Vels Institute of Science, Technology and Advanced Studies

SCHOOL OF PHYSIOTHERAPY

BPT Program Outcome:

PO1 : During this BPT degree, one can gain a comprehensive knowledge of physiotherapy, including areas such as Orthopedics, neurology, cardiac & Respiratory conditions, OBG and preventative health care.

PO2: The Bachelor of Physiotherapy incorporates significant clinical and professional training opportunities, providing hands-on experience with real patients in a supervised environment.

PO3: Students will have the ability to effectively work with patients and other Clients with respect to the care of individuals, specific groups, communities or populations

PO4: Students will have the Demonstrated skills that support lifelong learning in personal and professional development

PO5: One can apply a distinct body of knowledge, skills and attitudes, incorporating ethical action, to improve the health and well-being of patients & other Clients.

PO6: Student can demonstrate excellent verbal and non-verbal communication skills to build effective partnerships and establish rapport with patients, care givers, health professionals, other sectors and stakeholders.

Department of Physiotherapy

BOARD OF STUDIES MEMBERS

Sl.No.	BOS Members & Address	Designation
1.	**Dr.P. Senthil Selvam,** Head of the Department, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Chairperson
2.	**Dr.S.G. Sudhan,** Professor, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Internal Member
3.	**Dr.M.S. Sundaram,** Professor, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Internal Member
4.	**Dr.T.G. Tilak Francis,** Professor, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Internal Member
5.	**Dr.M. Sandhiya,** Assistant Professor, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Internal Member
6.	**Dr. Priyakumari,** Assistant Professor, School of Physiotherapy, Vels University, Pallavaram, Chennai – 600 117.	Internal Member
7.	**Dr. Jibe George Varghese,** Professor & Vice Principal, Saveetha College of Physiotherapy, Saveetha University, Thandalam, Chennai.	External Member
8.	**Dr. C.V. Senthil Kumar,** Principal, Dr. M.G.R Educational and Research Institute University , Chennai.	External Member
9.	**Dr. R. Sakthivel,** Clinical Therapist, Perungudi.	Alumni

VELS

INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)

(DEEMED TO BE UNIVERSITY Estd. u/s 3 OF THE UGC ACT, 1956)

NAAC ACCREDITED

PALLAVARAM - CHENNAI - INDIA

B.P.T
Bachelor of Physiotherapy

Curriculum and Syllabus
(Based on Choice Based Credit System)
Effective from the Academic year
2015-2016

School of Physiotherapy

B. P.T - Bachelor of Physiotherapy
CURRICULUM

Total No. of Credits: 200

B.P.T
Bachelor of Physiotherapy

I Semester

Category	Code	Course	Hours/Week			Credits
			Lecture	Tutorial	Practical	
Core	15BPT001	Psychology & Sociology – Theory	6	0	0	4
Core	15BPT002	Professional Ethics /Administration/Marketing - Theory	6	0	0	4
Core	15BPT003	Orientation in PT & First Aid - Theory	6	0	0	4
Elective	15BPT___	DSE Elective-I	6	0	0	4
Elective	15BPT___	DSE Elective-II	6	0	0	4
Total			**30**	**0**	**0**	**20**

II Semester

Core	15BPT004	Anatomy- Theory & Viva	8	0	2	6
Core	15BPT005	Physiology & Bio chemistry – Theory & Viva	8	0	2	6
Elective	15BPT___	GE Elective-I	5	0	0	4
Elective	15BPT___	AEC Elective-I	5	0	0	4
Total			**26**	**0**	**4**	**20**

III Semester

Core	15BPT006	Clinical Medicine & Pharmacology - Theory	5	0	0	4
Core	15BPT007	Microbiology / Pathology – Theory	5	0	0	4
Core	15BPT008	Bio mechanics I - Theory	5	0	0	4
Core	15BPT009	Bio mechanics II- Theory	5	0	0	4
Elective	15BPT___	GE Elective-II	5	0	0	4
Elective	15BPT___	AEC Elective-II	5	0	0	4
Total			**30**	**0**	**0**	**24**

IV Semester

Core	15BPT010	Therapeutics Exercise & Massage - Theory & Practical	8	0	2	6
Core	15BPT011	Electrotherapeutics – Theory & Practical	8	0	2	6
Elective	15BPT___	DSE Elective-III	5	0	0	4
Elective	15BPT___	DSE Elective-IV	5	0	0	4
Total			**26**	**0**	**4**	**20**

V Semester

Core	15BPT012	General Surgery , Plastic Surgery & burns - Theory	5	0	0	4
Core	15BPT013	Clinical Neurology & Psychiatry–Theory & Viva Voce	8	0	2	6
Core	15BPT014	Physiotherapy in Neurology –Theory & Practical	8	0	2	6
Elective	15BPT___	SEC Elective-I	2	0	0	2
Elective	15BPT___	DSE Elective-V	3	0	0	2
Total			**26**	**0**	**4**	**20**

VI Semester

Core	15BPT015	Clinical orthopaedics & Traumatology - Theory & Viva Voce	6	0	2	6
Core	15BPT016	Physiotherapy in Orthopaedics – Theory & Practical	7	0	2	6
Core	15BPT017	Community Medicine – Theory	5	0	0	4
Core	15BPT018	Physiotherapy in OBG & Women health – Theory & Practical	6	0	2	6
Total			**24**	**0**	**6**	**22**

VII Semester

Core	15BPT019	Clinical Cardio – pulmonary diseases – Theory & Viva Voce	8	0	2	6
Core	15BPT020	Physiotherapy in Cardio pulmonary diseases – Theory & Practical	8	0	2	6
Core	15BPT021	Community Based Rehab/ Disability Evaluation – Theory & Viva Voce	6	0	2	6
Elective	15BPT___	SEC Elective-II	2	0	0	2
Total			**24**	**0**	**6**	**20**

VIII Semester

Core	15BPT022	Principles of Bio Engineering / Geriatrics/ Ergonomics – Theory & Viva Voce	5	0	2	6
Core	15BPT023	Evidence Based practice - Theory	6	0	0	4
Practical	15BPT024	Clinical Reasoning in Physiotherapy management - Practical	0	0	2	2
Project	15BPT025	Project - Viva voce	0	0	15	12
Total			**11**	**0**	**19**	**24**

CREDITS

Total Hours of Instruction (Lectures, Tutorial, Practicals) 170 Credits

Clinical Supervision & Hands on skill (VI to VIII Sem) 10 Credits

Internship Training Programme (6 Months) 20 Credits

Grand Total **200 Credits**

List of Discipline Specific Elective Courses

15BPT101	English for communication
15BPT102	Computer & its application in PT
15BPT103	Biostatistics / Research Methodology
15BPT104	Clinical testing
15BPT105	Ergonomics
15BPT 106	Applied Physics
15BPT107	Applied Chemistry

List of Generic Elective Courses

15BPT151	Medical Electronics & Biophysics
15BPT152	Cardiopulmonary resuscitation
15BPT153	PT Evaluation
15BPT154	Clinical Diagnosis

List of Ability Enhancement Compulsory Courses

15BPT201	Food and Nutrition
15BPT202	Hospital Management
15BPT203	Acupuncture
15BPT204	Medical Transcription
15BPT205	Basic statistics

List of Skill Enhancement Elective Courses

15BPT251	Yoga
15BPT252	Fitness
15BPT253	Computer Languages
15BPT254	Effective English

Syllabus
Core Courses

15BPT001 PSYCHOLOGY & SOCIOLOGY 6 0 0 4

Course Objectives:

The objective of this course is that after 120 hours of lectures, demonstrations, practicals and clinics, the student will be able to recognize and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical – surgical patients/conditions. They should also understand the elementary principles of behavior for applying in the therapeutic environment.

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

Course outcome :

1. The student will know about psychology and its branches
2. Methods of application of psychology, where and how to apply psychology in physiotherapy
3. Understanding skill and developmental changes of the patients will be easily understood.
4. Psychotic disorders, psychotherapy methods are known to handle the patients.
5. The student will know about the society and relationship between the society and the profession.
6. Major social problems in the society and its remedial measures.
7. Social security and its benefits for the people in the society.
8. Importance of health in the society.
9. Rehabilitation methods of patients which is related to the society
10. Impact of culture, community, caste, family in social health

UNIT I PSYCHOLOGY 24

1. DEFINITION OF PSYCHOLOGY

Basic information in relation to following school, Methods, and Branches.

(A) Schools : Structuralism, Functionalism, Behaviorism gestalt psychology and psychoanalysis.
(B) Methods : Introspection, Survey, Observation and experimental method.
(C) Branches : Abnormal, Industrial, Educational, Child, Social , Clinical, Counseling Evolution of the Definition – Psychology Application of psychology in physiotherapy.

2. HEREDITY AND ENVIRONMENT

Nature – Nurture controversy.

- Relative Importance of Heredity and Environment
- Twins – Identical and Fraternal twins
- Internal and External environment.

3. DEVELOPMENT AND GROWTH BEHAVIOUR

Infancy to old age – 36developments (Physical, Cognitive, Socio – emotional)
(A) Baby hood
(B) Early, Middle, Late Childhood
(C) Adolescence
(D) Adulthood
(E) Middle Adulthood
(F) Oldage

4. INTELLIGENCE

Definitions, IQ
3 types of Intelligence – Social, Mechanical and Abstract Intelligence
Various Intelligence tests – verbal & Nonverbal test, performance test.

5. MOTIVATION

The "Why" of Behavior, motives, Incentives and Reinforcement , motivation cycle.
Physiological and psychological Needs.
Primary needs – Hunger, Twist, Air, Sleep, Sex Elimination Activity, Avoidance of pain, Safety & Security.
Secondary needs – Love and Affection, Self-esteem, Self – Actualization.
Abrahams Maslow's Need hierarchy theory.

UNIT II 24

1. EMOTIONS

Definition, Importance of Emotion, Differentiate from feelings. Emotion and nervous system.
Types of Emotion – Primary and Mixed Emotions.
Theories of Emotion (James- Lange theory and cannon – Bard theory)
Role of RAS, Hypothalamus, cerebral cortex, sympathetic Nervous system, Adrenal gland.
Emotion and Disease : Skin rashes, Migraine, Ulcer, etc.
Nature and control of anger, fear and anxiety.

