such candidates shall be allowed for re examination as ex- student on payment of prescribed fee with junior batch students.

14.3 The candidates who have passed all the examination i.e. till fourth Academic year shall be eligible for 6 months compulsory internship.

#### **15. Internship**

A student passed final year physiotherapy examination shall be allowed to do six month compulsory rotatory internship from any govt. & non govt. multispecialty hospital & center across India. The hospital should have well equipped rehabilitation/physiotherapy unit.No candidate shall be awarded degree certificate without successfully completing six month of internship. Completion certificate from the department on submission of notarized self declaration for internship completion.

#### **16. Re-admission in the University:**

A candidate who has failed and has not been promoted to the next Academic year shall have to repeat the year as a regular student. He will be allowed for re-admission on payment of prescribed fees provided he/she satisfies the following conditions.

16.1 That the candidate fails in supplementary examination.

16.2 That the candidate is declared failed

16.3 That candidate did not appear in annual examination and or he/she was granted permission for not to appear in examination on his /her own request.

16.4 That candidate who has been detained by the University may also be permitted to take re-admission if considered.

## **17 . Result**

17.1 The result of a candidate shall be declared on the basis of internal assessment and annual year exam of each year.

17.2 a) for candidates admitted to each Academic year ab-initio in B. P. T. Course.

I <sup>st</sup> year	100% of aggregate marks
II <sup>nd</sup> year	100% of aggregate marks
III <sup>rd</sup> year	100% of aggregate marks
IV <sup>th</sup> year	100% of aggregate marks

17.2 b) For diploma holder/lateral entry candidates admitted in II<sup>nd</sup> year of B.P.T. . course.

II <sup>nd</sup> year	100% of aggregate marks
III <sup>rd</sup> year	100% of aggregate marks
IV <sup>th</sup> year	100% of aggregate marks

## **18. Award of division:**

18.1 The division shall be awarded on basis of final result.

18.2 If a candidate passes all examinations and secures less than 60% marks of grand total he/she shall be placed in SECOND DIVISION.

18.3 If a candidate passes all examinations in the first attempt (without any carry over paper and secure more than 75% of aggregate of marks of grand total of Final year shall be awarded First Division with honors'.

## **19. Award of Degree**

19.1 The candidate shall be awarded degree certificate only on successful completion of the course including 6 months internship.

19.2 The entire course of study in Physiotherapy for I, II, III, IV year must be completed within 8 years of date of first admission, excluding the period of internship

## **20. Grace Marks**

20.1 A candidate may be awarded grace marks up to maximum of total 2 marks in one subjects of theory when appears in theory and no grace marks be awarded in practical and supplementary examinations.

20.2 The grace marks shall not be added to the aggregate marks.

## **21. Scrutiny**

21.1 Scrutiny shall be allowed in only theory papers as per the rules of university.

21.2 Re-evaluation as per university norms not permitted.

## **22. Unfair means**

Cases of unfair means shall be dealt with as per the rules of the University.

## **23. Cancellation of Admission**

The admission of a student at any stage of study shall be cancelled if:

23.1.1 He / She is not found qualified as per norms and guidelines or eligibility criteria prescribed by the University.

Or

23.2 He/she is found unable to complete the course within the stipulated time.

Or

23.3 He/she is found involved in creating indiscipline in university.

Or

23.4 He/she is found involved in any criminal case/has given any false statement.

23.5 The academic council shall have the power to relax or amend any provision provided in the Ordinance in any specific matter/situation subject to the approval of executive council of the University.

## 24. Fee

The schedule tuition fee shall be under

Rs. 52,000/- per annum or as pre-revised by Bundelkhand university Jhansi

## 25. Paper setter

There will be one paper setter for each theory subjects nominated by Hon'ble Vice chancellor, will set the question paper of 70 maximum marks.

### External examiner

There will be one external examiner nominated by Hon'ble Vice chancellor from the other universities or medical colleges, will conduct the practical examination of 70 marks.

### Internal theory

The internal theory marks will be given by subject expert teaching the subject, will also be signed by Head of department/ course coordinator

### Internal practical

The practical marks will be given by subject expert teaching the subject , will also be signed by head of department /course co-coordinator

## 26. Course of study & distributing hour year wise.

### A) First year

There shall be an examination at the end of first year after a regular course of study.

S.N	Subject	code	Theory( hrs)	Practical(hrs)
1	Anatomy	1681 Theory 16810 practical	120	60
2	Physiology	1682 Theory 16820 practical	120	60
3	Pathology	1683	60	
4	Microbiology	1684	60	
5	Sociology	1685	120	
6	Psychology	1686	60	
7	Basic of Electrotherapy& Exercise therapy	1687	60	
	<b>Qualifying subject</b>			
1.	Environmental science	1688		

**VALUE ADDED COURSE - YOGA IN HEALTH (NON CREDITABLE & NON ASSESBALE) 20HRS****B) Second year**

There shall be an examination at the end of second year after a regular course of study

S.N.	Subjects &code	Code	Theory (hrs)	Practical(hrs)
1.	Pharmacology	2681	60	
2.	Biochemistry	2682	60	
3.	General medicine and pediatrics	2683	120	
4.	Exercise therapy and Yoga	2684 theory 2688 practical	120	120
5.	Electro therapy	2685 theory 2689 practical	120	120
6.	Clinical orthopedics	2686 Theory 2690 practical	120	60
7.	Community medicine	2687	90	

**VALUE ADDED COURSE – WOMAN HEALTH (NON CREDITABLE & NON ASSESBALE) 20HRS****C) Third year**

There shall be an examination at the end of third year after regular course of study.

S.N	Subject	Code	Theory(hrs)	Practical(hrs)
1	Neurology &Neurosurgery	3681	60	
2.	Cardiothoracic diseases and surgery,	3682	60	
3.	General Surgery & Allied	3683	90	
4.	Biomechanics and kinesiology	3684	120	
5	Physical medicine& Rehabilitation	3685	90	
6.	Physiotherapy in Orthopedics conditions	3686 Theory 3688 practical	120	120
7..	Physiotherapy in Neurological condition	3687 Theory 3689 practical	120	120

**VALUE ADDED COURSE – EVIDENCE BASED PRACTICE IN ALLIED HEALTH(NON CREDITABLE & NON ASSESBALE) 20 HRS**

During third year posting of the student will have clinical posting for a period not less than 3 hrs per day includes practicals in given subjects.

#### D) Fourth year

There shall be an examination at the end of fourth year after regular course of study.

S.N.	Subject	Code	Theory (hrs)	Practical (hrs)
1	Community Physiotherapy, Physiotherapy Ethics	4681 Theory	60	
2	Research Methodology And Biostatistics	4682 Theory	60	
3	Physiotherapy In Cardiothoracic Conditions	4683 Theory 4688practical	120	60
4.	Physical Diagnosis and prescription	4684 Theory 4689practical	120	60
5.	Physiotherapy in Medical And Surgical Conditions	4685 Theory 4690practical	120	60
6.	Physiotherapy in Sports	4686 Theory 4687 practical	120	60

**VALUE ADDED COURSE – HUMAN RIGHTS (NON CREDITABLE & NON ASSESBALE) 20 HRS**

During fourth year the student will have clinical posting for a period not less than 3 hrs per day includes practicals in given subjects.

#### 27.Educational qualification of teachers

Minimum qualification for teachers is as follows

- Assistant prof – BPT with five years experience or M.P.T.
- Associate prof-MPT with five years Teaching as assistant professor
- Professor-MPT with 10 years Teaching experience out of which at least three years should be as associate professor

**BUNDELKHAND UNIVERSITY**  
**INSTITUTE OF REHABILITATION SCIENCES**



**DEPARTMENT OF PHYSIOTHERAPY**

**SYLLABUS**  
**FOR**  
**BACHELOR OF PHYSIOTHERAPY**  
**FIRST YEAR**



# SCHEME OF EXAMINATION

## B. P.T. FIRST YEAR

S.N	Subject	Code	Internal Assessment		Main exam		Total
			Theory	Practical	Theory	Practical	
1	Human Anatomy	1681/16810	30	30	70	70	20
2	Human Physiology	1682/16820	30	30	70	70	200
3	Pathology	1683	15		35		50
4	Microbiology	1684	15		35		50
5	Sociology	1685	15		35		50
6	Psychology	1686	15		35		50

7	Basic Of exercise therapy and electrotherapy	1687	30		70		100
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**Total-700**

8. Environmental Science 1688 30 70 100

# **B.P.T. 1681**

## **HUMAN ANATOMY**

### **Course objectives**

The objective of this course is to provide understanding of gross anatomy of various body parts, application of knowledge of anatomy to learn evaluation and application of physical therapy. Major emphasis of learning is towards, Musculo-skeletal, cardio-respiratory and nervous system, total lecture and practical duration will be 180, 120 lectures and 60 demonstration hours.

### **Course Outline**

Microscopic, Macroscopic, Radiological and Surface Anatomy of the Following:

#### **1. Cells & Tissues**

- a) Anatomical Nomenclature, Structure of Cell, Cell division.
- b) Tissues: Epithelial, Connective, Muscle & Nervous

#### **2. Embryology & Development**

- a) Early Human Development
- b) Development of Individual Systems: Respiratory, Gastro-intestinal, Urinary and Vascular System.
- c) Prenatal Growth in Form and Size
- d) Neonatal Anatomy and Growth

#### **3. Skin**

Types of Skin, Epidermis, Dermis, Nerves, Blood Vessels, age related Changes, Appendages of Skin: Pilosebaceous Unit, Nail Unit.

#### **4. Skeletal System**

- a) Morphology of Human Skeleton: The Skeleton in Life, Shape and Proportions of Bone, Functions of Bone and Skeleton, mechanical Properties of Bone, Growth of Individual Bones.
- b) Skeletal Connective Tissues: Structure of Cartilage, Bone as a Tissue, Microscopic Structure and Organization of Bone, Blood Vessels and Nerves supply.
- c) Types of Joints
- d) Axial Skeleton
- e) Appendicular Skeleton:-upper limb, lower limb

#### **4. Muscle**

Types of Muscle, Attachments of Skeletal Muscle Form and Function of Skeletal Muscle, , Functional Implications of Form. Muscle and Movement, Muscles and Fasciae of Head, Neck, Trunk, Upper Limb, Lower Limb.

#### **6. Nervous System**

Regional Organization of Central Nervous System, Peripheral Nervous System, Cranial Nerves, Spinal Nerves, and Autonomic Nervous System Peripheral Apparatus of Special Senses: Gustatory, Olfactory, Peripheral Visual, Accessory Visual, Auditory Vestibular.

#### **7. Heart**

- a) Blood Vessels, Thoracic Cavity and Heart.
- b) Arterial System, Venous System, Lymphatic.

#### **8. Respiratory System**

Nose and Paranasal Sinuses, Larynx, trachea. Bronchi, Pleura, Mediastinum

- 9. Abdomen** Oral Cavity, digestive organs ,small intestine, large intestine,  
Kidneys, Ureter, Bladder, Urethra Reproductive organs of Male and Female.

#### *Anatomy Practical*

1. Surface Anatomy: Identification and Description of surface land marks on Human Specimen.
2. Muscles, Bones Ligaments, Joints of head, face, trunk lower and upper extremities on a dissected human specimen..
3. Gross And Microscopic Anatomy of the Central and Peripheral Nervous System.
4. Gross anatomy of Respiratory, Digestive Endocrine, Urinary and Reproductive Systems on a dissected human body.
5. General Histology ( Endocrine System, Lymphoid System, Circulatory System, Connective Tissue, Epithelial Tissue, Urinary system, Digestive System & Reproductive System)

#### **BOOK REFERENCE**

1. Chaurasia, B D Human Anatomy: Regional and Applied CBS, New Delhi 2004 3V
2. Chaurasia, B D Human Osteology CBS, New Delhi 1991
3. Singh, Inderbir Text Book of Anatomy: With Color Atlas Jaypee, New Delhi 1999 3V
4. Singh, Inderbir Text Book of Neuroanatomy Jaypee, New Delhi 1999
5. Singh, Inderbir Text Book of Human Histology Jaypee, New Delhi 1997
6. Singh, Inderbir Text Book of Human Osteology Jaypee, New Delhi 1997

# B.P. T. 1682

## HUMAN PHYSIOLOGY

### Course objectives

The objective of the course is to provide understanding of gross physiology of various body parts, application of knowledge of physiology to learn evaluation and application of physical therapy. Total lecture and practical duration will be 180. 120 lectures and 60 demonstration hours.

### Course Outline

#### 1. Functional Systems of Cell

- a) Cell and its Function,
- b) Extra-Cellular Fluid, Intra- Cellular Fluid.
- c) Functional Systems of Cell, DNA, RNA.
- d) Control of Genetic Function and Biochemical Activity in Cells.
- e) Cell Differentiation, Cancer.

#### 2. Membrane Physiology, Nerve and Muscle

- a) Transport of Substances through the Cell Membrane: diffusion, Active Transport.
- b) Membrane Potentials and Action Potentials: Resting Membrane Potential of Nerves, Nerve Action Potential, Propagation of AP, Signal Transmission in Nerve Trunks.
- c) Contraction of Skeletal Muscle: Molecular Mechanics of Muscle, Contraction, Energetic of Muscle Contraction, Characteristics of Whole Muscle Contraction,
- d) Contraction and Excitation of Smooth Muscles, Hormonal Control of Smooth Muscle Contraction.

#### 3. Heart and Circulation

- a) Cardiac Muscle, Cardiac Cycle, Regulation of Heart Pumping Cardiac Failure.
- b) Rhythmical Excitation of the Heart: Specialized Excitatory and Conductive System of the Heart, Control of Excitation and Conduction in the Heart.
- c) Normal ECG, Methods of Recording, ECG Leads. Heart Sounds.
- d) Basic Theory of Circulatory Function, Interrelationships among Pressure, Flow and Resistance, Vascular Dispensability, Arterial Pressure Pulsation, Veins and their Function, Lymphatic system, Microcirculation, Capillary System, Exchange of Nutrients and other Substances, Interstitial Fluid, Local Control of Blood Flow, Humoral and Nervous Regulation of Circulation, Cardiac Output, Venous Return Arterial Pressure and their Regulation.

#### 4. Blood

RBC, Anemia, Polycythemia, WBC, Resistance of body to Infection, Blood Groups.

Homeostasis and Blood Coagulation. Composition, Function and Physical properties of Blood, Immunity, Plasma proteins and their Function

### **5. Kidney and Body Fluids.**

- a) Body Fluid Compartments: ECF, ICF, Interstitial Fluids and Edema.
- b) Urine Formation By the Kidneys Nephron, Glomerular Filtration , Renal Blood Flow, Tubular Reabsorption, Regulation of ECF Osmolarity and Sodium Concentration.
- c) Integration of Renal Mechanisms for Control of Blood Volume and ECF Volume.
- d) Renal Regulation of Potassium, Calcium, Phosphate and Magnesium, Regulation of Acid Base Balance. Diuretics.

### **6. Respiration**

- a) Mechanics of Pulmonary Ventilation, Pulmonary Volumes and Capacities, Alveolar Ventilation Functions of the Respiratory Passageways.
- b) Pulmonary Circulation, Pulmonary Edema, pleural Fluid.
- c) Physical Principles of Gas Exchange, Transport of Oxygen and carbon dioxide in the Blood and Body Fluids.
- d) Regulation of Respiration, Respiratory Dysfunction.

### **7. Nervous System**

- a) Sensory Receptors, Neuronal Circuits for Processing Information.
- b) Somatic Sensation: Touch, Position, Pain Thermal Headache.
- c) Special Senses
- d) Motor Functions of the Spinal Cord.
- e) Cortical and Brain Stem Control of Motor Function: The Motor Cortex, Corticospinal Tract, Vestibular Sensations and Maintenance of Equilibrium.
- f) Cerebellum, Basal Ganglia, Motor Control Integration of the many parts of the total Motor Control System.
- g) Intellectual Functions of the Brain Learning and Memory.
- h) Behavioral and Motivational Mechanisms of the Brain the Limbic System, Hypothalamus.
- i) States of Brain Activity: Sleep, Brain waves Epilepsy, Psychoses.
- j) Autonomic Nervous System
- k) Cerebral Blood Flow, CSF and Brain Metabolism.

### **8. Gastrointestinal System**

- a) Movement of G.I.T
- b) Function of Liver
- c) Secretary Functions.
- d) Digestion and Absorption of fat, proteins and Carbohydrate.

## **9. Endocrinology and Reproduction**

- a) Hormone Secretion, Transport and Clearance from Blood.
- b) Hormones: Pituitary, Thyroid , Adrenocortical, Pancreas ,Parathyroid, Reproductive.
- c) Puberty, Menarche, Menopause, Pregnancy , Lactation

## **10. Physiology of Exercise and Work**

- a) Neuromuscular activity human movement, physiological mechanism in movement,
- b) Circulatory and respiratory response to exercise including effects on the heart, blood circulation, body fluid changes pulmonary ventilation, gas exchange and transport etc.
- c) Effects of exercise and work on other body functions.
- d) Metabolic and environmental aspects of exercise and work –metabolism, energy requirement, efficiency of muscular work, nutritional aspects, heat and body temperature regulation and environmental factors.
- e) Effects of Exercise training – endurance, fatigue and recovery.

### **PHYSIOLOGY PRACTICAL**

1. Blood Group Identification
2. R. B. C. count W.B. C. count and Platelets count
3. Hemoglobin
4. Blood Sugar
5. B.T. & C.T. & E.S.R.
6. Vital Signs
7. Reflexes
8. Sensation testing

### **Book Reference**

1. Chatterji, C. C. Human Physiology Medical Allied 1997 2V
2. Keele, Cyril A Samson Wright's Applied Physiology Oxford University Press 1998
3. Bijlani, R. L. Understanding Medical Physiology Oxford University Press 1998
4. Guyton, A.C. and Hall, J. E. Textbook of Medical Physiology  
W.B.Saunders, Singapore 1998

## **B. P. T. 1683**

# **HUMAN PATHOLOGY**

### **Course objectives:**

The objective of the course is to provide rationale for understanding of the subject for Physiotherapy students. Brief concept of pathological basis of disease and infectious disease prevention, total lecture duration will be 60 lectures demonstration hours.

### **Course Outline**

#### **1. Introduction to Pathology**

- a) Definitions, Branches, Pathology as a Science
- b) Correlation Between Pathology and Physiotherapy

#### **2. Cell Injury, Death and Adaptation**

- a) Definitions and Causes, Mechanisms, Morphology of Cell Injury, Apoptosis
- b) Cellular Adaptations to Growth and Injury

#### **3. Acute and Chronic Inflammation**

- a) General Features of Inflammation, Vascular Changes and Cellular Events-Acute Inflammation.
- b) Chemical Mediators of Inflammation.
- c) Definitions, Causes and Histological Features-Chronic Inflammation.

#### **4. Tissue and Cell Repair**

- a) Normal Cell Growth, Repair by Connective tissue, Wound Healing
- b) Pathological Aspects of repair

#### **5. Hemodynamic Disorders**

Edema, Hyperemia and Congestion, Hemorrhage, Hemostasis and Thrombosis, Embolism, Infarction, Shock.

#### **6. Disorders of Immune System**

- a) Cells of the Immune System, Immune Mechanisms of Tissue Injury
- b) Autoimmune Disease: Mechanism, RA, SLE, Myasthenia Gravis.
- c) Immunodeficiency Diseases: Differences between Primary and Secondary, AIDS.

#### **7. Neoplasm**

- a) Definitions and Nomenclature, Characteristics, Carcinogenesis, Carcinogenic agents,.
- b) Biology of Tumor Growth, Tumor Immunity.

#### **8. Vascular System**

- a) Vascular Wall Cells and their Response to Injury



- b) Arterial Diseases: Arteriosclerosis, Hypertension and Hypertensive Vascular disease, Buerger's disease, Aneurysm.
- c) Venous Disease: Varicose Veins, Phlebothrombosis, and Thrombophlebitis.
- d) Lymphatic Diseases: Lymphangitis, Lymphoedema.

### **9. Cardiac System**

Types of Heart Disease: Ischemic Heart Disease, Hypertensive Heart Disease, Valvular Heart Disease, Myocardial Heart Disease, pericardial Heart Disease, Congenital Heart Disease

### **10. Hematopoietic and Lymphoid System**

Anemia, Polycythemia, Leukopenia, Leukemia,

### **11. Respiratory System**

Atelectasis, obstructive Lung disease, Restrictive Lung Disease, Vascular Lung Diseases, Pulmonary Infections: Pneumonia, Tuberculosis, Lung Abscess, Pleural Disorders: Pneumothorax, Hemothorax.

### **12. Gastrointestinal System**

Gastritis, Gastric Ulcerations, Ischemic Bowel Disease, Appendicitis, GI Tract Infections, Crohn's Disease, Jaundice, hepatic Failure, Cirrhosis, Hepatitis, Cholelithiasis, Cholecystitis, Diabetes Mellitus, Pancreatitis.

### **13. Urinary System**

Nephritis, Glomerulonephritis,

### **14. Endocrine System**

Hyperpituitarism, Hypopituitarism, Hyperthyroidism, Hypothyroidism.

### **15. Musculoskeletal System**

Osteoporosis, Osteomyelitis, Osteoarthritis, Gout, Osteoma, Osteosarcoma, Chondroma, Chondrosarcoma, Osteochondrosarcoma, Muscular Dystrophy.

### **16. Integumentary System**

Psoriasis, Acne Vulgaris.

### **17. Nervous System**

Hydrocephalus, Meningitis, Encephalitis, Hematoma, Multiple Sclerosis, Alzheimer's Disease, Parkinsonism, G.B. Syndrome.

### **Book Ref-**

1. Textbook of Pathology- Harshmohan
2. Textbook of Pathology-Robbins

## *B.P.T. 1684*

### *MICROBIOLOGY*

#### **Course objectives**

The objective of the course is to provide rationale for understanding of the subject for Physiotherapy students. Brief concept of microbiologic basis of disease and infectious disease prevention, total lecture duration will be 60 lectures demonstration hours.

#### **Course Outline**

##### **1. Immunology**

Infection, Immunity, Antigens, Antibody, Antigen-Antibody Reaction, Complement System, , Immunodeficiency Diseases, etc.

##### **2. Bacteriology**

- a) Morphology, Nutritional Requirements, Metabolism, Growth, Classification and Identification of Bacteria
- b) Gram positive cocci-Staphylococcus, Streptococcus, Pneumococcus,
- c) Gram negative-Gonococci, meningococci
- d) Gram positive bacilli-clostridium tetani, clostridium perfringens etc.
- e) Gram negative bacilli –salmonella, coliformis,pseudomonas,prosteus etc.
- f) Anaerobic non spring cocci and bacilli.
- g) Mycobacteria-- Tuberculli, M.leprae
- h) Sterilization and Disinfection

##### **3. Virology**

- a) General Characteristics and Classification Of Virus.Brief description of polio ,rubella hepatitis,AIDS Virus

##### **4. Miscellaneous**

- a) Medical Mycology-Actinimycosis,Dermatophytes,candidosis ets.
- b) Parasitology- filarial,Hook worm, round worm,malaria,ets.
- c) Spirochetyes-Syphilis(Congenital,acquired)
- d) Hospital Infection, Diagnostic Microbiology, etc

#### **Book Ref**

- 1 Chakraborty, P. Textbook of Microbiology NCB, Calcutta 1999
- 2 Ananth Narayan,R.Text Book of Microbiology Orient Longman, Madras

# **B.P.T. 1685**

## **SOCIOLOGY**

### **Course Objective**

This course will enable the students to understand specific sociological concepts principles, processes social institutions and various factors affecting the rural and urban communities of India, total lecture duration will be 60 hours.

### **Course Outline**

#### **1. Introduction**

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

#### **2. Sociology and Health**

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

#### **3. Socialization**

Meaning of socialization, primary secondary and anticipatory socialization, agencies of socialization.

#### **4. Social Groups**

Concepts of Social groups influence of formal and informal groups on health and sickness, the role of the primary groups and secondary groups in the hospitals and rehabilitation settings.

#### **5. Family**

Meaning and definition function and types, changing family patterns

#### **6. Community**

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

#### **7. Culture**

Components of culture, impact of culture, on human behavior, cultural meaning of sickness, response of sickness, and choice of treatment, (role of culture as social consciousness in molding the perception of reality), culture induced symptoms and disease, sub-culture of medical workers.

#### **9. Social Change**

Factor of Social change, human adaptation and social change, social change and stress, social change and deviance, social change and health programs the role of social planning in the improvement of health and in rehabilitation.