2. PERSONALITY

Definition, list the components, Physical characteristics character abilities, temperament, Interest and attitudes.
Role of heredity, Nervous system, family and culture on personality development
Basic concepts of freud. Dynamics of personality
Id, Ego, Super Ego.
Psychosexual developmental stages of Sigmund Friend stages oral, anal,
Phallic, latency and genital stages.
Psychosocial developmental stages of Erickson (8) stages
Personality Assessment :

(a) Paper- pencil tests, questionnaires & Inventories(BAI, CPI,MMPI)
(b) Interview – Standardised, unstandardised and stress Interviews.
(c) Projective Techniques: 1) TAT – Thematic Apperception test.
2) Sentence Completion Test.
3) Rorschach's Ink blot Test.

3. LEARNING

Definition, Laws of learning by Thorndike
Theories of Learning :

1) Conditioning theories - Classical conditioning Operant conditioning
2) Insight Learning.
3) Trial and Error learning.

Effective ways to learn :
Massed Vs Spaced, Whole Vs part, Recitation Vs Reading, Serial Vs Free Recall Incidental Vs Intentional Learning, Role of Language, Knowledge of Results, Association, Organization and Mnemonic methods.

4. THINKING

Definition, Concepts – 5 types of concepts
Creatively – steps in creative thinking.
Delusions – faculty thinking types (Reference, Influence, Sin guilt , Persecution, Grandeur and Hypochondria and Nihilistic delusions.

5. FRUSTRATION

Sources and solutions of frustration (Internal & External) Reactions of Frustration
Conflicts and its 4 types

1. Approach Conflict
2. Avoidance – Avoidance Conflict
3. Approach – Avoidance Conflict
4. Double Approach - Avoidance Conflict

Stress – How to cope up with stress.

UNIT III **24**

1. SENSATION, ATTENTION AND PERCEPTION

List the senses, sensation and sensory experiences–vision, auditory, Gustatory, Cutaneous, olfactory, Equilibrium, Kinesthetic and visceral sense.
Types of attention – voluntary, Involuntary & Habitual

- Division of attention, Internal (Subjective) & External (objective) factors which influences Attention.
- Span of Attention.
- Nature of stimulus, Intensity, color, Repetition, movement, size.
  Perception and perceptional organization.
- Disorders of perception (Hallucination & its types – visual, auditory cutaneous, gustatory, olfactory hallucination.
- Errors of perception (Illusion –"Muller – Lyer" illusion – Horizontal vertical illusion.
- Principles of perception – figure ground principle
- principle of closure
- Grouping principles.
  a. Similarity
  b. Proximity
  c. Continuity
- Other factors influencing perception – Interest, Motives, Values, Needs, Moods, Sex, Religion and past experience.

2. LEADERSHIP

3 Styles of leadership.

- Autocratic Leadership
- Democratic Leadership
- Laissez –faire Leadership (free – rein)
- Traits of a leader.

Leadership can be cultivated or not?

3. DEFENSE MECHANISM OF THE EGO

Successful and un successful Defense mechanisms
Importance of Defense Mechanisms.

- Compensation, Repression, Regression, Denial, Rationalization (Sour grapes & Sweet lemon), projection, Identification, Introjections, Acting out, Depersonalization.

4. MEMORY AND FORGETTING

Forgetting – Decay through disuse
Interference effects
Memory – How to improve memory, Attention and Concentration.
How to face exam and overcome exam stresses.

5. THERAPY

Neurotic and psychotic disorders
Psychosomatic and somato-psychotic diseases
Childhood disorder – Autism
- Mental Retardation

General out time:

Therapy for mild mental disorders (for – psychotic problems)
Counseling and guidance
Psychotherapy, coping strategies for stress anger and Anxiety.
Psychological Relaxation Techniques.

UNIT IV SOCIOLOGY 24

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. SOCIALIZATION

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

3. SOCIAL GROUPS

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

4. FAMILY

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

5. SOCIAL PROBLEMS OF THE DISABLED

Consequences of the following social problems in relation to sickness and disability; remedies to prevent these problems.
Population explosion
Poverty and unemployment
Beggary
Juvenile delinquency
Prostitution
Alcoholism
Problems of women in employment

6. SOCIAL CONTROL

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

7. SOCIAL SECURITY

Social security and social legislation in relation to the disabled.

UNIT V **24**

1. SOCIOLOGY AND HEALTH

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

2. CULTURE

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

3. 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.

4. CASTE SYSTEM

Features of the modern caste system and its trends.

5. SOCIAL WORKER

Medical social worker

6. SOCIAL CHANGE

Meaning of social change, Factors of social change, human adoption and social change, social change and stress, Social change and deviance, Social change and health programmes, the role of social planning in the improvement of health and in rehabilitation.

HEALTH PSYCHOLOGY (APPLIED) – Not for exams

A. PSYCHOLOGYICAL REACTIONS OF A PATIENT

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

B. REACTIONS TO LOSS

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

C. STRESS

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

D. COMMUNICATIONS

Types – verbal, non – verbal, elements in communication, barriers to good communication, developing effective communication, specific communication techniques of counselors.

E. COMPLIANCE

Nature, factors, contributing to non compliance, improving compliance.

F. EMOTIONAL NEEDS

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

G. GERIATRIC PSYCHOLOGY

Specific psychological reactions and needs of geriatric patients.

H. PAEDIATRIC PSYCHOLOGY

Specific psychological reactions and needs of pediatrics patients.

I. BEHAVIOUR MODIFICATION

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

J. SUBSTANCE ABUSE

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

K. PERSONALITY STYLES

Different personality styles of patients.

Evaluation

Total Hours:120

Text books:

1. Morgan & King,Introduction to Psychology,3rd Ed,1994

2. Sachdeva D.R. & Bhushan. V, An introduction to Sociology, Kitab Mahal Limited, 1974.

References:

1. Cliford T.Morgan – Introduction to Psychology, ELBS, 2 Ed, 1990

2. Hilgard & Atkinson - Introduction to Psychology,CBS, 3 Ed, 1994

3. Madan.G.R. Indian Social Problems, Vol.1, Chennai Applied Publications, 1973.

15BPT002 PROFESSIONAL ETHICS/ADMINISTRATION/MARKETING 6 0 0 4

Course Objective

After 120 hours of lecture, students should be able to understand the principles of physiotherapy profession, should be able to understand principles of management in personal management, times management and administration including budgeting.

Course Outcomes:

1. This course provides basic knowledge on legal responsibility and professional culture .
2. This course explains the role of different national professional bodies
3. This explains basic principles and concepts of management and administration
4. This provides information on organization principles and budget planning
5. This gives knowledge on job recruitment, preparation for 1st job and career development
6. Rules and Regulations of governing bodies of Physiotherapy can be well understood

UNIT I PROFESSIONAL ETHICS AND LEGAL ISSUES 24

1. The implications and confirmation to the rules of professional conduct.
2. Legal responsibility for their actions in the professional context and understanding liability and obligations in case of medico-legal action.
3. A wider knowledge of ethics relating to current social and medical policy in the provision of health care.

UNIT II PROFESSIONAL BODIES 24

1. National and international professional bodies; Professional associations and educational body. Difference between scientific association (Professional body) and statutory body.
2. The role of international health agencies such as WHO and WCPT.

UNIT III MANAGEMENT STUDIES FOR PHYSIOTHERAPY 24

1. Definition – Branches of management- Principles of health sector management.
2. General principles of management: Theories of management.
3. Personnel management: Policies and procedures. Basic concepts and theories.

UNIT IV ORGANIZATION 24

1. Financial issues including budget and income generation.
2. Principles of an organizational chart.
3. Organization of a department: Planning, space, manpower, materials and basic requirements.

UNIT V RESOURCE AND QUALITY MANAGEMENT 24

1. Resource and quality management: planning with change and coping with change.
2. Self management
   a. Preparing for 1st job
   b. Time management
   c. Career development

Evaluation

Total Hours: 120

Text books:

1. Larry J Nosse, Management Principles for Physical therapist, Lippincott Williams,2nd Ed, 2005

2. Chris croft,Time Management,International Thomson Business press, 1996.

References:

1. Elaine Lynne ,Management in Health Care, Macmillan Publisher,4th Ed,1994.

2. Willam A. Reinke, Health Planning for Effective Management,Oxford University Press,3rd Ed,1988.

15BPT003 ORIENTATION IN PHYSIOTHERAPY & FIRST AID 6 0 0 4

Course Objective

The objective of this course is that after 120 hours of lectures, demonstration, practicals and clinicals, the student shall be able to demonstrate and understand the principles of first aid and demonstrate skill in giving first aid treatment in emergencies that may be met in the community and in his/her practice as therapist.

Course outcome:

1. Students should have understood the importance of first aid how it can be attempted during various emergency needs ,what are the common positions which can be attempted while giving first aid & should know the indications and contraindications while giving first aid for different emergency needs.

2. Students should have understood the common musculoskeletal and respiratory and wounds how to manage those injuries during the golden period of the injury, know the different treatment method for each musculoskeletal and respiratory and wound management.

3. Students should know how the spinal cord or brain injuries will be handled during the emergency situations & will also understand different ways of wound care and hemorrhage management.

4. Students should have understood about the internal structure damage in person encounter during shock & should know how to perform a differential evaluation for diagnosing a shock.

5. Student should have understood how the natural disasters can affect the persons living environment.& should know the different ways to be followed during disaster in order to rescue the people from the emergency needs. They should be aware of emergency resources available through which they can save the life of the people.

6. Student should understood what is physiotherapy, know what are fields in which the role of physiotherapy is important, should have understood the basic bedside manners which have to be followed in their daily clinical routine.

UNIT I

24

1. Introduction

Definition of first aid, importance of First aid, Golden rules of First aid, scope and Concept of emergency.