## **10. Social Problems of the Disabled**

Consequences of the following social problems in relation to sickness and disability remedies, to prevent these problems.

- a) Population explosion
- b) Poverty and unemployment
- c) Beggary
- d) Juvenile delinquency
- e) Prostitution
- f) Alcoholism
- g) Problems of women in employment
- h) Social of the health profession.
- i) Various perspectives, power and autonomy in professions, women and professions.

## **11. Social Security**

Social Security and social legislation in relation to the disabled.

## **12. Social Worker**

Meaning of social work, role of social worker

### **Book references**

1. Sociology for physiotherapy –Bid
2. Sociology for physiotherapy-Dr.R.Rajput

# **B.P.T. 1686**

## **PSYCHOLOGY**

### **Course Objective**

This course will enable the students to understand specific psychological factors and effects in physical illness and this will help them to have a holistic approach in their dealing with patients during admission treatment, rehabilitation and discharge, total lecture duration will be 60 hours

### **Course outline**

#### **General psychology**

**1. Definition, application and methods in psychology.**

**2. Biology of Behavior.**

**3. Sensory processes and perception.**

**4. Principles of learning.**

Classical and Instrumental Conditioning, Cognitive learning.

**5. Memory.**

Theories, long and short – term memories, forgetting, amnesia.

**6. Thinking and Language.**

Concepts, thinking process, problem- solving and decision making, creative thinking and language communication.

**7. Motivation.**

Theories, Biological and Social motives, frustration and conflict of motives, motives to know and be effective.

**8. Emotion and Stress.**

Expression and perception of emotions, physiology and application of emotion.

**9. Attitudes.** Nature and measurement of attitudes, Attitude theories, Factors in attitude change Behavior and attitudes

**9. Development – A Lifespan Perspective (infancy, childhood, adolescence, adult, old age)**

**10. Personality**

Defining and thinking about personality

Theories and issues and controversies and research

**11. Intelligence and intelligence testing**

#### **Clinical psychology (theory)**

**1. Brief description of Psychological assessment and testing.**

2. Abnormal Psychology.
3. Therapy for Psychological distress.

**Practicals** (demonstration only)-Assessment of intelligence, personality, ego defence mechanism, demonstration of memory, perception, and thinking disorder

**Book Ref-**

1. Introduction to psychology-N.L.Munn
2. Psychological testing-A. anastani
3. Elementary psychology-Kothurkar
4. Abnormal psychology-Bhatia

## **B.P.T. 1687**

# **BASIS OF ELECTROTHERAPY & EXERCISE THERAPY**

## **SECTION I**

### **Course Objective**

This course will enable the students to understand the basic mechanics and medical electronics in their application in exercise therapy and electrotherapy. The total duration of lectures and instructional course will be 120 hours

### **Course Outline**

#### **BASIS OF ELECTROTHERAPY**

##### **1. Physical principles**

- a) Structure and properties of matter – solids, liquids and gasses, adhesion, surface tension, viscosity, density and elasticity.
- b) Structure of atom, molecules, elements and compounds
- c) Electron therapy static and current electricity
- d) Conductors, Insulators, Potential difference, Resistance and intensity.
- e) Ohm's Law – Its application to AC & DC currents.
- f) Rectifying Devices Thermionic Valves, Semiconductors, Transistors, Amplifiers, Transducer and Oscillator circuits.
- g) Capacitance condensers and in DC and AC circuits.
- h) Display devices and indicators – analogue and digital.

##### **2. Effects of Current Electricity**

- a) Chemical effects- ions and electrolytes, ionization, Production of an EMF by chemical actions.
- b) Magnetic effects, Molecular theory of magnetism, Magnetic fields Electromagnetic Induction.
- c) Milli Ammeter and voltmeter transformers and choke coil
- d) Electromagnetic spectrum.

##### **3. Electrical Supply**

- a) Brief outline of main supply of electric current
- b) Dangers- short circuit, electric shocks.
- c) Precaution – safety devices, earthing fuses etc.
- d) First aid and initial management of electric shock.

#### **4. Various Electrotherapeutic agents**

- a) Cooling and Thermal agents: Physical Principles of cold, Superficial and deep heat.
- b) Ultrasound: Physical Principles of Sound.
- c) Electro magnetic Radiation Physical Principles and their Relevance to Physiotherapy.
- d) Electric Currents: Physical Principles and their Relevance to Physiotherapy Practice.

#### **5. Circuit Diagrams.**

- a) SWD
- b) US
- c) MWD
- d) LASER.

### **SECTION-II**

#### **BASICS OF EXERCISE THERAPY**

Definitions, Units, Classifications, Effects and Physiotherapy Application of the Following:

##### **1. Mechanical Basis of Movement**

Force and force Systems, Motion and its Laws, Levers, Angle of Pull, Pulleys and its types, Pendulum, Friction, Work Energy and Power Friction, Stress and Strain.

##### **2. Skeletal Basis of Movement**

Planes and Axis, Joints and their Classification, Classification of Movement, Degrees of Freedom, Bones and their Classification.

##### **3. Musculoskeletal Basis of Movement**

Structure of Muscle and its Classification, Muscle Tension, Muscle Fiber Group Action of Muscles, Torque & angle of pull.

##### **4. Gravity**

Lows, Centre of gravity, Line of Gravity and their Alterations, Role in Human Body and Movement.

##### **5. Equilibrium**

Effects, Supporting Base, role in Human Movement.

##### **6. Simple Machines**

Levers and their Functions and classification, Pulleys and their Functions and classification, Inclined Planes and their Functions and classification.

##### **7. Elasticity**

Stress, Strain, Hooke's Law Springs and their properties.

##### **8. Hydrostatics and Hydrodynamics**

Principles, Application



## **10. Traction**

### **Basis of Electrotherapy & Biomechanics Practical**

#### **SECTION I**

##### **BASIS OF ELECTROTHERAPY**

Diode and Triode valves, Transistors, Ammeter, Voltmeter, Galvanometer, Rheostat, Resistance Box, Transformer etc.

1. Demonstration of circuits in Electrotherapy units like stimulator, SWD, LASER and Ultrasound, etc.

#### **Section –II**

##### **Basics of BIOMECHANICS**

1. Mechanical Principles applied in Physiotherapy like force, Torque, Centre of Gravity, etc.
2. Demonstration of different types of levers in the human body.
3. Demonstration of different types of pulleys and strings used in Physiotherapy.
4. Demonstration of Archimedes' Principle of floatation and Bernoulli's Theorem in Hydrotherapy.
5. Demonstration of axial and pendular suspension.

#### **Book references**

1. Hollis, M. and Cook, P.F. Practical Exercise Therapy CBS, New Delhi 1999
2. Gardiner, Dena Principles of Exercise Therapy CBS, New Delhi 1999
3. Lippert, Lynn Clinical Kinesiology for Physical Therapy Jay pee New Delhi 1996

**SYLLABUS**  
**FOR**  
**BACHELOR OF PHYSIOTHERAPY**  
**SECOND YEAR**

# SCHEME OF EXAMINATION

## B.P.T. SECOND Year

S. N.	Subject	Code	Internal Assessment		Theory	Practical	Total
			Theory	Practical			
1	Pharmacology	2681	15		35		50
2	Biochemistry	2682	15		35		50
3	General Medicine and paediatrics	2683	30		70		100
4	Exercise Therapy	2684 theory 20688 practical	30	30	70	70	200
5	Electrotherapy	2685 theory 20689 practical	30	30 -	70	70 -	200
6	Clinical Orthopedics	2686 theory 20690 practical	30	30	70	70	200
7.	Community Medicine	2687	30		70		100

VALUE ADDED COURSE – WOMAN HEALTH (NON CREDITABLE & NON ASSESBALE)

**Total-900**

## **B. P.T. 2681**

### **PHARMACOLOGY**

#### **Course Objectives:**

The objective of the course is to understand pharmaco-kinetics, pharmaco-dynamics, Usage of common drugs with (indications, contraindications, and side effects, to understand the drug actions that may affect the physical therapy treatment. Course is not prescription oriented. The total duration of lectures and instructional course will be 60 hours

#### **Course Outline**

##### **1. General pharmacology**

a) Definitions and Routes of Drug Administration

b) Pharmacokinetics:

Transportation across membranes, Absorption, Distribution, Biotransformation, Excretion, Kinetics of elimination

b) Pharmacodynamics

Principles and Mechanisms of Drug Action, Combined effects of drugs, Drug dosage, Factors modifying Drug Action, Adverse Drug Effects

##### **2. Systemic Pharmacology**

a) Drugs acting on Central Nervous System

b) Anesthetics, alcohols, alkaloids, narcotics, narcoleptics

c) Hypnotics, anticonvulsants, Sedatives, stimulants, anti anxiety, etc

d) Drugs acting on peripheral nervous system: Skeletal muscle relaxants

e) Drugs acting on the Autonomic Nervous System: Cholinergic & Anti cholinergic drugs,

f) Adrenergic & Anti adrenergic drugs.

g) Drugs acting on cardiac vascular system.

h) Drugs acting on the respiratory system

i) Gastrointestinal Drugs

j) Narrow spectrum and broad spectrum antibiotics

k) Drugs acting on Skin and Mucous membrane

l) Antiseptics, Disinfectants

m)Hormones and drugs affecting endocrine functions

n) Vitamins

o) Immunologic agents.

p) Diagnostic agents.

#### **Book Reference**

1. K.D.Tripathi Essential of Medical Pharmacology New Delhi 2. N. Muruges.

## **B.P.T. 2682**

### **BIOCHEMISTRY**

#### **Course Objectives:**

The objective of the course is to understand biochemical basis of life sciences Note: A brief description of metabolic pathways mentioned herein is indicated. Details and structures are to be avoided. The total duration of lectures and instructional course will be 60 hours

#### **Course Outline**

1. Basic Biophysics – Concepts of Acid base buffer, brief knowledge of biological process such as osmosis viscosity, surface tension, dialysis with special emphasis on their biomedical implications

#### **2. Protein**

Definition, Classification, properties & functions, protein metabolism, plasma proteins amino acids- classification, properties & biological importance of proteins,

#### **3. Enzymes**

Definition, Classification, properties, mechanism of action, clinical importance & regulation of activity.

#### **4. Carbohydrate**

Definition, Classification, Metabolism-different pathways and general function  
Blood Sugar level, glucose tolerance & glycosuria.

#### **5. Lipid**

Definition, Classification & functions of lipids – triglycerids, fatty acids, saturated, unsaturated fats, phospholipids & lipoproteins, cholesterol, Beta oxidation & ketone bodies metabolism.

#### **6. Vitamins ( fat & water soluble)**

Definition, classification, functions dietary sources, daily requirement & deficiency disorders.

#### **7. Hormones**

Introduction Definition & Classification of hormones. Mechanism of hormone action, Effects of hormones on various metabolism & hormonal disorders.

#### **10. SPECIAL TOPICS**

- a) Water electrolyte balance & acid base balance.
- b) Nutrition–Introduction, Nutrients of their role in human, Nutritional requirements Balance diet, Nutritional disorder, SDA (special dynamic action), Respiratory quotient (RQ) & Basal Metabolism rate (BMR).