2. First Aid Emergencies

1. Burns and scalds: Causes, Degree of burns, First aid treatment, General treatment.
2. Poisoning: Classification (irritants, acid, alkali and narcotics), signs and symptoms. First aid treatment, General treatment.
3. Trauma due to foreign body intrusion: Eye, ear, nose, throat, stomach and lungs.
4. Bites: First aid, signs, symptoms and treatment.
   a. Dog bite: Rabies.
   b. Snake bite: Neurotoxin, bleeding diathesis.

UNIT II

24

1. Skeletal injuries

Introduction to fracture, Types of fractures, mechanism of injury, Signs and symptoms. Rules of treatment, Transportation of patient with fracture, First aid measures in Dislocation of joints, treatment for muscle injuries.

2. Respiratory Emergencies

1. Asphyxia: Etiology, Signs and symptoms, rules of treatment.
2. Drowning: Definition and management.
3. Artificial Respiration: Indications, Types and techniques.

3. Wounds and Hemorrhage

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

UNIT III

24

1. Shock and Unconsciousness

Definition; Types of shock, common causes of shock, signs and symptoms of shock (Assessment of established shock). General and special treatment of established Shock.

2. Transportation of the injured

1. Methods of transportation: Single helper, hand seat, stretcher, wheeled transport (ambulance).
2. Precautions taken: Blanket lift, Air and sea travel.

UNIT IV **24**

1. Community Emergencies

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

2. Community Resources

Police assistance, voluntary agencies (local, national, international) and ambulance services (functions)

UNIT V **24**

1. Orientation and introduction to physiotherapy

a. Acquire the geographical orientation of the various concerned sections of the college & the clinical training areas.
b. Get the overall idea about the graduate program & its scope in the professional Practice
c. Learn the bed – side manners. General ethical code & discipline of the department
d. Acquire the skill of History taking in general.

Evaluation

Total Hours: 120

Text Books:

1. Hoon R.S, First aid to the injured, St.John Ambulance Association,10th Ed, 2014.

2. Gardner Ward & Peter J. Roylance, New Advanced First Aid, London Butter Worths, 3rd edition, 2001.

References:

1. Raine Hardhins and Hunt Vaheirs,Urgencies and emergencies for Nurses, English Universities Press Ltd, 1965.

2. First Aid, American Red Cross, The Balckiston company, Philadephia, 1945.

3. Golqalla Asoi, A handbook of emergencies ,Bombay sam and company,1986

15BPT004 ANATOMY 8 0 2 6

Course Objectives:

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

Course outcome:

On completion of the paper, students are expected to:

CO1- Understand the structural and functional importance of cell and different types of tissues.
CO2- Gain Basic anatomical knowledge of cardiovascular, lymphatic, digestive and genito-urinary system.
CO3 –Know about detail anatomical knowledge of nervous system and outline of endocrine system.
CO4 –Understand the different type of classification and general features of bone, joints and muscular tissues.
CO5 – Study about the structural and functional importance of muscles, joints, long and short nerves and different spaces in upper limb and lower limb, including applied aspect.
CO6 – Know about basic anatomical knowledge of boundaries and contents of thoracic, abdominal and pelvic cavity.
CO7 – Gain knowledge of greater vessels, muscles and structural and functional importance of different viscera in head and neck region.
CO8 – Gain knowledge of outline of Visual, auditory and taste pathways, including applied aspect.

UNIT I INTRODUCTION 40

a. Introduction

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

b. Cell

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

c. Tissues

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

UNIT II **SYSTEMS** **40**

a. Cardio - Vascular System

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

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

3. a. Mention the position and general distribution of major arteries and veins. Name their main branches.
   b. Name the types of arteries and veins. Give examples and indicate the basic microscopic structure of types of blood vessels.

b. Lymphatic System

1. Comprehend the general and regional arrangements of the lymphatic system.
2. Name the lymphatic organs and mention their location.
3. Illustrate the basic structural features of lymphatic vessel, lymphatic, thymus, spleen and tonsils.
4. Assign functional roles to the lymphatic system.
5. State the position and immediate relation of the spleen.

c. Respiratory System

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

2. a. State the position, extent, gross and microscopic structure of the parietal pleura
   b. Comprehend the arrangements of pleura. Mention the parts and position of the parietal pleura
   c. Name the recesses of pleura.
   d. Identify the trachea and bronchi.
   e. Identify the right lung and left lung.
   f. Name the components of the hilum of lung.
   g. Name the broncho pulmonary segments.
   h. Illustrate the main features of the microscopic structure of the lung.
   i. Identify the borders and surfaces of the lung on the specimen.

d. Digestive System (N.B... no details are required)

1. a. List the parts of the digestive system.
   b. Mention the boundaries and features of mouth.
   c. Classify teeth.

d. Mention position, extend, subdivisions, communications, internal features and muscles of pharynx.
e. Name the tonsils and define faces.
f. Identify the internal features of the mouth and the pharynx on the specimen.

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

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

4. a. Name the subdivisions of the intestine and mention their position.
b. Mention the differences between small and large intestine.

5. a. Name the arteries arising from abdominal aorta. Name the organ supplied by these branches.
b. Name the positions of the principal autonomic visceral nerve plexuses in the abdomen and pelvis, and state the organs supplied by them.

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

7. Name the position and subdivisions of the pancreas.

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

e. Genito-Urinary System (N.B. no details are required.)

1. a. Comprehend the basic functional implications and the basic structure of the kidney and ureter.
b. Mention the position, size and shape of the kidney.
c. Name the immediate relations of the kidney.
d. Indicate the cortex, medulla, pyramids, sinus, calyces and pelvises of urethra in macro section of kidney.
e. Illustrate the structure of a nephron.
f. Identify the urethra and indicates the position of the ureter.

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

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

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

5. Name the common internal and external iliac arteries.

f. Nervous System

1. a. Define the subdivisions of nervous system. Define central, peripheral and autonomic nervous system and name their subdivisions. Comprehend the position and form of the spinal cord, its structure and functions in terms of neuronal connections.
   b. Indicate the position and extent of the spinal cord.
   c. Illustrate the principal features shown in a transverse section of the spinal cord.
   d Specify the basic features of a mono and multi synaptic spinal reflex pathway.
   e. Illustrate the white and grey matter and anterior, lateral and posterior columns of the spinal cord
   f. Mention the origin, termination and position of important ascending and descending tracts, sites of crossing of fibers of these tracts, and function of each tract.
   g. State the main consequence of spinal cord transection and hemi section and explain the rational of cordotomy.
   h. Indicate the blood supply and meanings of spinal cord.

2. a. Name the subdivisions of the brain. Identify and mention the external features of the brain.
   b. Mention the internal structures and basic features of the brain stem and name the nuclei and fibre tracts with special emphasis on cranial nerve nuclei.
   c. Identify and mention the parts of the cerebellum.
   d. Mention the external features and internal structures of the cerebellum and name its various afferent and efferent fibers tracts and their origin and termination.
   e. Mention the features of the gross components of the cerebrum.
   f. Mention and identify the location of gyri, sulci and cortical areas.
   g. State and identify association, commissural and projection fibers.
   h. Define and identify components of fore brain, including cerebral cortex, insula, olfactory bulb, olfactory tract, uncus, fornix, basal ganglia, thalamus, hypothalamus, internal capsule, corpus callosum etc.
   i. Predict the result of damage to internal capsule.
   j. Outline sensory and motor pathways and trace these pathways.

k. Name sensory and motor nerve endings with their functions.
l. Define pyramidal motor system and name its tracts.
m. Define upper and lower motor neurons.
n. Name the parts and tracts of the extra - Pyramidal system and indicate their functions.

3. Outline the basic structures of sensory organs: - Nose, Tongue, Eye, Ear and Skin.
4. Briefly outline the nature and basics of muscle tone, Mention the anatomical pathways involved in the production and maintenance of muscle tone.
5. a. State the formation, circulation and drainage of CSF.
   b. Locate and identify the ventricles.
   c. Identify and name the meninges and spaces around it and locate the cisterns.
   d. Define lumbar puncture and cisternal puncture.
   e. State the feature of the meninges.
   f. Recognise the difference between extradural, subdural and subarachnoid haemorrhage.
6. a. Outline the arrangements of major blood vessels around the brain and spinal cord.
   b. Mention the arteries forming the circle of Willis.
   c. Name the branches of major arteries supplying the brain and spinal cord and mention the parts they supply.
   d. Predict the result of blockage or rupture of central deep branches.
   e. Predict the result of occlusion of cerebral arteries.
   f. Predict the result of occlusion of vertebral or basilar arteries.
   g. Identify and mention the connections of dural venous sinuses.
   h. Name and identify the parts of the limbic system. Mention their function in emotion and behaviour.
7. a. Mention the position and structure of the autonomic nervous system.
   b. Mention the sites of origin and termination of the preganglionic and postganglionic sympathetic and parasympathetic fibers.
   c. Name and locate the sympathetic and parasympathetic ganglia.
   d. Summarise the functional differences between sympathetic and parasympathetic systems.
8. a. Enumerate the cranial nerves in serial order.
   b. Mention the nuclei, origin and termination. Indicate the site of attachment to brain/brain stem.
   c. Explain the general distribution of the cranial nerves and the course of result of VII nerve.
   d. Predict the result of injury to cranial nerves.
9. a. Anatomy of spinal cord - review.
   b. Name the groups of spinal nerves.
   c. Explain the formation and branches of the spinal nerves and distribution of anterior and posterior rami.
   d. Locate and name the plexuses of nerves.
   e. Indicate the course and distribution of branches of the plexuses of nerves.

g. Endocrine system

1. List the endocrine organs and mention their positions.
2. Mention the hormones produced by each endocrine organ.

UNIT III OSTEOLOGY 40

a. Introduction to Bones (Osteology)

1. a. Define skeleton.
   b. Mention the subdivisions of skeleton. Name the bones in each subdivision. Know the number of bones in each subdivision and total number of bones.
   c. Classify the bones and give examples.
   d. Enumerate the common surface features of the bones.
   e. Define ossification. Explain the types of ossification and give examples. Define ossification centre. Explain the growth of a long bone in length and width.
   f. Indicate blood supply and nerve supply of a bone.

2. When regional anatomy is taught:
   a. Identify the name and correctly orientate the bone.
   b. Identify surfaces, borders and all other surface features.
   c. Mark and indicate the muscular and ligamentous attachments on the bone.

b. Introduction to Joints (Syndesmology / Arthology)

1. a. Define a joint or articulation.
   b. Classify the joints and gives examples for each type. Define each type of joint.
   c. Mention the basic features of a synovial joint.
   d. Define the axis and movements possible in a synovial joint.
   e. Define range of movement and limiting factors.
   f. Indicate the blood supply and nerve supply in general.
   g. Define stability of a joint.
   h. Demonstrate common movements.

2. When regional anatomy is taught:
   a. Mention the type, the articular surfaces, ligaments, and movements, axis of the movements, chief muscles producing the movements, limiting factors, nerve supply and blood supply of all individual joints.
   b. Mention the factors for stability.
   c. Articulate the factors for stability.
   d. Indicate applied anatomy for all joints.

UNIT IV MYOLOGY 40

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

1. a. Define a skeletal muscle.
   b. Define fasciae, tendon, and aponeuriosis.
   c. Classify the skeletal muscles by shape etc., and give examples.
   d. Define origin, insertion, muscle work (contractions), type of muscle work, range of muscle work; group actions - protagonists, antagonists, synergists and fixators: shunt and spurt muscles; types of levers with examples.

2. When the regional anatomy is taught:
   a. Mention the position, origin, insertion, nerve supply and actions of the skeletal muscles. (for the skeletal muscles of soft Palate, Pharynx and larynx, position, action and nerve supply may be sufficient)
   b. Indicate the groups of muscles by position and action, group action and nerve supply of group of muscles.
   c. Indicate segmental innervations of muscles.
   d. Predict the result of paralysis of individual and group of muscles.

b. Upper Extremity

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

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

3. Axilla:
   a. Mention and identify the boundaries and contents of axilla.
   Name the branches of axillary artery. Name and identify the cords and branches of brachial plexus and mention their root value.
   b. Illustrate the formation of brachial plexus.

4. Shoulder Girdle:
    a. Comprehend the main features of the joints of the shoulder gridle and state their functions.
    b. Name the joints of shoulder girdle. Identify the articular surfaces and name the ligaments and movements of sternoclavicular and acromioclavicular joints. Mention the types of joints.
    c. Demonstrate and name the movements of scapula. Mention the chief muscles producing these movements. Correlate movements of scapula.
    d. Assign functional roles to the articular disc and costo clavicular ligament.

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

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

7. Elbow Joint:
    a. Mention the type, articular surfaces and ligaments of elbow joints.
    b. Define and demonstrate the movements. Name the chief muscles producing these movements.
    c. Mention the factors for stability and limiting factors.
    d. Indicate the applied anatomy.
    e. Mention the blood supply and nerve supply.
    f. Explain the carrying angle.

8. Forearm, Wrist and Hand:
    a. Mention the bones of forearm, identify the ends, borders, surfaces and features of radius and ulna.
    b. Identify the head, neck, tuberosity and styloid process of radius. Identify the coronoid process, olecranon process, trochlear notch, tuberosity, head, styloid process of ulna, radial notch of ulna and ulnar notch of radius.

c. Name and identify the carpal bones, metacarpal bones and phalanges in an articulated hand.
e. Mention the position, origin, insertion, nerve supply and action of these muscles.
f. Indicate the course, relations and distribution of median, ulnar and radial nerves.
g. Mention the type, articular surfaces and ligaments of radioulnar joints. Define the movements of supination and pronation. Mention the axis and muscles producing these movements. Analyse these movements and apply it to the functional role in routine day to day actions.
h. Mention the position and distribution of radial and ulnar arteries and ulnar, median and radial nerves.
i. Name and locate the carpal bones. Mention the type, articular surface and ligaments of wrist joint. Define and demonstrate the movements and mention the muscle producing them. Mention its blood supply and nerve supply.
j. Predict the result of paralysis of muscles of the forearm.
k. Mention the functional implications of prehension in the structure of hand.
l. Indicate the arrangements of tendons of the digits, retinaculae, fibrous flexor sheaths and synovial sheaths.
m. Evaluate the hinge type of interphalangeal joints, ellipsoid type of Metacarpophalangeal joints and saddle type of carpometacarpal joint.
n. Name and identify the small muscles of the hand. Mention their position, origin, insertion, nerve supply and action.
o. Mention the types of bones formed and ligaments of the joints of the hand. Define the movements and the muscles producing these movements. Predict the result of paralysis of the various types of grip.
p. Demonstrate the types of grip.

9. Nerves of Upper limb:
   a. Comprehend and apply the knowledge of the position and distribution of upper limb nerves.
   b. Mention the root values of the nerves.
   c. Identify the nerves and mention the position, course, relations and distribution of nerves of upper limb.
   d. Predict the result of injury to these nerves.

10. Blood Vessels of Upper Limb:
   a. Comprehend and apply the knowledge of the position and distribution of blood vessels and lymph nodes.
   b. Trace the main arteries and veins.
   c. Indicate their position name the main branches of tributaries.
   d. Name and locates the lymph nodes.

11. Cutaneous Nerves of Upper Limb:
   a. Name the cutaneous nerves and illustrates the areas of their distribution.
   b. Illustrate the dermatomes.

c. Lower Extremity

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

2. Medial side of Thigh:
   a. Name and identify the muscles of the medial side of thigh. Mention their origin, insertion, nerve supply and action.
   b. Indicate the course, relations and distribution of obturator nerve.

3. Back of Thigh:
   a. Identify and mention the position, origin, insertion, nerve supply and action of the hamstring muscles.
   b. Indicate the position, course, relation and distribution of sciatic nerve.

4. Gluteal region:
   a. Identify and mention the position, origin, insertion, nerve supply and action of the muscles.
   b. Name and mention the position and course of the nerves found there and names of the arteries present in the Gluteal region.

5. Hip Joints:
   a. Mention the type, articular surface and ligaments.
   b. Define the movements and name the chief muscles producing the movements.
   c. Mention the blood supply, nerve supply, factors for stability and limiting factors.
   d. Indicate applied anatomy.

6. Knee Joints:
   a. Mention the type, articular surfaces and ligaments.
   b. Define the movements and name the chief muscles responsible for the movements.
   c. Analyse the movements.
   d. Know the blood supply and nerve supply.
   e. Indicate applied anatomy.
   f. Define locking and unlocking of the joints.

7. Popliteal fossa:
   a. Indicate the boundaries and contents.
   b. Mention the position and branches of tibia and common peroneal nerves.

8. Front of Leg and Dorsum of Foot:
    a. Name and identify the tarsal bones, metatarsal bones and phalanges in an articulated foot.
    b. Name and identify the muscles.
    c. Mention the position, origin, insertion, nerve supply and actions of the muscles.
    d. Position and distribution of deep peroneal nerve.
    e. Indicate the position and attachments of extensor retinaculae.
    f. Mention and identify the features of the tibia and fibula.
9. Lateral Side of Leg:
    a. Name and identify the muscles.
    b. Mention the position, origin, insertion, nerve supply and action of the muscles.
    c. State the position, course and distribution of superficial peroneal nerve.
    d. State the position and attachment of peroneal retinacula.

10. Back of Leg and Sole of Foot:
    a. Name and identify the features of the bones of the foot.
    b. Name and identify the muscles of back of leg.
    c. Mention the position, arrangement, origin, insertion, nerve supply and action of the muscles.
    d. State the position, course and distribution of tibial artery.
    e. State the position and distribution of posterior tibial artery.
    f. Mention the position and attachment of flexor retinaculum.
    g. Mention the arrangement, origin, insertion, nerve supply and action of muscles of foot.
    h. Indicate the types, formation and factors for the maintenance of the arches of foot.
    i. Mention the type, articular surface, ligaments, movement's of chief muscles for the movement, axis of movements and applied anatomy of tibiofibular joints, ankle joints, subtalar joints, M.P.joints and I.P. joints.
    j. Palpate and identify the tendons around the ankle and dorsum of foot.

11. Nerves:
    a. Indicate the position, formation and branches of lumbar and sacral plexuses.
    b. Mention the root values of the nerves.
    c. Mention the position, course, relation and distribution of the nerves.
    d. Predict the result of injury to the nerves.
    e. Illustrate cutaneous innervation of dermatomes.

12. Blood vessels:
    a. Indicate the position of arteries and their main branches.
    b. Indicate the position of veins and their main tributaries.
    c. Indicate the position of lymph nodes.

A. Trunk - Thorax – Abdomen

Vertebral Column:

1. State the basic osteology of vertebral column.

2. Identify the parts of a typical vertebra. Identify and state the main features of typical vertebra in each group of vertebrae. Identify a typical vertebra.
3. State the form, structure and movements of joints of vertebral column. Mention the movements and the muscles producing them.
4. Identify the intervertebral disc and mention its parts.
5. State the formation and ligaments of the intervertebral joints.
6. Name and identify the curvatures of the vertebral column and Indicate the deformities.
7. State the contents of vertebral canal.

Thorax:

1. a. State the main features of the bones and joints of thoracic cage. Mention the boundaries.
   b. State the parts and features of sternum.
   c. Define true, false and floating ribs. Mention the parts and features of typical rib. Know the main features of a typical rib.
   d. Mention the type and formation of the joints between rib and vertebrae, between costal cartilage and sternum and between coastal cartilages.
   e. Mention the type and formation of the joints between the parts of sternum. Indicate the importance of sternal angle.
   f. Analyse pump handle and bucket handle movements of ribs.
   g. Palpate bony land marks such as jugular notch, sternal angle, xiphisternum and spines of thoracic vertebrae.

2. a. Define inter coastal space and list the contents. Mention the course and branches of typical intercostal nerve. Name the muscles of thorax. Mention the origin, insertion, nerve supply and action of intercostal muscles and diaphragm.
   b. Name the structure passing through the diaphragm and mention the orifices in the diaphragm.