**Book Reference;-**

1. Biochemistry Dr.S.P.Singh

2 Chatterji, M N Text Book of Medical Biochemistry Jaypee, Bangalore

## **B. P.T. 2683**

### **GENERAL MEDICINE AND PAEDIATRICS**

#### **Course Objectives:**

The objective of the course is to understand the subject of medicine, the medical patient & implications of medical condition in physical therapy. The total duration of lectures and instructional course will be 120 hours

#### **Course Outline**

##### **MEDICINE**

1. Introduction: Brief outline of subject of medicine, a medical patient, common signs & Symptoms of disease
2. Infectious Diseases: Brief description of concept of infection, types, classification & clinical manifestation of infection and general principle of management (No specific infections)
3. Nutritional & Metabolic Diseases: Brief description of following diseases along with Outline of management: Diabetes Mellitus, Vitamins (A, B, C, D & K) and Minerals iron, calcium phosphorus, iodine) deficiencies, and Obesity
4. Alimentary tract: Brief description of manifestations of alimentary tract disease & general principle of diagnosis & outline of management of following diseases: Peptic ulcer disease, common infections of small & large intestine
5. Brief description of liver diseases along with outline of management: Hepatitis, & Jaundice
6. Diseases of the blood: Brief description of manifestations along with outline of management of common blood diseases - Anaemia, Leukaemia, Coagulopathy
7. Diseases of connective tissues: Brief description of manifestations along with outline of Management of - SLE, polymyositis
8. Diseases of skin: Brief description of manifestations along with outline of management of common skin diseases - scabies, pediculosis, taeniasis, impetigo & psoriasis
9. Geriatrics- physiology of ageing, manifestations of diseases in old people and general Principles of management. Implications of aging in physical therapy.
10. first Aid in common Medical Emergencies
11. Cardio-vascular System: Manifestations of heart & vascular disease & general principle of diagnosis. Brief description of following diseases along with outline of management: Cardiac failure, Ischaemic heart disease, hypertension, atherosclerosis, Deep vein Thrombosis
12. Respiratory System: Manifestations of respiratory disease & general principle of diagnosis. Brief description of following diseases along with outline of management: Obstructive Pulmonary diseases (Bronchial Asthma, COPD), pulmonary infections

(Pneumonia, Bronchitis, Lung abscess, Tuberculosis), Respiratory failure, occupational

### **PAEDIATRICS**

1. Normal Growth and development of child – motor, mental, language and social
2. Pathological presentations of growth and development disorders
3. Common infectious diseases in children: Brief description of following infectious diseases along with outline of management: Tetanus, diphtheria, Mycobacterial, measles, chicken pox, gastroenteritis, HIV, and Malaria
4. Immunization programmes – WHO schedule, different vaccinations, rationale; special consideration to various disease eradication programmes like Pulse-Polio
5. Child and nutrition - Nutritional requirements, malnutrition syndrome, Vitamins (A, B, C, D & K) and Minerals (iron, calcium phosphorus, iodine) deficiencies in children and management in brief
6. Clinical presentation, management & prevention of the following: - Cerebral palsy, Poliomyelitis, Muscular dystrophy
7. Childhood rheumatism-types, clinical presentation, & management in brief.
8. Acute CNS infections: clinical presentation, complications and management of bacterial and tubercular infections in brief.
9. Clinical presentation, management & prevention of the following respiratory conditions: URI, LRI, bronchiolitis, asthma, TB (in brief)
10. Clinical presentation, management & prevention of the following cardiac conditions: Rheumatic heart disease, SABA, Congenital heart disease - ASD, VSD, PDA (in brief)

:

### **Book References**

1. Chamberlin, E.N. and Ogilvie, C. Symptoms and signs in Clinical Medicine Jhon Wright 1974
2. Swash, Michael Hutchison's Clinical Methods W B Saunders, London 2000
3. Ghai, O. P. Essential Pediatrics Inter print, New Delhi 1987
4. General Medicine –Golwala
5. General Medicine- Davidson



# B.P.T. 2684

## EXERCISE THERAPY

### Course Objectives

In this course student will learn the principles techniques and effects of exercise as therapeutic modalities in the restoration of physical function. the total duration of lecture demonstration and practical will be 240 hours. Student should be able to explain the rationale for the prescription of safe and effective exercises.

### Course Outline

#### 1. Introduction to exercise therapy

- a) Principles, techniques, & general areas of its application assessment & its importance.
- b) Description of its fundamental starting position & derived position including joint positions, muscle work, stability effects & uses.
- c) Introduction to movement including range of the joint motion muscle work & neuromuscular co-ordination.
- d) Classification of movements describe the types techniques of application indication contraindication effects & uses of the following
  - i) Active movements
  - ii) Passive movement
  - iii) Active assisted movement
  - iv) Resisted movement
  - v) To study the principles technique of application indication contraindication precaution effects & uses of suspension therapy

#### 2. Manual Muscle Testing:

- a) Principles and applications of techniques of manual muscle testing
- b) Testing position, procedure and grading of muscles of the upper limb, lower limb and trunk etc.

#### 3. Goniometry

- a) Goniometer and its types
- b) Principles, technique and application of goniometry
- c) Testing position, procedure and measurement of ROM of the joints of upper limbs, lower limbs and trunk.

#### 4. Soft tissue manipulation (Therapeutic Massage)

- a) History, various types of soft tissue manipulation technique

- b) Physiological effects of soft tissue manipulation on the following system of the body  
circulatory, nervous, muscle skeletal, excretory, respiratory, integumentary system and  
metabolism
- c) Classify, define and describe effleurage, stroking, kneading, petrissage, deep friction,  
vibrations and shaking etc.
- d) Preparation of the patient effect uses indication and contraindication of the above  
manipulation

### **5. Motor learning and motor control**

- a) Introduction to motor learning
  - Classification of motor skills
  - Measurement of motor performance
- b) Introduction to motor control
  - Theories of motor control
  - Applications
    - Learning environment
    - Learning of skill
    - Instructions and augmented feed back
    - Practice condition

### **6. Relaxation**

- Definition: - Relaxation, Muscle fatigue, Muscle spasm, General causes, signs, symptoms  
of tension (mental and physical).
- Factors contributing to fatigue and tension.
- Techniques of relaxation (local and general).
- Effect, uses and clinical application
- Indication and contraindication

### **7) Therapeutic Gymnasium**

- Set-up of gymnasium & its importance
- Various equipment in the gymnasium
- Operational skills, effects, & uses of each equipments

### **8. Therapeutic Exercises**

- a) Principle , classification, techniques physiological and therapeutic effects indication and  
contraindication of therapeutic exercises
- b) Assessment and evaluation of the patient ( region wise) to plan a therapeutic exercise  
program
- c) Joint mobility: aetiogenesis of joint stiffness, general technique of mobilization, effects,  
indication, contraindications & precautions

- d) Muscle insufficiency: aetiology of muscle insufficiency ( strength, tone, power, endurance & volume) general technique of strengthening, effects indication contraindications & precautions.
- e) Neuromuscular in coordination: review normal neuromuscular coordination, aetiology of neuromuscular in coordination & general therapeutic techniques, effects, indication contraindication & precautions
- f) Functional re- education general therapeutic techniques to re- educate ADL functions

## **9. Posture, Balance, Gait**

- a) Posture overview of mechanism of the normal posture
- b) Abnormal posture: assessment, types, aetiology management including therapeutic exercises.
- c) Static & dynamic balance: assessment & management including therapeutic exercise
- d) Gait: overview of normal gait & its components
- e) Gait deviations: assessment, types, aetiology management including therapeutic exercises.
- f) Types of walking aids indications, effects & various training techniques.

## **10. Hydrotherapy**

- a) Basic principles of fluid mechanics as they relate to hydrotherapy
- b) Physiological & therapeutic effects of hydrotherapy, including joint mobility, muscle strengthening & wound care etc.
- c) Types of hydrotherapy equipments, indications, contraindications operational skills & patients preparations.

## **11. Special Techniques**

- a) Introduction to special mobilization & manipulation techniques, effects indications, effects, indications & contraindications.
- b) Conceptual framework, principle of proprioceptive neuromuscular facilitation (PNF) techniques, including indications, therapeutic effects and precautions.
- c) Review normal breathing mechanism, types, techniques, indications, contraindications, therapeutic effects & precautions of breathing exercises.
- d) Principles of traction physiological & therapeutic effects classification types indications contraindications technique of application operational skills & precautions
- e) Group therapy types advantages & disadvantages
- f) Suspension Therapy: Principles of suspension & types, Components Effects and uses & therapeutic application
- g) Exercises for normal person importance & effects of exercise to maintain optimal health & its role in the prevention of diseases types advantages disadvantages indications contraindications & precautions for all age groups

## **12 Yoga**

- a. Introduction to yoga: conceptual frame work
- b. Yogasanas and Pranayama:
- c. Physiology and therapeutic principles of yoga,
- d. Yogasana for physical culture, relaxation and medication.
- e. Application of yogasana in physical fitness, flexibility.
- f. Therapeutic application of yoga. Yoga a holistic approach
- b. Various asana
- c. the body mind relationship, effects & precautions.

### **BPT 2683- EXERCISE LAB HOURS**

1. Soft tissue manipulative techniques region wise-upper limb, lower limb, neck, back and face.
2. Measurement of ROM of joints-upper limb, lower limb and trunk.
3. To practice the grading of muscle strength region wise upper limb and lower limb and trunk.
4. Position of joints, muscle work, and stability of various fundamental and derived positions.
5. Different types of muscle contraction, muscle work, group action of muscles and coordinated movement
6. Various types of suspension therapy and its applications on various part of body-region wise.
7. Local and general relaxation techniques.
8. Structure and functions along with application of various equipment in a gymnasium.
9. Assessment & evaluative procedures, including motor, sensory, neuromotor coordination, vital capacity, limb length & higher functions.
10. Various techniques of mobilization of joints region wise.
11. Various techniques of progressive strengthening exercises of muscles region wise.
12. Use of various ambulation aids in gait training.
13. Evaluate ADLs and practice various training techniques.
14. Mat exercises.
15. Normal and abnormal posture & practice various corrective techniques.
16. Equilibrium/balance & practice various to improve balance.
17. Structure and functions of hydrotherapy equipment and their applications.
18. Various traction techniques, including manual, mechanical & electrical procedures.
19. Various group exercise therapies.
20. Effects of basic yoga asana
21. Plan & practice program for normal person of various age group

## **BOOK REFERENCE**

1. Hollis, M. and Cook, P.F. Practical Exercise Therapy CBS, New Delhi 1999
2. Gardiner, Dena Principles of Exercise Therapy CBS, New Delhi 1999

# BPT 2685

## ELECTROTHERAPY

### Course Objectives

In this course student will learn the principles techniques and effects of electrotherapy in the restoration of physical function. The total duration of lecture demonstration and practical will be 240 hours. After 240 hours of lectures and practical students will be able to list indications and contraindications of various Modalities understand different techniques of applications, their justification and effects, Demonstration of individual techniques of applications of various modalities.

### Course Outline

#### 1. LOW FREQUENCY CURRENTS:

Nerve Muscle Physiology: brief outline

##### Faradic current:

Indications, contraindications, Techniques, parameters, Group muscle stimulation.

- Faradic footbath, Faradism under pressure and muscle re-education

##### Galvanic current:

- Indications, contraindications, precautions and therapeutic effects of stimulation.

- Techniques, parameters, Dosimetry

##### Electro-Diagnosis:

- S. D. Curve, Reaction of degeneration, Chronaxie & Rheobase

- Outline of EMG & Nerve conduction velocity

##### Iontophoresis:

- Definition and principles & factors

- Indications, effects, techniques, contraindications, precautions and Potential harmful effects.

##### TENS therapy:

- Principle of therapy, Parameters and therapeutic uses.

- Theories of pain and pain control.

- Indications and contra-indications, Dosimetry

#### B. MEDIUM FREQUENCY CURRENTS:

Definitions, effects, indications, techniques of application, contraindications

Interferential therapy:

- Physiological, therapeutic effects & dangers, Indications & contra indications

- Technique and method of applications, Dosimetry.

### **C. THERMAL THERAPY MODALITIES:**

#### 1. Infrared Therapy:

- Therapeutic effects and uses, Techniques of application, • Indications, contraindications precautions and Potential harmful effects.

#### 2. Heating Modalities:

- Therapeutic effects and uses, Techniques and applications
- Indications, contraindications, precautions and Potential harmful effects of various heat modalities:

Paraffin wax bath therapy,

Hydro collator packs,

Whirlpool

Moist heat, Heating pads,

Hot air chambers.

#### 3. Cold-therapy:

- Indications, contraindications and therapeutic effects.
- Technique, precautions and Potential harmful effects of treatment, Dosimetry

### **D. HIGH FREQUENCY CURRENTS:**

Short wave Diathermy: Continuous & Pulsed

- Indications, contraindications and therapeutic effects.
- Methods of application-capacitor and induction electrode, precautions and Potential Harmful effects of treatment, Dosimetry.

#### **Microwave Diathermy:**

- Characteristics and therapeutic effects.
- Application techniques, indications, contraindications, precautions and potential harmful effects, Dosimetry.

### **E. ULTRASONIC THERAPY:**

- Physiological and therapeutic effects & potential harmful effects.
- Indications, contraindications, methods of application and precautions, Dosimetry

### **F. ACTINOTHERAPY:**

#### **Laser:**

- Introduction, effects and potential harmful effects.
- Indication, contraindications, precautions, method of application, dosimetry

#### **Ultraviolet therapy:**

- Physiological and therapeutic effects- photosensitization
- Indications and contraindications and Potential harmful effects.