3. a. Define the boundaries and subdivision of the mediastium and list the contents. Identify the contents.
   b. State the features of thoracic parts of sympathetic trunk.

Abdomen:

1. a. Mention the main features of lumbar vertebrae, sacrum and coccyx.
   b. Mention the formation and subdivisions of the bony pelvis. List the features of the female bony pelvis and their roles.
   c. Mention the type, articular surfaces, ligaments and movements of the joints of pelvis.

2. a. Define abdominal cavity.
   b. List the layers of anterior abdominal wall. Name and mention the origin, insertion, nerve supply and action of the muscles and the features of these muscles.
   c. Explain the formation of rectus sheath and list its contents.
   d. Define inguinal canal and knows its position, extent, formation and contents. Indicate

its clinical importance. Define inguinal hernia.

e. Name and identify the muscles of posterior abdominal wall.
Give their origin, insertion and action. List the organs on the posterior abdominal wall. Name the blood vessels on the posterior wall.
f. Mention the position and formation of lumbar plexus. Name its branches.
g. State the anatomy of lumbar region. Understand the disposition of muscles of the back in layers. Mention the arrangement of lumbar fascia. Identify the muscles in region. Understand the lumbar routes to abdomen. Identify and mention the attachments and actions of the large muscles of back. (at least the ones ending capitis).
h. Distinguish abdominal cavity and peritoneal cavity.
i. Mention the features of lumbar part of sympathetic trunk and other sympathetic ganglia.
j. Mention the branches and distribution of the abdominal aorta and iliac arteries.
k. State the inferior vena cava and iliac veins and mention their tributaries.

d. Pelvis

1. State the main features of subdivisions, boundaries, walls and floor of pelvis.
2. Mention the features of the pubic symphysis and sacroiliac joints.
3. Distinguish and mention the major difference between the male and female.
4. Identify the muscles of the pelvic floor and mention their attachments, actions and nerve supply.
5. Mention the structure of the urogenital diaphragm.

UNIT V HEAD/NECK/TRUNK/SPECIAL SENSES 40

Head and Neck

Musculoskeletal and neurovascular features. identify the anterior and posterior triangles of neck. Name the subdivisions.
List the contents.

1. a. State the main features of the skull and the facial skeleton.
b. Identify the large skull bones and their parts.
c. Identify the cranial fossae and hypophyseal fossa.
e. Identify and name the main muscle of the face. Mention their nerve supply and action.
f. Predict the results of paralysis to the facial muscles and sequel of injury to the facial nerve. (VII Nerve)
g. Map the cutaneous distribution of the three divisions of the trigeminal (Vth) nerve on the face.

2. a. Identify the general features of a typical cervical vertebra, atlas, axis and seventh cervical vertebra.
b. Identify the erector spinae, sternomastoid, scalene muscles and geniohyoid. Mention their attachments, actions and nerve supply.
c. Identify the phrenic, accessory and vagus nerves. Mention their distribution.
d. Identify and state the position, distribution and root values of the nerves of cervical and brachial plexuses.
e. Demonstrate the action of sternocleidomastoid.

f. Mention the type, articular surface, ligaments, movements and muscles producing these movements, at the atlanto-occipital and atlanto-axial joints. Demonstrate these movements and the movements of the cervical part of vertebral column.

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

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

c. Define the modes of distribution of pre and postganglionic efferent neurons in sympathetic and para sympathetic nervous system.

d. Name the cranial nerves containing para sympathetic fibers and mention their distribution.

e. Distinguish between sympathetic and para sympathetic systems in relation to their functions.

Eye:

1. State the position of the lacrimal apparatus, the functional implications of structure of the eye and the lacrimal apparatus.
2. Name and illustrate the coat, their subdivisions, the refractive media, the chambers of the eye and the optic nerve.
3. Mention the structure of retina and optic pathway.
4. Know the basic understanding of the light and accommodation reflex. (omitting the pathways).
5. Mention the distribution of the three divisions of trigeminal (V) nerve.
6. Name and state the nerve supply and simple actions of the extraocular muscles
7. Predict the results of lesions of III, IV, and VI cranial nerves.

Nose:

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

Temporomandibular joint:

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

Mouth:

1. State the main features of the mouth cavity, tongue, palate, salivary glands, teeth and gums.
2. Mention the sensory and motor innervations of the tongue.
3. Identify the salivary glands.
4. Demonstrate movements of the tongue and palate.
5. Test and produce the swallowing (gag) reflex.
6. Predict the sequelae of lesions of the VII and XII cranial nerves.

Pharynx:

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

Larynx and Trachea:

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

Ear:

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

Cranial nerves:

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

Evaluation **Total Hours: 200**

Text Book

1. Chaurasia , Human Anatomy - VOL I, VOL II, VOL III ,7 th Edition , CBS, 2016.

References:

1. Nigle Palastanga, Anatomy and human movement, Butterworth Heinmann pub. 4th Ed,2007.

2. Cunningham's Manual of Practical anatomy (for practical classes only) Vol . 1, 2 and 3 . Romanes, Oxford university press, 3Ed, 2006 .

3. Gray's Anatomy, William Bannister, Churchill Living Stone pub, 3 Ed, 2007

15BPT005 PHYSIOLOGY & BIO CHEMISTRY 8 0 2 6

Course Objective

The Objective of this course is that after 200 hours of lectures, demonstrations Lab practicals the student will be able to demonstrate an understanding of elementary human physiology dealing with cell, skin, muscle, blood and other important systems of the body.

Course outcome:

1.Outline of structural and functional importance of cell, muscle and skin.

2. Detail knowledge of different type and function of blood cells. Brief outline of cardiovascular and respiratory system.

3. To Understand the carbohydrate, protein and lipid metabolism.

4. Outline of different parts and functions of excretory, endocrine and reproductive system.

5. Detail knowledge of central nervous system, peripheral nervous, supporting tissues and autonomic nervous system.

6. Brief knowledge of pathway of vision, auditor and taste.

7. Basic bio chemistry knowledge of different type of digestion.

8. Understand the applied aspect of cardiovascular, nervous and respiratory system.

UNIT I **40**

a. CELL INTRODUCTION
Outline of basic concept of cell structures, function of components; transport across membranes.

b. SKIN
Structure; functions; blood flow; temperature regulation.

c. MUSCLE

1. Structure of muscle tissue; Gross structure and microscopic structure. Arrangement of myofibrils. Myonerual junction.
2. Chemical processes involved in muscle contraction.

3. Physiology of muscle contraction, Single muscle twitch, Quantal summation, Wave Summation, Tetany, Effects of temperature changes, All or none law, Faituge, Isotonic, isometric and isokinetic contraction.
4. Exercise metabolism, Oxygen debt, Respiratory quotient.
5. Development of endurance, Factors affecting endurance and muscle strength, Factors affecting general and cardio respiratory endurance, Aerobic and anaerobic work, Efficiency of muscular activity, aerobic versus anaerobic(e.g speed, workload, fatigue, diet, obesity).
6. Description about Age related changes in muscle function. Cardiovascular system , pulmonary function, physical work capacity & nervous system.
7. Environment and exercise. Adaption to heat and cold. Exercise in heat and in cold. Human limitation in heat, Acclimatization to heat, Exercise at high altitudes.

UNIT II **40**

a. BLOOD

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

b. CIRCULATION

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

c. RESPIRATION

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

UNIT III **40**

a. DIGESTION

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

b. EXCRETION

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

c. ENDOCRINES

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

d. REPRODUCTION

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

UNIT IV **40**

a. NERVOUS SYSTEM

1. Structure of neurones.
2. Properties of neurones;(excitation & conduction)
3. Synapse and synaptic transmission; Reflexes and properties of reflexes;
4. Sensory ending Spinal cord; Pathways in the spinal cord.
5. Brain stem; Thalamus; Basal ganglia, Cerebrum; Cerebral cortex.
6. Control of posture and control of voluntary motor activity.
7. Autonomic nervous system.

b. SPECIAL SENSES

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

UNIT V **BIOCHEMISTRY** **40**

A. Cell – Biochemical morphology of cell

B. Carbohydrates chemistry – Definition, general classification, properties and functions.

C. Carbohydrate Metabolism – Digestion and absorption, Glycolysis, TCA Cycle, Gluconeogenesis, Glycogenolysis, Glycogenesis, HMP shunt and its importance, Hormonal regulation of blood sugar level, Diabetes mellitus, GTT and its Importance.

D. Lipid chemistry – Definition, general classification, properties and functions

E. Lipid Metabolism – digestion and absorption, Metabolism of Fatty acids, Ketogenesis, Ketolysis, Outlines of metabolism of cholesterol, Bio medical importance, Phospholipid & lipoproteins functions. Digestion & absorption of lipid B – Oxidation of fatty acid

with energetic, Ketone bodies and their & metabolism.

F. Protein chemistry – Definition, general classification, properties and functions (Proteins and Amino acids).

G. Protein Metabolism – Diagestion and absorption, Urea Cycle, outlines of metabolism of Aromatic amino acids. Mineral metabolism – Ca, P, Mg, Fe and Function of Trace elements.

H. Nucleic acid – Definition, Classification, structure of DNA, Types of RNA and their functions.

I. Enzymes – Definition, classification, properties, Factors affecting enzyme action, clinical importance.

J. Vitamins – classification, sources, Chemistry, functions, Deficiency manifestations and requirement.

K. Bio – energetic – Biological oxidation – Oxidative phosphorylation (Electron transport chain)

L. Electrolyte and Acid base balance, Blood gas analysis.

M. Muscle chemistry – chemistry and mechanism of muscle contraction.

N. Nutrition – Composition of food, balanced diet, Kwashiorkor, marasmus, nitrogen balance, major dietary constituent & their importance.

O. Clinical Bio chemistry – liver function test, Renal function test, Lipid profile in Serum.

PRACTICAL DEMONSTRATIONS

A. Muscle contraction in frog: simple muscle curve, tetany, wave summation, quantal summation , fatigue.
B. Pulmonary Function Tests
C. Effect of exercise on ventilation.
D. Physical fitness.
E. Determination of BP; effect of exercise on BP.
F. Examination of sensory and motor system;
G. Examination of superficial and deep reflexes.

APPLIED PHYSIOLOGY:

A. The Heart and Circulation

1. Structure and properties of heart muscle.
2. The action of the heart.
3. Determinants of cardiac performance.
4. Normal E.C.G.
5. Maintenance of blood pressure.
6. Cardiac arrest and heart failure.

7. Outline of lymphatic circulation & pulmonary circulation.
8. Cardiovascular compensation for postural and gravitational changes.
9. Hypertension.
10. Oedema.
11. Central and peripheral venous pressures.

B. Nervous System and Muscles

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

C. Respiration

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

Evaluation

Total Hours: 200

Text Books:

1. John E.Hall, Arthur C.Guyton, Text Book of Physiology, Saunders, 12th Edition , 2010

2. S.S.Randhawa, Medical BioChemistry ,PV Books, 1 Ed, 2013

3. Chatterjee ,Human Physiology,Central book agency, 4th edition , 1958.

References:

1. L. Prakasam Reddy ,Concise Medical Physiology,JP Brothers,3rd Edi,1999

2. Shetty nandhini, Biochemistry for Physiotherapist and AHS, JP bros, 1 Ed, 2008

3. Sembulingam,Essentials of Physiology , JP Medical Ltd, 6th Ed, 2013

4. Sujith Kumar Chaudhri, Concise medical physiology, New Central Book Agency, 6th Ed , 2011

5. U. Sathyanarayana, Essentials of Biochemistry, Book and Allied (P) Ltd, Kolkata, 1stEd,1999
6. Ganong's review of medical physiology kim .E. Barrett 25th edition.
7. DM .Vasudevan Textbook of biochemistry for medical students 7th edition.

15BPT006 CLINICAL MEDICINE & PHARMACOLOGY 5 0 0 4

Course Objective

The objectives of this course is that after 100 hours of lectures & demonstrations, in addition to clinics the student will be able to demonstrate a general understanding of the diseases that therapists would encounter in their practice. They should have a brief idea of the aetiology and pathology, what the patient's symptoms and the resultant functional disability. This would help the candidates to understand the limitations imposed by the disease on any therapy that may be prescribed.

Broad outline of goals of pharmacological and surgical therapy should be imparted in those Diseases in which physical will be an important component of overall treatment.

Course outcome:

1. This helps in study the of medicines encountered in the management of physiotherapy
2. This course gives basic idea of different diseases and infectionss
2. This provides brief knowledge on symptoms and pathology of diseases
3. This gives knowledge on analysing and interpretating imaging findings into the physical therapy diagnostic process
4. This provides the foundation of differential diagnosis
5. This provides a basic knowledge on physiological and pathological changes during old age
6. This provides information on normal and abnormal developmental disorders in paediatrics

UNIT I **20**

Infections

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

Bacterial – Tetanus

Viral – Herpes Simplex, Zoster, Varicella, Measles, German measles, Hepatitis B, Aids

Protozoal – Filaria

Haematology

1. Define and briefly describe clinical aspects of iron deficiency, B12 and folic acid deficiency anaemia.
2. List types of bleeding diathesis.
3. Describe the clinical features of Haemophilia.

UNIT II **20**

Respiratory Tract

1. Bronchitis - Define, lists etiological factors and describe symptoms.
2. Pneumonia - List types of pneumonia (lobar, broncho, aspiration pneumonia.).
3. List etiologic agents and briefly outline symptoms and complications of pneumonia.
4. Asthma - Define; describe briefly the etiological factors and clinical features of acute exacerbation.
5. Chronic obstructive airway diseases - Define emphysema and chronic bronchitis. Briefly describe the pathology, symptoms of disease and clinical course.
6. Tuberculosis - Describe the aetiology, pathology and clinical features of pulmonary TB.
7. Bronchiectasis - Define and describe briefly the pathology and clinical symptoms of bronchiectasis, bronchopulmonary segments and basis of postural drainage.
8. Emphysema - Define and briefly describe etiological factors.
9. Chest well deformities - Describe funnel chest, Pigeon chest barrel chest, Kyphoscoliosis of thoracic spine.
10. Briefly outline functional disability of occupational, Lung diseases, List pneumoconiosis.

Cardio - Vascular System

1. Cardiac failure - Define. List causes and symptoms.
2. Rheumatic fever - Define and briefly describe aetiology and gross pathology of rheumatic heart disease.
3. Infective endocarditic. - Define and outline aetiology, symptoms and complications.
4. Ischemic heart disease - Outline pathology of IHD, define angina pectoris and Myocardial infarction, Describe the clinical features and broadly outline medical and surgical therapy.
5. Hypertension - Define and outline the clinical features, complications & goals of therapy.
6. Outline pathogenesis and clinical features of pulmonary embolism, Deep vein thrombosis, pulmonary infarct.

7. Congenital heart disease - List ASD, VSD, Fallot's Tetralogy and PDA & briefly outline the pathologic anatomy.

UNIT III **20**

Bone, Joint and Connective Tissue Disorders

1. Brief introduction to concept of autoimmune disease.
2. Define: Systemic lupus erthymatosIs, Polymyositis, Dermatomysitis, Polyarteritis Nodosa, and Scleroderma.
3. Rheumatoid arthritis - Describe aetiology, clinical features and complications, drug therapy and non pharmacological therapy.
4. Osteoarthritis - Describe aetiology, clinical features and complications and review non-steroidal anti-inflammatory drugs and steroids.

Renal Diseases

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

Metabolic Diseases

1. Diabetes - define and outline aetiology. List types of diabetes & complications and briefly outline use of insulin, diet and oral hypoglycaemic agent in management of diabetes.
2. Obesity - Define and outline management.

Geriatrics

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

UNIT IV **20**

ENT, OPTHAMOLOGY, DERMATOLOGY, PAEDIATRICS

E.N.T

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

OPTHAMOLOGY

- Eye lesions in leprosy, including causes, treatment and complications of Igophthalmos.

- Field defects arising from lesions in the visual pathway, their clinical symptoms and methods of testing.
- Effect of Paralysis of ocular muscles and treatment.
- Causes, clinical features and a treatment of disorders of ocular movement occurring in diseases such, as myasthenia gravis, progressive supranuclear palsy and lower motor neuron diseases.
- Causes, clinical features, treatment and prognosis in Visual failure arising from cataract, inflammatory disorders, Vitamin A deficiency, Glaucoma and Trachoma ; emphasis on preventable causes and prophylactic measures.
- Define blindness, and visual disability evaluation. Investigative procedures used for testing visual failure, including basic screening procedures for visual acuity suitable for community health surveys.

DERMATOLOGY

Diseases of skin – leprosy, pigmentary anomalies, vasomotor disorders, tropic ulcers their classifications and management dermatitis, coccal and fungal parasitic and viral infections, skin diseases related to rheumatology, tropical skin diseases and Hyperhydrosis.

PEADIATRICS

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

2. List the maternal and neonatal factors contributing to high risk pregnancy & the neonate: Inherited disease: maternal infections - viral and bacterial: maternal diseases incidental to pregnancy, such as gestational diabetes, pregnancy included hypertension: chronic maternal diseases such as heart diseases, renal failure, tuberculosis, diabetes, epilepsy: bleeding in the mother at any trimester.

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

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

5. Briefly outline associated defects; Mental retardation, microcephaly, blindness, hearing and speech impairment, squint and convulsions. Briefly outline treatment.
   Outline prevention: Appropriate management of high risk pregnancies, prevention of neonatal and postnatal infections, metabolic problems.

6. Muscular dystrophy: Outline various forms, modes of inheritance and clinical manifestation; physical findings in relation to disabilities, progression of various forms

and prognosis. Describe treatment goals in forms which are and are not fatal.

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

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

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

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

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

UNIT V **20**

PHARMOCOLOGY

1. Terminology
2. Classification of drugs
3. Factors influencing the dosage of drugs and its actions.
4. Drug Allergy
5. Principles of drug administration and routes.
6. Definition, action, indications, contra – indications, adverse reactions Of the following :
7. Anti inflammatory
8) Anti epileptic
9) Sedatives, Hypnotics, Tranquilizers
10) Muscle relaxants
11) Alcohol
12) Pulmonary effects of general anesthetic agents

13) Mucolytic agents
    a. Local anaesthetic agents
    b. Narcotic Steroids
    c. Vasodilators
    d. Insulin and oral hypoglycemic agents
    e. Antibiotics – Bactericidal, Bacteriostatic
    f. Chemotherapeutic drugs in leprosy and tuberculosis.

Evaluation

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

Total Hours: 100

Text Books:

1. Davidson,A Text Book of Medicine, Churchill Livingston, 21 st Ed, 2010.
2. S.D.Seth , Text Book of Pharmacology, Churchill Livingstone, 8 Ed, 2012

References:

1. K.D.Tripathi , Essentials of Medical Pharmacology, JayPee Brothers.1Ed, 2007
2. Harrison, Principles of Medicine, , Mc Graw hill , 17 th Ed, 2008.
3. OP Ghai, Essential Pediatrics, CBS Publishers, 7th Ed, 2010.
4. Kumar and Clarks , Clinical medicines, Jaypee Brothers, 3 rd Ed, 2013.
5. Multani, Principles of geriatrics physiotherapy, Jaypee Brothers, 1 st Ed, 2008.
6. Tripathi, Essentials of medical pharmacology, Jaypee Brothers, 7th Ed, 2013.

15BPT007 MICROBIOLOGY / PATHOLOGY 5 0 0 4

Course objective

The objective of this course is that after 100 hours of Lecture, the students will be able to understand about the knowledge of pathology, microbiology including immunity, virology, antiseptics and allergy.

Course outcome:

1. Knowledge about disease and changes in structure and function of cells during disease condition gained.
2. Knowledge about haemorrhage , shock and various blood vessel occlusive disease gained.