- Methods of application, Sensitizes, Filters, Dosage, wavelength, penetration, tolerance, Treatment / Application condition wise

- Comparison between UVR & IR Therapy

#### **G. Advanced electrotherapy:**

- Computerization of modalities, Programming of parameter.

- Selection and combination of parameters.

- Combined therapy-U.S.+TENS-Principles, uses, indications etc.

- Principles of Bio-feed back, indications & uses.

#### **ELECTROTHERAPY (Lab Hours)**

1. Basic operation of electric supply to the equipment and safety device.
2. Sensory and motor stimulation of nerves and muscles by various types of low frequency currents on self, Locate and stimulate different motor points region wise, including the upper and lower limb, trunk & face.
3. Therapeutic application different low frequency currents faradic foot bath, faradism under pressure, Iontophoresis.
4. Reaction of degeneration of nerves. Plot strength duration curves. Chronaxie and Rheobase.
5. Hydrocollator unit, its operation and therapeutic application of hot packs-region wise.
6. Various types of infrared lamps and their application to body region wise.
7. Paraffin wax bath unit, its operation and different method of application- region wise.
8. Different types of Ultra violet units, their operation, and assessment of test dose and application of UVR – region wise.
9. TENS Stimulator, its operation and application – region wise.
10. Short wave diathermy unit, its operation and different methods of application – region wise.
11. Microwave diathermy unit, its operation and different methods of application – region wise.
12. Ultrasound unit, its operation and methods of application – region wise.
13. LASER unit, its operation and methods of application – region wise.
14. Various forms of therapeutic cold application region wise including ice , cold packs, vapocoolant sprays, etc.
15. Intermittent pneumatic therapy unit its operation and different methods of application – region wise.

#### **BOOK REFERENCE**

- 1...Froster, A. and Palastanga, N. Clayton's Electrotherapy: Theory and Practice AITBS, Delhi 1999
2. John, Low and Ann, Reed Electrotherapy Explained: Principles Butterworth Heine, Oxford 2000
3. Nelson, R.M. and Currier, D.P. Clinical Electrotherapy Appleton and Lange 1987
- 4 Chemeron, M.H. Physical Agents in Rehabilitation W B Saunders, London 1999



# **B.P.T. 2686**

## **CLINICAL ORTHOPAEDICS**

### **COURSE OBJECTIVES:**

Following the basic science and clinical science course, this course introduces the student to the orthopedic conditions which commonly cause disability. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by orthopedic pathology on the functioning of the individual. After 120 hours of lectures & 60 hours practical demonstration, in addition to clinics the student will be able to demonstrate an understanding of orthopedic conditions causing disability and their management.

### **COURSE OUTLINE**

#### **A. INTRODUCTION OF ORTHOPAEDICS**

Introduction to orthopedic, terminology, types of pathology commonly dealt with clinical examination, common investigations and outline of non-operative & management.

#### **B) PRINCIPLES OF OPERATIVE TREATMENT**

List out indications Contra-indications and briefly outline principles of: Arthrodesis, Arthroplasty, Osteotomy, Bone grating and Tendon – Transfers.

#### **C) SPRAINS AND MUSCLE STRAINS**

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

#### **D) FRACTURES & DISLOCATIONS: General Principles Outline the following:**

1. Types of Fractures including patterns open and closed fractures and fracture dislocations.
2. Difference between dislocation & subluxation.
3. General & local signs & symptoms of fractures, dislocations.
4. Principles of management of fractures, dislocations
5. Prevention & treatment of complications including : Fracture – diseases, Volkmann's ischemic contracture, Sudecks Atrophy, Carpal Tunnel Syndrome, Myositis ossificans, and shoulder – hand syndrome.
6. Fracture healing.

#### **E) UPPER LIMB FRACTURES & DISLOCATIONS**

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

#### **F) LOWER LIMB FRACTURES & DISLOCATIONS**

1. Enumerate major long bone fracture and joint injuries.

2. Briefly describe their clinical features, principles of management and complications.

#### **G) SPINAL FRACTURES AND DISLOCATIONS**

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

#### **H) RECURRENT DISLOCATIONS**

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

#### **I) AMPUTATIONS**

1. Classify amputation, list out indication.
2. Outline pre-operative, post - operative and prosthetic management.
3. Outline prevention and treatment of complications of amputation.

#### **J. BONE & JOINT INFECTIONS**

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

#### **K. BONE JOINT TUMORS**

Classify and outline the clinical features, management and complications of the following (being/malignant bone and joint tumors, osteoma, osteosarcoma, osteoclastoma, Ewing's sarcoma, multiple myeloma).

#### **L. CHRONIC ARTHRITIS**

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

#### **M. LOW BACK ACHE;- PIVD, SPONDYLOLISTHESIS AND OTHER CAUSES**

#### **N. PAINFUL ARC SYNDROME, TENDONITIS, FASCITIS, MAJOR BURSITIS & SPASMODIC TORTICOLLIS**

Outline the above including clinical features and management

#### **O. SPINAL DEFORMITIES**

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

#### **P. POLIOMYELITIS**

Describe the pathology, prevention, management and residual problems of polio, outline the treatment of residual paralysis including use of orthosis ,Principles of tendon transfers.

#### **Q. CONGENITAL DEFORMITIES**

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

## **R. PERIPHERAL NERVE INJURES**

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

1. Radial median and ulna nerve lesions.
2. Sciatic and lateral popliteal nerve lesions.
3. Brachial Plexus injuries including Erb's Palsy Klumpke's Paralysis Crutch palsy.

## **S. HAND INJURIES**

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

## **T. LAPROSY**

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

**U. MISCELLANEOUS Conditions:-** Periarthritis, ,thoracic outlet syndrome, tennis elbow, Golfer's elbow etc.

## **Practical**

Students do clinical checking, ward work, hospital posting to acquaint him/her about traumatology and orthopaedic conditions.

## **BOOK REFERENCE**

1. Outline of fracture-Adams vol-I,II
2. Textbook of orthopaedics-J. Maheshwari
3. Apley's orthopaedics.

## **B.P.T.2687**

# **COMMUNITY MEDICINE**

### **Course Objective**

This course enables the students the environmental and community dynamics on the health of individual with special emphasis on disability limitation protection & prevention. The objective of this course is that 90 hrs of lecturer students will be aware of environmental and social factor contributing the diseases their spread & prevention & will have the basic idea of education

### **Course Outline**

#### **Theory**

1. General concepts of health & disease with reference to natural history of disease with the pre pathogenic phase. The roles of socioeconomic & cultural environment in health & disease. Epidemiology & scope role of epidemiologic investigation in public health.
2. The National health programme- highlighting the role of social, economical, & cultural factor in the implementation of the national programmes. Primary health care objectives and implementation.
3. Health problems in vulnerable group- Pregnant and lactating women, infants & preschool children, occupational groups and geriatrics.
4. Occupational health: Definition, scope, of occupational disease, prevention of occupational disease & Hazards, role of ESI in the occupational health of industrial workers.
5. Social security and other measures for the protection of occupational hazards, accidents, & disease, details of factory act, environmental safety & compensation act, ESIS.
6. Family welfare programme: -Objective of national family planning methods. A general Idea of Advantage & disadvantage of methods, reproductive child health services concepts of planned pregnancies, and population dynamics.
7. Mental Health Community aspects of mental health: role of physiotherapist in mental health problems such as cerebral palsy and mental retardation etc.
8. Communicable Diseases (Malaria, filaria, tuberculosis, leprosy, viral encephalitis) .Classification according to the mode of transmission, role of insects & other factor in disease transmission control & prevention of communicable disease, universal immunization programme, programme such as ART, DIARRHEA & polio control .
9. International Health agencies AND national NGOs

10. Vital & Health statistics-Basic Concepts, morbidity rates, period age and causes of specific death rates & Roles of these rates as indicators of health & diseases.

### **Health education**

1. Health education Philosophy, Main Principles and objectives, health education versus health legislation.
2. Review of belief, values, norms, habits, and taboos among practices. More in human groups and their importance in learning and change process.
3. Review of concepts on perception, Attitude, socialization process, Learning and theories of learning, social change and change in process, motivation needs and drives.
4. Principles and process of communication.
5. Methods and tools of health education, individual and group methods, a critical evaluation of theories, tools and health education.
6. Role of health professional in health education, Coordination and cooperation, Health education with their of health team, Health education components in Health Programmes
7. Elements of planning a health Education programme with special Emphasis on Community Participation.

### **BOOK REFERENCE**

Text book of preventive and social Medicine- Dr. J.E. Park

**SYLLABUS**

**For**

**BACHELOR OF PHYSIOTHERAPY**

**THIRD YEAR**

# SCHEME OF EXAMINATION

## B.P.T. THIRD Year

S. N .	Subject	Code	Internal Assessment		Main Exam		Total
			Theory	Practical	Theory	Practical	
1	Neurology, Neurosurgery	3681	15		35		50
2	Cardio Thoracic Diseases And Surgery	3682	15		35		50
3	General Surgery, and allied	3683	30		70		100
4	Biomechanics and Kinesiology	3684	30		70		100
5	Physical medicine and rehabilitation	3685	30		70		100
6.	Physiotherapy in Orthopedics conditions	3686/30688	30	30	70	70	200
7.	Physiotherapy in Neurological Condition	3687/30689	30	30	70	70	200

VALUE ADDED COURSE – EVIDENCE BASED PRACTICE IN ALLIED HEALTH(NON CREDITABLE & NON ASSESBALE)

Total-800

## **B.P.T.-3681**

# **GENERAL SURGERY, AND ALLIED (OBSTETRICS AND GYNAECOLOGY, ENT & OPHTHALMOLOGY)**

### **COURSE OBJECTIVE**

This course provide basic knowledge about relevant of general surgery, plastic surgery ,ENT,Ophthalmology, Obstetrics and Gynaecology with emphasis on physiotherapeutic. This objective of this course is that, after 90 hours of lectures and demonstration students at should have a broad understanding about common surgical conditions which they would be handling as a physiotherapist ,they should have brief idea about etiology pathology type and extent of disability the patient will have as a result of the conditions , so that he/she as a physiotherapist with surgeons should help the patient to achieve, cure and/or ameliorate his/her illness or sufferings.

### **Course outline**

#### **Theory**

1. Introduction: Description of events frequently accompanying general anesthesia. Blood transfusion and physiology response.
2. Wound, ulcers boil carbuncles.
3. Principles of pre and post operative Examination, Investigations post operative complications and their management.
4. Abdomianl surgery: Incision , complication, management of the following –Nephrectomy , Appendicectomy ,Herniorapy, Histectomy,Thyroidectomy, Colostomy, Adrenalleectomy,Cystectomy, Prostactectomy, Cholecystectomy, Illeostomy, Incisional hernia and its prevention.
5. Burns: Causes, Classification medical management and precaution in the acute stage, complication of burns and their management.
6. Plastic Surgery
  - a. Principles of plastic Surgery, Post operative management and complications.
  - b. Cineplasty,Principles of cosmetic surgeries ,Skin grafting
  - c. Surgeries of hand with emphasis on management of traumatic and leprosy hand.
  - d. Burns and plastic surgery management.
7. Ophthalmology

Etiology, sympatomatolgy and treatment of visual defects, emphasis on error of refraction, squint, conjunctivitis,trachoma, corneal ulcers,iritis,cataract,retinitis,Deattachment of cornea and glaucoma (Lecture Demonstration)



8. E.N.T.

Etiology, Symptomatology and treatment of Sinusitis, Rhinitis, Acute and Chronic otitis, Otosclerosis, Mastoidectomy and Loss of hearing.

9. Obstetrics and gynecology

- a. Anatomy and physiology of Female reproductive system.
- b. Principles of clinical examination, investigation, diagnosis and prognosis in female reproductive system disorders.
- c. Menstruation and disorders of menstruation.
- d. Physiological changes during pregnancy
- e. Antenatal care and diagnosis of pregnancy including high risk pregnancy.
- f. Labor, Stages of Labor, Normal and Abnormal Labor and management of neonate.
- g. Puerperium and post natal care, social obstetrics-Maternal and perinatal mortality.
- h. Pelvic pain and its management.
- i. Important gynecological conditions-brief review of PID tumors, malignancy, Infertility, Endometriosis, Ectopic pregnancy,.
- j. Prolapse of uterus, Causes of Incontinence of urine type and its management.
- k. Abortion and its control.
- l. Surgical consideration in obstetrics and gynecology.