3. Knowledge about importance of nutrition, function of nutrition and its deficiency diseases gained
4. Pathogenesis and pathological changes of disease in various body system is understood properly.
5. To Know about the mechanism of autoimmune diseases.
6. Knowledge about the various microorganism, its classification and structure gained.
7. Knowledge about various method of sterilization and its importance gained.
8. Knowledge about infectious diseases gained.
9. To Know about immunity, types and its importance.
10. To Know about the various disease caused by microorganism and its prevention.

UNIT I **PATHOLOGY** **20**

A. Introduction: Disease, concepts of disease, classifications of lesions.
B. Bacterial, viral and parasitic infections a general outline.
C. Cell injury, necrosis and gangrene.Inflammation, healing and repair, Degeneration.
D. Haemorrhage, shock, thrombosis, embolism.
E. Tuberculosis, typhoid.
F. Deficiency diseases.
G. Tumours: Aetiology & spread. Common tumour.
H. Blood: Anaemia, Heart and blood vessels, Common congenital anomalies, Rheumatic & coronary heart diseases.

UNIT II **20**

A. Respiratory system: Pneumonia, Bronchiectasis, Emphysema, Chronic bronchitis, Asthma.
B. Bone and joints : Autoimmune disease, Septic arthritis, Osteomyelitis.
C. Skin: Leprosy.
D. Urinary system.
E. Central nervous system: CNS infections, vascular disorders.
F. Rheumatoid Arthritis.
G. Scleroderma and Psoriasis.
H. Diseases of muscle including Poliomyelitis, Myopathies.
I. Volkmann's ischemia.

UNIT III **MICROBIOLOGY** **20**

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

UNIT IV **20**

1. Disinfection and antiseptics.
2. Sterilisation and asepsis.
3. Antibacterial agents - fundamental aspect. Susceptibility test
4. Infection - source of infection.
   - portals of entry.
   - Spread of infection.

UNIT V **20**

1. Immunity - natural and acquired, non-specific immunity.
2. Allergy and hypersensitivity.
3. Outline of common pathogenic bacteria and the diseases produced by them. Treatment and prevention.
   1. Respiratory tract infections.
   2. Meningitis.
   3. Enteric infections.
   4. Anaerobic infections
   5. Urinary tract infections.
   6. Leprosy, tuberculosis and miscellaneous infections.
   7. Wound infections.
   8. Sexually transmitted diseases.
   9. Hospital acquired infections.
4. Pathogenic Yeasts and fungi.
5. Virology -Virus infections, with special mention of Hepatitis, Poliomyelitis & Rabies.

Evaluation

Total Hours:100

Text Books:

1. SatishGupte,The Short text book of Medical Microbiology by, JayPee Brothers,2nd Ed,2004.
2. Ananthanarayananan&JayaramPaniker,Text book of Micro biology, Orient Longman,9th Ed,2013.
3. Harsh mohan, Text book of Pathology, Jaypee brothers, 7th edition-2015.

References:

1. Kumar, Essentials of Microbiology , JP, 1st Ed, 2014.
2. Datta, Textbook of Pathology, JP , 2nd Ed, 2004.

15BPT008 BIOMECHANICS – I 5 0 0 4

Course Objectives

The objectives of this course is that after 100 hours of lectures and demonstrations the student will be able to demonstrate an understanding of the principles of Biomechanics and Kinesiology and their application in the health and disease pertaining to muscles and joints of upper limb.

Course Outcome:

1. Knowledge of the basic elements in normal joint structure and function and understanding the changes that function can induce in that structure.
2. All skeletal muscles adhere to general principles of structure and function. During human movements muscles not only provide the force to move the limbs but also provide force for stabilization.
3. The structure and functions of accessory muscles of ventilation.
4. The TM joint is structurally and functionally unique. The influence of the cervical spine upon the TM joint must always be recognized.
5. The more distal joints of the upper extremity depend on the dual mobility and stability roles of the shoulder complex.
6. The interrelationship between the elbow complex and wrist and hand complex makes normal functioning of the elbow vitally important.
7. The motor control of and sensory feedback from the wrist and hand alone occupy more space topographically on the primary and sensory cortices of the brain.
8. The student analyse normal human movement from a global perspective , integrating biomechanics, muscle mechanics and motor control theory.
9. Introducing the student to use of these methods for evaluation and treatment of disorders of the musculoskeletal system.

UNIT I **20**

Joint Structure and Function

1. Describe the basic principles of joint design and a human joint.
2. Describe the tissues present in human joints including dense fibrous tissue, bone, cartilage and connective tissue.
3. Classify Joints-synarthosis, Amphiarthrosis, Diarthrosis, Sub classification of synovial joints.
4. Describe joint function, kinematic chains, range of motion.
5. Describe the general effects of injury and disease.
6. Dislocation, degeneration (OA), R.A, Soft tissue injury, Sprain, Strain, Capsulitis, Bursitis.

UNIT II **20**

Muscle Structure and Function

1. Describe Mobility and Stability functions of muscles.
2. Describe elements of muscle structure- Composition of a muscle fiber, the motor unit, types of muscle fibers, muscle fiber size, arrangements and number, muscle tension, length-tension relationship.
3. Describe types of muscle contraction, speed and angular velocity, applied load, voluntary control, Torque & Isokinetic exercise.
4. Summarise factors affecting muscle tension.
5. Classify muscles: Spurt and Shunt muscles, Tonic and Phasic muscles.
6. Factors affecting muscle function: Type of joint and location of muscle attachment, number of joints, Passive insufficiency, Sensory receptors.

UNIT III **20**

a) Thorax & Chest Wall

1. Review of Basic Anatomy related to chest, wall.
2. Diaphragm & its function.

b) Temporomandibular joint

1. Anatomy of Temporomandibular joint, ligaments, capsule & muscles that act at Temporomandibular Joint
2. Movement of Temporomandibular joint.
3. Role of temporomandibular joint in equilibrium

UNIT IV **20**

a) The Shoulder Joint

1. Describe the structural components of the shoulder complex including the articulating surfaces, capsular attachments and ligaments and movements of the following joints.
   i) Sterno-clavicular
   ii) Acromio-clavicular
   iii) Scapulo-thoracic
   iv) Gleno-humeral.

2. Describe the function of the shoulder complex including dynamic stability of the glenohumeral joint, musculotendinous cuff, Stabilisation of the dependent arm, Scapulohumeral Rhythm, Scapulothoracic and glenohumeral contributions.

3. Describe the muscles of elevation (Deltoid, Supraspinatus, Infraspinatus, Teresminor, Subscapularis, Upper Trapezius, Lower Trapezius, Serratus anterior, Middle Trapezius & Rhomboids).

4. Describe the muscles of depression (Latissmus dorsi, Pectoralis, Teres major, Rhomboids).

5. Muscles functioning around shoulder.

6. Effect of injury & aging.

7. PA, dislocation, ligament instability.

b) The Elbow joint

1. Describe the structure of the Humero-ulnar and Humeroradial joints including articulating surfaces, Joint capsule Ligaments & Muscles.
2. Describe the function of the Humero-ulnar and Humeroradial joints including the Axis of motion, Range of motion, Muscle action.
3. Describe the structure of the superior and inferior radioulnar joints.
4. Describe the function of the superior and inferior radioulnar joints.
5. Describe the mobility and stability of the Elbow complex and its relationship to Hand and Wrist.
6. Describe the effects of injury & aging.
7. Dislocation, Bursitis Dislocation , Ligamental instability , Cubitus varus, Cubitus valgus.

UNIT-V **20**

The Wrist and Hand complex

1. Describe the wrist complex including Radiocarpal joint, Midcarpal joint and the Ligaments of the wrist complex.
2. Describe the function of the radiocarpal and midcarpal joints including the movements and muscles involved.
3. Describe the Hand complex including : Structure of fingers (Carpometacarpal, Metacarphalangeal and interphalangeal joints of fingers, ligaments & range of motion).
4. Describe the finger musculature including Extrinsic & Intrinsic finger flexors and the Extensor mechanism on the MCP, PIP and DIP joint function and intrinsic finger muscles.
5. Describe the structure of the Carpometacarpal, MCP and IP joints of thumb.
6. Describe the Thumb musculature including the Extrinsic and Intrinsic thumb muscles.
7. Describe Precision, Power, Cylindrical, Spherical & Hook grips.
8. Describe Precision handling, Pad to pad, Tip to tip and Pad to side prehension and Functional position of wrist and hand.
9. Effect of injury & aging, dislocation, deformities of hand paralysis of hand muscles.

Evaluation

Total Hours: 100

Text Book:

1. Cynthia C Norkins, Joint Structure and Function – a Comprehensive Analysis , Jaypee Brothers, 5Ed, 2010.

References:

1. Gary l Soderberg, Kinesiology – Application to Pathological Motion – (especially for patho biomechanics) Williams & Wilkins,2nd Ed, 2007

2. I.A.Kapandji, Physiology of joint structure- Churchill Livingston pub, 6th Ed, 2010.

15BPT009 BIOMECHANICS – II 5 0 0 4

Course Objectives

The objectives of this course is that after 100 hours of lectures, demonstrations that the student will be able to demonstrate an understanding of the principles of Biomechanics and Kinesiology and their application pertaining to spine, lower limbs and locomotion.

Course outcome:

1. Categorize the structure & functions of cervical, thoracic, lumbar and sacral vertebra.
2. Becomes familiar with effects of injury in the spinal column and various developmental deficits.
3. Understands general and specific features of the hip, knee, and ankle complex.
4. Identifies the biomechanical aspects of the pathological conditions around the hip, knee, and ankle joint
5. Differentiate the structure and functions of the tibio-femoral and patella-femoral joints
6. Evaluate the pathological basis of injury and aging of the hip, knee and ankle complex
7. Learns about different terminologies related to the ankle-foot complex
8. Analyse the different postural malalignment like scoliosis, kyphosis, lordosis and fixed flexion deformity
9. Knows about the variation between different pathological gait patterns
10. Become familiar with new and traditional gait terminologies and can able to categorize the determinants of gait.