**Practical (Only Demonstration not examination)**

Students will be posted for the period of one month in general surgery, plastic surgery, burns, Obstetrics and gynecology units. They will do clinical checking and ward work to acquaint themselves to general and surgical conditions.

**Book References**

1. Surgery by Nan
2. Baily & Love- short practice of surgery
3. Obstetrics and Gyneacology in health care of women by saymoul L. Romney
4. Shaw Textbook of gyneacology.
5. Jeffcoat's principles of gyneacology.
6. Surgery by S. Das.

## **BPT 3682**

# **NEUROLOGY, & NEUROSURGERY**

### **Course Description**

This Course Serves to provide the basic knowledge of Neurology, Neurosurgery to the students to apply in the field of physiotherapy, total Lectures and demonstration hours will be 60

### **NEUROLOGY**

#### **1. Basics Neuro anatomy and physiology**

- a. Motor system( pyramidal, extra pyramidal & cerebellar)
- b. Sensory system
- c. Reflexes of Bladder and bowel control.

2. Principles of clinical examination, diagnosis, Differential diagnosis and prognosis of neurological disorders.

3. Salient features and management of common neurological disorders:

- a. Cerebral palsy
- b. Stroke
- c. Movement disorders (Parkinsonism, Dystonia, Chorea, Tremors and writer's cramps, Cerebellar ataxia and freidreich's ataxia etc)
- d. Motor neuron diseases
- e. Diseases of spinal cord-compressive(spondylotic),Non compressive.
- f. Peripheral neuropathies-Diabetics Entrapment neuropathies.
- g. Muscle Disorders- Dystrophies, poliomyelitis, Myasthenia Gravis.

### **NEUROSURGERY**

#### **Neurophysiology**

Review in brief of the neurophysiological basis of tone and disoreder and pain.

#### **Clinical Features and Management**

Breifly outline the clinical features and management of the following neurological Disoreders.

1. Trauma-Broad localization, First aid and management of squeals of Head injury and Spinal cord injury.
2. Diseases of the Spinal Cord:
  - a. Cranoivertebral junction anamolies.
  - b. Syringomyelia
  - c. Cervical and lumbar Disc diseases.

3. Peripheral Nerve Disorders:
  - a. Peripheral nerve injuries: localization and management.
  - b. Entrapment Neuropathies.
4. Management of Pain, Electrical stimulation of brain and spinal cord.
5. Spina bifida.

**Book references**

1. Davidson's principles and practice of Medicine.
2. Brain Clinical Neurology
3. Medicine and neurology by Golewala
4. Baily and Love's-short practice of surgery
5. Lindsay, Ian bone, Calender -Neurology and Neurosurgery illustrated.

## **B.P.T. 3682**

# **CARDIOTHORACIC DISEASES AND SURGERY**

## **COURSE OBJECTIVES**

Following the basic science and clinical science course, this course introduces the student to the cardio thoracic conditions which commonly cause disability. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by cardio thoracic pathology on the functioning of the individual. The objective of this course is that after 60 hours of lectures & demonstration, in addition to clinics the student will be able to demonstrate an understanding of cardio thoracic conditions causing disability and their management.

## **Cardio- Respiratory Diseases**

### **Theory**

1. Brief idea of anatomy and physiology of cardio-respiratory system
2. Outline of aetiopathogenesis of cardio- respiratory disorders, investigations, diagnosis, differential diagnosis and principles of management.
3. **Cardio vascular system:**
  - a. Cardiac failure-definition, causes, symptoms and signs and brief management of cardiac failure.
  - b. Hypertension-Definition, classification, Symptomatology, Complications and treatment.
  - c. Brief Description of Deep Venous Thrombosis and pulmonary embolism.
  - d. Vascular diseases: Atherosclerosis. Buerger's Disease, phlebitis etc.
4. **Respiratory System;**

(Respiratory diseases including the diseases of chest wall)

  - a. Chronic bronchitis and Emphysema – definition, clinical features, investigation, complication and treatment.
  - b. Bronchial Asthma definition, Aetiopathogenesis, clinical feature, diagnosis and treatment.
  - c. Pneumonia-Definition, classification, clinical features, complications and treatment.
  - d. Tuberculosis- Aetiopathogenesis, clinical test of pulmonary tuberculosis, Diagnosis, complications and treatment.
  - e. Chest wall Deformities- describe various deformities of chest wall, its effects and pulmonary diseases associated with it.
  - f. Occupational lung diseases-clinical features, Diagnosis and treatment.
  - g. Respiratory failure- Classification, Causes and Treatment.

## **CARDIOTHORACIC SURGERY**

### **Theory**

#### **1. Introduction**

Types of incision, pre and post operative assessment, management and complication of cardiothoracic surgery and their management.

#### **2. Thoracic surgery**

a. Outline clinical features and management of the following:

Fracture of ribs, Flail chest, Stove in chest, Pneumothorax, Haemothorax, Lung contusion and laceration and injury to vessels and bronchus.

b. Outline clinical features and management of carcinoma of lung.

c. Describe in detail of the following: Management of endo tracheal tubes, Tracheal Suction, Weaning the patient from ventilator, Extubation and Post extubation care.

#### **Book references**

1. Medicine:

2. Davidson's principles and practice of medicine.

3. Harrison's internal medicine.

#### **2. Surgery**

1. Geneva surgical operations-By Kirk/Williamson.

2. Surgery by Nan.

3. Bailey and Love's-short Practice of surgery.

## **BPT 3684**

# **BIOMECHANICS & KINESIOLOGY**

### **COURSE OBJECTIVES**

This course supplements the knowledge of anatomy and enables the students to have a better understanding of the principles of biomechanics and their application in musculoskeletal function and dysfunction, after 120 hours of lectures, demonstrations practical and clinics the student will be able to demonstrate as understanding of the principles of Biomechanics and Kinesiology and their application in health and disease.

### **COURSE OUTLINE**

#### **A. MECHANICS**

1. Types of motion, planes, direction and quantity of motion.
2. Define forces, force vectors, components of forces, Reaction forces, Composition of forces , Newton's Law of motion.
3. Gravity, segmental centers of gravity, centre of gravity, and line of gravity of the human body, stability and centre of gravity relocation of the center of gravity.
5. Equilibrium
7. Muscle Action Lines, Total muscle force vector, Divergent muscle pulleys, Anatomic pulleys.
8. Lever systems: First order levers, second class levers , Third class levers , torque Mechanical Advantage.
9. Define moment arm; Moment Arm of a muscle force.

#### **B. JOINT STRUCTURE AND FUNCTION**

1. The basic principles of joint design and human joint, Tissue present in human joints including dense fibrous tissue, bone, cartilage and connective tissue.
2. Joints Classification, joint function, kinematic chains, range of motion.

#### **C. MUSCLE STRUCTURE AND FUNCTION**

1. Elements of muscle structure, composition of a muscle fiber, the motor unit, and type of muscle fibers, muscle fiber size arrangement and number, Muscle tension, length tension relationship, Mobility and stability functions of muscles
2. Types of muscle contraction, factors affecting muscle tension.
3. Active and passive insufficiency. b. Active and passive tension. c. Concentric, and eccentric contractions. d. Reserve action 5. Agnoists, antagonists and synergists.

#### **D. THE VERTEBRAL COLUMN**

1. Articulations, Ligaments and muscles, typical vertebra intervertebral disc.
2. Regional structure and function of cervical, dorsal, lumbar and sacral vertebrae.
3. The muscles of the vertebral column – Flexors, Extensors, Rotators and lateral flexors. Mobility and stability functions of muscles.
4. The effects of injury and development deficits.

#### **E. THE SHOULDER COMPLEX**

1. The structural components of the shoulder complex including the articulating surfaces, capsular attachments and ligaments and movements of the following joints.  
i) Sternoclavicular ii) Acromioclavicular iii) Scapulothoracic iv) Glenohumeral
2. Function of the shoulder complex including dynamic stability of the glenohumeral joint, musculohumeral Rhythm Scapulothoracic and glenohumeral contributions.
3. Muscles of shoulder complex

#### **F. THE ELBOW COMPLEX**

1. Structure of the humero-ulnar and Humero-radial joints including articulating surfaces, joint capsule, Ligaments and Muscles.
2. The function of the Humero-ulnar and Humero-radial joints including the Axis of motion, Range of motion, Muscle action.
3. Structure and function of the superior and inferior radio-ulnar joints.
4. Mobility and stability of the Elbow complex and its relationship to Hand and Wrist.
6. Describe the effects of injury and the resistance to longitudinal compression forces, to distraction forces and to medial lateral forces.

#### **G. THE WRIST AND HAND COMPLEX**

1. Wrist and hand complex
2. The finger musculature including Extrinsic & MCP, PIP and DIP joint function and intrinsic finger muscles.
4. Structure and movement of the Carpo metacarpal, MCP and IP joints of thumb.
5. Prehension, Power, Cylindrical, and Spherical & Hook grips. Precision handling, Pad to pad, Tip to tip and Pad to side prehension and functional position of wrist and hand, activity in radial and ulnar deviation from neutral.

#### **I. THE HIP COMPLEX**

1. The general features of the hip joint including the articulating surfaces on the pelvis and the femur angulations: Angle of inclination, Angle of Torsion: Internal architecture of femur and pelvis joint capsule. Ligaments and Muscles (Flexors, Extensors- One joint extensors, Two joint extensors, Adductors, Medial Rotators and Lateral Rotators).

2. Function of hip – Rotation between pelvis lumbar spine and hip pelvic motion – Anterior posterior pelvic tilting lumbar pelvic rhythm, Lateral pelvic tilting, Pelvic rotation the pelvic motions in the static erect posture, Femoral motion
5. Hip stability in Erect Bilateral stance, saggital plane equilibrium and Unilateral stance.
6. Describe reduction of forces with weight shifting and using a cane and deviations from normal in muscular weakness and Bony abnormalities.

#### **J.THE KNEE COMPLEX:**

1. Structure of the Tibiofemoral joint Articulating on femur and tibia, the menisci, joint capsule and bursa, Ligaments and other supporting structures, Anterior- posterior and Medio- Lateral stability: Muscle structure Knee flexors and extensors: Axes of knee complex: Mechanical axis, anatomic axis and axis of motion.
2. The function of the tibiofemoral joint Range of motion. Flexion and extension, Rotation, abduction and Adduction, Locking and unlocking function of Menisci and Muscle function.
3. Structure and function of the platellofemoral joint.
4. Describe the effects of injury and disease in the tibiofemoral and patellofemoraj.

#### **K.ANKLE – FOOT COMPLEX**

The structure, ligaments axis and function of the following: ankle joint, tibiofibular joints, subtalar joints, talocalcaneonavicular joints, Transverse Tarsal Joint, Tarsometatarsal joint, Plantar arches, Metatarasophalangeal joints, interphalangeal joints.

Define the terminology unique to the ankle foot complex, including inversion eversion, pronation- supination, dorsiflexion plantar flexion – extension and abduction and abduction.

#### **L.POSTURE**

1. Effects of gravity and indicate the location of the gravity line in the saggital plane in optimal posture.
2. Analyse posture with respect to the optimal alignment of joints in the antero-posterior and lateral views by given description
  1. The position of hip, knee and ankle joints in optimal erect posture.
  2. The poison of body's gravity line in optimal erect posture, using appropriate points of reference.
  3. The effects of gravitational moments of body segments in optimal erect posture.
  4. The gravitational moments acting around the vertebral column, pelvis, hip, knee and ankle in optimal erect posture.
  5. Muscles and ligamentous structures that counter balance gravitational moments in optimal erect posture.
  6. The following postural deviations: pes planus, halux valgus, pes cavus, idiopathic scoliosis, kyphosis and lordosis.
  7. The effects of the above postural deviations on body structure i.e. ligaments, joints and muscles.



## **M. GAIT CYCLE**

1. GAIT CYCLE ;Introduction, The subdivisions of the stance and swing phases of gait, The time and distance parameters of gait, kinetic and kinematic analysis of gait cycle
- 2.. The role of each of the determinates of gait.
3. The muscle activity that occurs in the upper extremity and trunk.
- 4.. Gait evaluation

### **TEXT BOOKS RECOMMENDED:**

1. Kisner, Therapeutic Exercise Foundation and Techniques, JP Bros Medical Publishers, Bangalore, Ist Indian Ed. 1997.
2. Brunnstorm, Clinical Kinesiology, JP Bros Medical Publishers, Bangalore, 5<sup>th</sup> Ed. 1996, Ist Indian Ed. 1998.
3. Clinical kinesiology for Physical Therapist Assistants, JP Bros Medical Publishers, Bangalore, Ist Indian Ed. 1997.
4. Joint structures & Function by Cynthia – Norkin.

### **Biomechanics & Kinesiology Practical (Demonstration only)**

1. Study the effects of forces on objects, 2. Determination of the CG of an object
3. Identification of axes & planes of motion at the joints of spine, shoulder girdle, joints of upper extremities, pelvic girdle & joints of lower extremities
4. Study the effects of different types of muscles contractions, muscle work group, action of muscles & coordinated movement
5. Analysis of normal posture respect of L.O.G & the optimal position of joints in anteroposteriorly & lateral views.
6. Analysis of normal gait & measurement of spatio- temporal features.

### **,Recommended Books**

1. Joint structure & function: Norkins
2. Biomechanics of human motion: Leveau

## **BPT 3685**

# **PHYSICAL MEDICINE & REHABILITATION**

### **COURSE OBJECTIVE**

1. The concept of team approach in rehabilitation
2. Observation & identification of diagnostic features
3. Medical & surgical aspects of disabling conditions.
4. Identification of residual potentials in patients with partial & total disability.
5. Formulation of appropriate goals in treatment & rehabilitation

Total duration of lecture and demonstration will be 90 hours

### **Course outline**

1. Conceptual framework of rehabilitation, definitions & various models of rehabilitations
2. Description of roles of members of the rehabilitation team.
  - a) physician
  - b) Occupation therapist & physiotherapist
  - c) Clinical psychologist
  - d) Social workers
  - e) Prosthetic & orthotic engineers
  - f) Audiologist & speech therapist
  - g) Hearing aid & ear mould technicians
  - h) Orientation & mobility instructors
  - i) Teachers for various categories of children with disability
  - j) Vocational instructors, counselor & placement officers
  - k) multi- purpose rehabilitation workers
3. epidemiology of disabilities with emphasis on loco motor disability, its implication on the individual, family, society, economy & the states.( Poliomyelitis, meningitis, encephalitis, tuberculosis, filariasis, leprosy, tetanus, measles)
4. Outline the influence of nutritional factors such as protein, energy, malnutrition, anemia, vitamins & minerals deficiencies on disability.

Preventive aspects of disability & organizational skills to manage it.

Define occupational health & list methods of prevention of occupational diseases & hazards

5. Pre- vocational rehabilitation.
6. Community based rehabilitation & out- reached program of rehabilitate person with disabilities living in rural areas.  
\*define community based & institutional based rehabilitation  
\*describe the advantage & disadvantage of institution & community based rehabilitation
7. Principles in management of communication impairment.
8. Architectural barriers & possible modifications
9. Outline selected National Health Program
10. Disability evaluation: principles of disability evaluation & discuss its use
11. Legal aspects: of disability in terms of compensation for disability & benefits available to the disabled.
12. Prosthetics & orthotics
  - a. introduction
  - b. upper limb prosthesis & its rehabilitation
  - c. lower limb prosthesis & its rehabilitation
  - d. upper limb orthosis & its rehabilitation
  - e. lower limb orthosis & its rehabilitation
  - f. spinal orthosis & its rehabilitation

### **Book References**

1. Rehabilitation Medicine-Rusk
2. Tidy's Physiotherapy
3. Cash Textbook Of Physiotherapy all Volume

## **B. P.T. 3686**

# **PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS**

### **Course objective**

The objective of this course is that after 240 hrs of lectures and demonstrations practicals and clinics the students will be able to acquire the concept of evaluation of function and disability due to musculoskeletal dysfunction, set goals and apply their skills of exercise therapy and electrotherapy in clinical situation to restore musculoskeletal function.

### **Course Outline**

#### **Traumatology and Orthopedics**

- a. Classification of Fracture, causes and types.
- b. Signs and symptoms and complications of fractures.
- c. Healing of Fracture Principles of Fracture management.
- d. Principles of Physiotherapy management in fracture.
- e. Physiotherapy management of Complications.
- f. Dislocation-Common sites, sign and symptoms. Principles of physiotherapy Assessment and management in shoulders dislocation, hip dislocation etc.
- g. Specific Fractures and their complete physiotherapy assessment and their management.**

**Upper Limb-** Scapula, Clavicle, Humerus, Ulna and Radius. Colles fracture and crush injuries of hand.

**Lower Limb-** fractures of Pelvis, Neck of femur, Shaft of Femur, patella, Tibia and Fibula, Pott's fracture of tarsal and metatarsal bones.

Management of Fracture of spine with or without neurological deficit.

#### **1. Soft Tissue Injuries:**

Soft tissue injuries, Synovitis, Capsulitis, Volkmann's ischaemic Contracture etc.; tear of semilunar cartilage and cruciate ligament of knee, Rotator cuff Tendonitis, Ankle sprain, Tennis elbow, Golfer's Elbow, G.T Bursitis.

#### **2. Degenerative and infective conditions**

Osteoarthritis of major joints, Spondylosis, Spondylitis, Prolapsed Intervertebral disc lesions, Spondylolithesis, peri arthristis, Rotator cuff lesion of shoulder. Tuberculosis of Spine, Bone and major joints, Perthe's Diseases, Rheumatoid Arthritis, Ankylosing Spondylitis etc and other miscellaneous conditions commonly treated by physiotherapy.

### **3. Deformities**

**Congenital:** - Torticollis and cervical rib,C.T.E.V.; Pes Cavus and pes planus and common deformities.

**Acquired:-** Soliosis,Kyphosis, Lordosis, Coxa Vara, Genu Valgum. Genu varum and genu recurvatum etc.

**5. Orthopaedics surgery:** Pre and Post operative assessment and a management of surgeries like Arthroplasty, Arthrodesis, Osteotomy, tendon Transplant and Tendon Transfer, Soft tissue release, Grafting, Partial and complete joint replacement, Arthroscopy, Spinal stabilization, reattachment of limbs, illazarove technique, operation in C.P and Polio,.

**6. Amputations:** levels of amputation of upper and lower extremity, Stump bandaging, Pre and post Prosthesis fitting assessment and management (check out of prostheisis training etc.) Complication of amputation and their management.

**7. Manipulation Therapy:** Assessment .Principles and techniques of therapy and factors considered in therapy.

### **Practical:**

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students.

### **Book Refrences:**

1. Cash's textbook of orthopedics and rheumatology.
2. Physiotherapy for Rheumatology.
3. Physiotherapy in disorders of brain.
4. Clinical orthopedics for physical therapy.
5. Tidy's Physiotherapy.
6. Clinical orthopedics for physical therapy -By Richardson's Sadowsky.

## **B. P.T. 3687**

# **PHYSIOTHERAPY IN NEUROLOGY AND NEUROSURGERY**

### **Course Description**

This Course Serves to integrate the knowledge gained by the students in normal neurology with skills gained by exercise therapy and electrotherapy subjects. Thus enabling them to apply these in clinical situations of dysfunction due to pathology of nervous system.

### **Course Objective**

The objective of this course is that after 240 hours of Lectures and demonstration, practical and clinics the students will be able to identify the disability due to neurological dysfunction set the goals and apply their skills of exercise therapy and electrotherapy in clinical situations to restore their functions

### **Theory**

1. Review of Basic Neuro Anatomy and physiology
2. Symptomatology of Neurological Disorders, Role of investigation in differential diagnosis, Clinical Examination of CNS Including cranial Nerves.
3. Principles of examination of higher functions and applicability in training.
4. Developmental disorders of CNS, early detections of brain damaged child risk babies, neuropaediatric examination, neonatal behavioural abnormalities.
5. Developmental programmes and delayed milestones neuro developmental screening test minimum brain damage, movement disorders of a child.
6. Sensory, motor, functional, psychosocial behavior of a child, perceptual motor dysfunction and training ,sensory integration .
7. Neuro development approaches ( like Bobath technique, rood's approach, Vojta technique, Biofeedback, Yoga etc), Primitive Patterns and abnormal motor behavior due to brain damage, its control and training with reference to gait and hand function.
8. Assessment and treatment techniques in stroke, Meningitis, Encephalitis, Parkinson's diseases, C.P., Cerebellar ataxia, freidreich's ataxia, Head Injury.
9. Assessment and treatment of spinal cord lesions such as motor neuron diseases, Disseminated sclerosis, Transverse myelitis, spinal tumors, Poliomyelitis, Syringomyelia, Spinal cord injury and sub acute combined degeneration of spinal cord.
10. Assessment and treatment of Neuropathies and Nerve injuries.
11. Assessment and treatment of Myopathies.

12. Pre and Post operative assessment and treatment in neurosurgery.
13. Electro- diagnosis procedure and prognosis in neurological disorders.

**Practical:**

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students.

**Book references**

1. Cash's textbook of neurology for physiotherapist by john cash.
2. Key issue in neurological Physiotherapy by Ada/Canning.
3. Elements of Pediatrics Physiotherapy by Eckersly.
4. Tidy's Physiotherapy.

**SYLLABUS**  
**FOR**  
**BACHELOR OF PHYSIOTHERAPY**  
**FOURTH YEAR**



# SCHEME OF EXAMINATION

## B.P.T. FOURTH YEAR

S. N.	Subject	Code Theory/practical	Internal Assessment		Theory	Practical	Total
			Theory	Practical			
1	Community Physiotherapy, Physiotherapy Ethics	4681	15		35		50
2	Research Methodology And Biostatistics	4682	15		35		50
3	Physiotherapy In Cardiothoracic Conditions	4683/4688	30	30	70	70	200
4.	Physical Diagnosis and prescription	4684/4689	30	30	70	70	200
5.	Physiotherapy in Medical And Surgical Conditions	4685/4690	30	30	70	70	200
6	Physiotherapy in Sports	4686/4687	30	30	70	70	200

VALUE ADDED COURSE – HUMAN RIGHTS (NON CREDITABLE & NON ASSESBALE)

Total-900

**B.P.T. 4681**  
**COMMUNITY PHYSIOTHERAPY, FIELD VISIT AND**  
**PHYSIOTHERAPY ETHICS**

**Course objective**

The objective of this course is after 60 hrs of lectures and demonstrations the students will be able to understand the various community awareness programmes and health disorders causing disability and the role of physiotherapy in community awareness and prevention of and health disorders causing Disability.

**Course outline**

**Community Physiotherapy**

**Theory**

Health delivery programme in urban and rural areas, population studies and health statistics.

Disability surveys epidemiological aspects and demand on physiotherapy services.

Concepts of rural camps and integration of infrastructural services and voluntary agencies.

Extension Services and mobile Units.

Parental Education Programme.

Home Exercise programme packets in various physiotherapy conditions.

Community awareness and participation in preventive aspects of health disorders.

Disability evaluation and screening for deformities and developmental disorders.

Pediatrics disorders screening and advice maternal care and home advice,

Sports, industrial and occupational disorders and p[reventive programme

Geriatric Disease.

**Field Visits**

1. Visit To Different physiotherapy College
2. Visit to different National and Regional Centre.
3. Visit To different Health Institutions.

# **Physiotherapy Ethics**

## **Theory**

1. History Of Physiotherapy
2. Philosophy and philosophical statements
3. Major ethical principles applied to moral issues in health care.
4. Rules of professional conduct,scope of practices
5. Relationship with patients.
6. Relationship with medical colleague
7. Relationship with professional
8. Confidentiality and responsibility
9. provision of service and advertising
10. Sale of goods
11. Professional and professional standard.
12. Professional and government licensing, Accreditation and education standard.
13. Laws and legal concepts
14. Protection from malpractices claims, Consumer protection act
15. Liability and documentation.

## **Book References.**

1. British Journal of physiotherapy
2. Medical Ethics by C.M.Francis
- 3.Rehabilitation Medicine by Joel A. Delisa
4. Krusens Hand Book of Physical Medicine and rehabilitation.

# **B.P.T. 4682**

## **RESEARCH METHODOLOGY AND BIOSTATISTICS**

### **Course Objectives:**

The objective of this course is that after 60 hrs of lecture the student will be able to frame a research project using the principles of research methodology and biostatistics. This course involves a description of principles for conducting research.

### **Course outline**

#### **1. Introduction**

- a) Introduction Importance of research in clinical practice, scientific approach, characteristics, purposes, and limitations.
- b) Ethical issues in research, elements of informed consent.
- c) Structure of a research proposal.
- d) Attributes scale – types of data, clinical data primary & secondary data measures, Arithmetic mean, geometric mean, harmonic mean, median , mode, quartile deviation.**

#### **2. Research Methodology**

- a) Research question including literature review.
- b) Measurement: Principles of measurement, reliability and validity.
- c) Experimental sampling and design.
- d) Descriptive research

#### **3. Biostatistics:**

- a) Descriptive statistics-measurement scales, variables and their measurement, symbolic data.
- b) Statistical data-Tabulation, calculation of central tendency, presentation of data in diagrammatic and graphic form, dispersion regression and correlation.
- c) Sampling and probability as a mathematical system,
- d) Comparison of means, T-tests. **Analysis of Variance**, Multiple comparisons, correlation
- e) Test of hypothesis, types of scales.**

#### **Books reference:**

1. Handbook Of Research In Physical Therapy. CE Bork
2. Physical Therapy Research: Principles and Application. E Domholdt
3. Research Methodology for Physical Therapists. C Hicks

### **RESEARCH PROJECT/DISSERTATION**

1. Research Project will be done under the supervision of the Faculty Members as assigned by HOD /course coordinator.
2. In case of any failure in the completion and submission of research project/ dissertation Students will not be allowed to appear in final year university practical examination
3. It will be non university theory examination subject; evaluation will be done by PHYSICAL DIAGNOSIS AND PRESCRIPTION SUBJECT practical external examiner.

## **B.P.T. 4683**

### **PHYSIOTHERAPY IN CARDIOTHORACIC CONDITION**

#### **Course objective**

This course serves to integrate the knowledge gained by the students in both the clinical cardio and respiratory conditions with the skills gained in various manipulative techniques for the management of Cardio- thoracic conditions disability. Total durations of theory demonstrations and clinical will be 180 hours

#### **Course Outline**

Review of Cardio- Respiratory Anatomy and physiology.

1. Symptomatology of cardio-respiratory disorders, investigation, Diagnosis, Differential Diagnosis and prognosis.
2. Clinical Examination of respiratory system disorders.
3. Principles and techniques of physiotherapy in diseases of respiratory system.
4. Physiotherapy Assessment and management techniques in the following:  
Bronchial Asthma, Bronchiectasis, Pulmonary Embolism, Pulmonary Tuberculosis, Emphysema, Pleurisy and  
Empyema, Atelectasis, Pneumothorax, Bronchopulmonary fistula etc.
5. Pulmonary rehabilitation:  
Definition  
Aims and Objectives  
Patho physiology of the diseases  
Techniques of rehabilitation including Biofeedback.  
6. Clinical examination of cardio vascular system disorders, Principles and techniques of physiotherapy in cardio vascular diseases.
7. Physiotherapy Assessment and management techniques in the following cardio vascular diseases: Congestive heart failure, Myocardial Infarction, Endocarditis, Valvular diseases of heart, congenital vascular diseases, P.D.A.; Hypertension, Thrombosis, Phlebitis and Phlebothrombosis, Burger's Diseases, Varicose veins and ulcers.
8. Cardio-thoracic surgery, incision, Types, Indication and Contra-indications.
9. Pre and Post operative evaluation, Principles and techniques of physiotherapy management of heart and vascular surgery.
10. Evaluation, Principles and technique of physiotherapy, management in traumatic and surgical conditions of chest, lung, pleura, and mediastinum.
11. Principles of chest physiotherapy in ITU AND ICCU
12. Pre and post operative physiotherapy assessment and management in the following conditions

Segmental resection  
Lobectomy  
Pneumonectomy  
Decortication  
Thoracoplasty  
Pneumothorax  
Bronchopulmonary fistula  
Congenital abnormality of heart  
Peripheral Vascular disorders

### **13. Cardiac Rehabilitation**

Definition  
Aims and objectives  
Pathophysiology of disease  
Principles of rehabilitation  
Technique of cardiac rehabilitation including Yoga and biofeedback

#### **Practical**

Various physiotherapy modalities and treatment technique for above mentioned surgical and medical conditions should be demonstrated and practiced by the students.

#### **Book Reference**

1. Cash Textbook of Chest, heart and vascular disease for physiotherapist
2. Cash Textbook of General medical and surgical conditions for physiotherapist
3. Dhect Physiotherapy In Intensive Care unit-Mc Kenzie
4. Physical Rehabilitation-Sussan O Sullivan
5. Guide to chest Physiotherapy Brompton

## **B. P.T. 4684**

# **PHYSICAL DIAGNOSIS AND PRESCRIPTION**

### **Course objective**

The objective of this course is that after 200 hrs of lectures and demonstrations, practical and clinics the students will be able to acquire the concept of evaluation of function and measurement in general an disorder in different system. Thus students will be able to diagnose and measure the physical problems presented by the patients and write a prescription of management by physiotherapy

### **Course Outline**

#### **General considerations of**

##### **A. Cardio respiratory System-**

1. Physical evaluation of cardiorespiratory system in normal and pathological conditions, Posture (Recumbent, erect orthopaenic) Breathing Pattern and breath hold (rate, rhythm, use of accessory muscle), chest deformity, cough, sputum, tactile and vocal fremitus, mobility of thoracic spine and rib cage percussion, breath sound Chest expansion measurement. Heart rate, Blood Pressure, Heart Sound, Pulse Rate
2. Pulmonary function test, spirometry and gas analysis
3. Cardiac efficiency test:
  - a. Principles of E.C.G. and Stress ECG Ultrasonography
  - b. Clinical cardiac fitness tests.
  - c. Clinical monitoring
  - d. Treadmill and Ergometry

##### **B. Nervous System**

1. Evaluation of function and measurement in general with reference to  
Upper and lower motor neuron lesion  
Dermatome and Myotomes  
Nerve Entrapment  
Muscle Tone,  
Voluntary movement and Voluntary control test  
Test of disorder of programmes Cerebellum & Basal ganglia Lesion etc. and coordination tests.  
Abnormal Movements- Clonus, Tremor, Chorea, Athetosis etc.  
Neural Control Of bladder.



### **C. Electro diagnosis**

Surface and needle electromyography  
Nerve conduction velocity Test (Motor and Sensory)  
Reflex Study: - H Reflex, F waves.  
Cerebral Evoked Potential  
Comparisons of conventional S-D Curve and E.M.G.  
Analysis of E.M.G.in normal and pathological conditions.

### **D. Musculoskeletal System**

Goniometry, Manual Muscle Assessment,  
Posture and Posture Disorder Evaluation  
Physical Examination of Joints in Normal and Patho- mechanical condition,  
Muscle Strength and endurance  
Range of motion and joint flexibility  
Measurement of muscle girth, leg length, pelvic inclination, segmental measurement of body parts

### **E. Assessment of pelvic floor muscle strength and function**

Digital Evaluation of vagina, Periniometer, Pad test

### **F.Principles on investigative methods in modern medicine like EEG, MRI,CT Scan etc.**

### **G. Work Physiology and exercise prescription**

Ergonomics consideration for exercise consideration  
Work Physiology Consideration analysis and planning  
Work adjustment as per biomechanical and clinical consideration.

### **H. Prescription writing**

### **I. Biophysical Measurement.**

Practical- Students are required to do practices of patient assessment, investigative equipments and prescription writing of patients in clinics.

### **Book References:**

1. Textbook of physical diagnosis-Mark M.Swartz
2. Rehabilitation Medicine-Joel A.Delisa
3. Diffrential Diagnosis in physical Therapy-Goodman and Snyder
4. Manual Exercise testing-Ordet

## **B.P.T.4685**

### **PHYSIOTHERAPY IN MEDICAL AND SURGICAL CONDITIONS**

#### **Course Objectives**

This course involves a description of the assessment and treatment of patients with general medical and general surgical conditions. After 180 hours of Lectures and demonstration, practical and clinics the student will be able to conduct a safe and effective treatment of patients with General medical and general surgical conditions

#### **Course Outline**

##### **1. Review of the pathological changes and principles of management by Physiotherapy of the following conditions:**

- a) Diabetes Mellitus
- b) Oncology
- c) Geriatric Medicine.
- d) Inflammation acute, chronic and suppurative.
- e) Edema – Traumatic, obstructive, paralytic, edema due to poor muscle and laxity
- f) Common condition of Skin – Acne, Psoriasis, Alopecia, Leucoderma, Leprosy.
- g) Deficiency Diseases – Rickets, Diabetes, Obesity, Osteoporosis & other efficiency disorders related to Physiotherapy.
- h) Psychiatric Disorders – Psychosis, Psychoneurosis, Senile dementia.

##### **2. Special Considerations**

- a) **Problems of Elderly:**
  - i) Medical, sensory motor, cognitive falls.
  - ii) Frail and Institutionalized elder
  - iii) Functional assessment of the elderly

##### **3. General Gynecology and Obstetrics conditions**

Review of the pathological changes and principles of pre and postoperative management by Physiotherapy of the following conditions:

- a) Common operation of reproductive system, including surgical intervention for child delivery. Ante natal and post natal Physiotherapy management.
- b) Common operations, of the ear, nose, throat and jaw as related to Physiotherapy.
- c) Common organ transplant surgeries - heart, liver, bone marrow, etc.

##### **4. Common Abdominal Surgery;**

Common abdominal surgeries, including GIT, liver, spleen, kidney, bladder, etc.

## **5. Wounds, Burns and Plastic Surgery**

Review of the pathological changes and principles of pre and postoperative management by Physiotherapy of the following conditions.

- a) Wounds, ulcers pressure sores.
- b) Burns and their complications.
- c) Common reconstructive surgical procedures for the management of wounds, ulcers, burns and consequent contractures and deformities.

## **K. PHYSIOTHERAPY IN GENERAL SURGERY**

Assess the patients, medical history, past treatment, breathing pattern, ability to cough and pain. Identify problems: Pain, increased secretions, defective posture and decreased exercise tolerance. Treatment techniques: Breathing exercise, huffing and coughing, mobilizing exercise, posture correction and graduated exercise programme.

### **LAB HOURS**

**Course Description:** This course involves a description of the assessment and treatment of general medical and general surgical conditions.

**Course Objectives:** The student will be able to conduct a safe and effective treatment of patient with General medical and General surgical conditions

The students will be shown patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. Assessment of medical and cardiopulmonary functions
3. Clinical diagnosis of the presentations.
4. Investigations and tests of different clinical presentations
5. Physiotherapy management of the various diseases & surgeries

### **Recommended Books**

1. Physiotherapy In Gynaecological & Obstetrical Conditions-Poldon
2. Astrand P. A. Rodahe K. -Text Book Of Work Physiology
3. Therapeutic Exercise –Kisner

**B.P.T. 4686**  
**PHYSIOTHERAPY IN SPORTS**

**Course Objective**

The objective of this course is that after 180 hrs of lecture and demonstrations practical and clinical the student will be able to acquire the concept of sports injury evaluation and will be able to provide sports training and physiotherapy in particular area.

**Course outline**

**1.Introduction**

2. Pre participation evaluation
3. Dietics and nutrition in sports
4. Sports and sports training
  - a. Principles of sports training
  - b. Instrumentations in sports training,Isokinetic exercise
  - c. Modern Principles of sports analysis and training

**5. Sports and sports injuries**

- a. Introduction
- b. Frequency and site of injury
- c. Aetiological Factors
- d. Investigation in sports injury
- e. Diagnosis and prognosis

**6. Sports injury management**

Principles of sports management in following stage

- a. Immediately after injury
- b. Acute stage
- c. Chronic stage
- d. Rehabilitation Stage

**7. Injury and management of the following**

- a. Hip, Knee , Ankle and foot injuries
- b. Shoulder, Elbow , Forearm, Wrist and Hand injury
- c. Spine, Head, and Neck Injuries
- d. Chest, abdomen, and pelvic injuries.

8. Pharmacology in sports
9. Rehabilitation in sports.

**Book Reference**

1. Cash Textbook of Orthopaedic conditions
2. Modern principles of athletic training-Carl E claf and Daniel D Arnheim
3. Sports Injury-Karim Khan
4. Therapeutic Exercise- Kolbe Kissner
5. Basic Athletic Training-Cramer