UNIT I **20**

The Vertebral column

1. Describe the general structure and function of the vertebral column including: Primary and secondary curves, Articulations, Ligaments and muscles, typical vertebra, intervertebral disc.
2. Describe factors affecting stability and mobility.
3. Regional structure and function of cervical, dorsal, lumbar and sacral vertebrae.
4. Describe the muscle of the vertebral column – Flexors, Extensors, Rotators and Lateral Flexors.
5. Describe the effects of injury and developmental deficits.
6. Scoliosis, Kyphosis, Lordosis, Spondylosis, Spondylolisthesis, Spondylitis, IVDP

UNIT II **20**

The Hip Complex

1. Describe the general features of the hip joint including the articulating surfaces on the pelvis & the femur, Angulations, Angle of inclination, Angle of Torsion, internal architecture of femur and pelvis, Joint capsule, Ligaments & Muscles (flexors, Extensors –one joint extensors, two joint extensors, Adductors, Medial rotators and Lateral rotators.)
2. Describe the function of the hip – Rotation between pelvis, lumbar spine and hip: Pelvic motion, Anterior posterior pelvic tilting, Lumbar pelvic rhythm, Lateral pelvic tilting, Pelvic rotation.
3. Summarise the pelvic motions in the static erect posture.
4. Describe Femoral motion.
5. Describe Hip stability in Erect Bilateral stance, Sagittal plane equilibrium and Unilateral stance.
6. Describe reduction of forces with Weight shifting and using a cane and deviations from normal in muscular weakness & Bony abnormalities.
7. Effect of injury & aging, coxa vara, coxa valga, dislocation, muscle paralysis, ligament instability

UNIT – III **20**

The Knee Complex

1. Describe the structure of the Tibiofemoral joints: Articulating surfaces on femur and tibia, the menisci, joint capsule and bursa, Ligaments and other supporting structures, Anterior- posterior and Medial- Lateral stability: Muscle structure: Knee flexors & extensors: Axes of knee complex: Mechanical axis, Anatomic axis and axis of motion.
2. Describe the function of the Tibiofemoral joint: Range of motion, Flexion and extension, Rotation, Abduction and Adduction, locking and unlocking, Function of Menisci and Muscle function.
3. Describe the structure of the Patellofemoral joint.

4. Describe the function of the Patellofemoral joint.
5. Describe the effects of injury and disease in the Tibiofemoral and Patellofemoral joints.
6. Describe the effect of injury & aging, genu valgum, genu varum, osteoarthritis, meniscal injury, ligamental instability, bursitis, chondromalacia patella.

UNIT – IV **20**

Type Ankle – Foot Complex

1. Describe the structure, ligaments, axis and function of the following: ankle joint, tibiofibular joints subtalar joints, Talocalcaneonavicular joints, Transverse Tarsal joint, Tarsometatarsal joint, Plantar arches, Metatarsophalangeal joint, Interphalangeal joints.

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

   a. Weight distribution in the ankle joint during unilateral & bilateral stance.

   b. Effects of injury & aging, muscle paralysis, posture, Pes planus, pes cavus, Hammer toe, claw toe, Hallux valgus.

UNIT V **20**

Posture

1. Describe the effects of gravity and indicate the location of the gravity line in the Sagittal plane in optimal posture.
2. Analyse posture with respect to the optimal alignment of joints in the antero-posterior and lateral views.
3. Postural malalignment in scoliosis, kyphosis, Lordosis, fixed flexion deformity.

Gait

Define:

1. The stance, swing and double support phases of gait.
2. The subdivisions of the stance and swing phases of gait.
3. The time and distance parameters of gait.
4. Gait determinants
5. Gait analysis in sagittal & frontal plane
6. Pathological gait:
   Ataxic, circumduction, High stepping gait, short stepping gait, scissoring gait, antalgic gait, Waddling gait, lurching gait, quadriceps palm gait, sailors gait.

Describe:

1. Joint motion at the hip, knee and ankle for one extremity during a gait cycle.
2. The location of line of gravity in relation to the hip, knee and ankle during the stance phases of gait.

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

Explain:

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

Compare:

1. Motion of upper extremities and trunk with motion of pelvis and lower extremities.
2. The traditional gait terminology with the new terminology.
3. Normal gait with a gait in which there is unequal leg lengths.
   Posture including postural deviation.
   Gait including gait analysis and pathological gait.

Evaluation

Total hours: 100

Text Book:

1. Cynthia C Norkins, Joint Structure and Function – a Comprehensive Analysis, Jaypee Brothers, 4th Edition, 2012.

References:

1. Gary l Soderberg, Kinesiology – Application to Pathological Motion – (especially for patho-biomechanics) Williams & Wilkins, 2nd Edition, 2007

2. I.A. Kapandji, Physiology of joint structure- Churchill Livingston pub, 3rd Edition, 2005
3. Zeevi Dvir, Clinical Biomechanics, Churchill Livingstone, 2000.

15BPT010 THERAPEUTICS EXERCISE & MASSAGE 8 0 2 6

Course Objective

The objectives of this course is that after 200 hours of lectures, demonstrations, practical and clinics the student will be able to list the indications and contra - indications of various types of exercise therapy, demonstrate the different techniques, and describe their effects.

Course Outcome:

1. This provides fundamentals of muscle and joint function
2. To gain knowledge on joint range and their measurements
3. This demonstrates the active and passive movements of each joint
4. This illustrates practical kmowlege on passive movement, resisted exercise and muscle grading
5. This demonstrates posture, movement retraining, balance and co ordination.
6. This illustrates pathological gait and use of different mobility aids
7. This provides basic information on therapeutic massage and its effect on different systems of the body
8. This demonstrates face, neck, back, upper limb and lower limb massage

UNIT I **EXERCISE THERAPY** **40**

Introduction

- Definition, types of exercise, Principles

Muscle

- Definition, types, muscle work, angle of pull & mechanical efficiency of muscle
- starting position:
  Types muscle work, forces involved, equilibrium
- Derived position:
  Types muscle work, forces involved, equilibrium

Movement

Explain the following terms, with suitable examples:

1 Classifications of movement: Active, Passive.
2 Effects of exercise: Physiological effects, Therapeutic effects.
3 List the indications and contra - indications of the following and demonstrate the technique for each:

Joint Mobility

Describe the following:

1. Joint ranges (outer range, middle range, inner range), Individual joint structures, joint movements (anatomic, accessory), causes of joint range limitations, prevention of joint stiffness, positioning (physiological resting position).
2. Passive range of movement, methods of relaxation, active exercises, manual mobilisation techniques, gliding techniques.
3. Accessory movements: Posterior glide, Anterior glide, Superior and Inferior glide, Traction and approximation.
4. Indications and contra - indications for mobilisation of individual joints and demonstrate practically the various mobilisation techniques for individual joints and teaching home programme.

Goniometry

1. Describe the following: Normal range of various joints. Description of gonimeter, Range of measuring system (180 foot trunk and head). Techniques of goniometry.
2. Demonstrate measuring of individual joint range using goniometer.

Pelvic Tilt

Describe the following:

1. Normal pelvic tilts, Alterations from normal, anterior tilt (forward), Posterior tilt (backward), Lateral tilt.
2. Muscles responsible for alterations and pelvic rotation.
3. Identification of normal pelvic tilt, pelvic rotation and altered tilts and their corrective measures.

Practicals:

Relaxation, Accessory movements, Goniometry and pelvi tilt

UNIT II **40**

PASSIVE MOVEMENTS: Relaxed passive, Mobilizing passive (forced P.M. manipulations,Serial manipulations) Demonstrate passive stretching of following muscles / muscle groups and describe the indications. contra – indications, physiological effects, advantages and disadvantages of each.

Upper Limb: pectoralis major, biceps brachii, triceps brachii, long flexors of the fingers.

Lower Limb: rectus femoris, iliotibial band (tensor fascialata), gastrocnemius soleus, Hamstrings,hip abductors, ilio- psoas,Quadriceps.

Neck: Strernocleidomastoid

Resisted exercise

1. Describe the types, techniques, indications and contra-indications, physiological effects, advantages and disadvantages and demonstrate three resisted exercises in progression for the following muscle groups:
   Shoulder abductors, Shoulder forward flexors, Triceps Brachii, Hip abductors, Hip flexors, Quadriceps femoris, Abdominal muscles, Back extensors.

1. Describe the home programme for strengthening neck muscles and back extensors

Progressive Resisted Exercises

1. Describe the following exercises, their advantages and disadvantages and demonstrate the techniques of the following types of PRE: Fractional system, Mac Queen's set system, Mac Queen's power system, Delorms, Oxford.
2. Demonstrate the skill to grade upper and lower limb, neck and trunk muscles. Delorms, Dumbells, Sand bags Pulleys, Power board and Weigh cuffs.

Muscle Grading

1. Describe the types of muscles grading, principles of muscle testing key to muscle grading, techniques of muscle testing - easy test and hard test and functional test (ADL).
2. Demonstrate the skill to grade upper and lower limb, neck and trunk muscles.

Re - Education of Muscle

1. Muscle weakness causes of muscle paralysis / weakness prevention of muscle wasting, early, re-education.
2. Describe the following in re-education of muscles: the term re-education of muscles,

Techniques, Spatial summation, Temporal summation.

3. Demonstrate the various re-education techniques and facilitating methods on various groups of muscles.
4. Demonstrate the progressive re-education exercises in strengthening using various applications: (according to their muscle power) Grade I - Grade V.
5. Muscle strengthening – PNF Hold relax, slow reversal, Rhythmic stabilisation, repeated contractions.

UNIT III **40**

Suspension therapy

1. Describe the basic physics of simple pendulum and pendular movement.
2. Describe types of suspension:vertical, axial and eccentric fixation (changing/shifting point of suspension)
3. Explain the indications and techniques for each type of suspension
4. Demonstrate axial and eccentric fixation for mobilizing and strengthening and reeducation of various muscles and joints.

Hydrotherapy

1. Definition,Forces,Principles of Hydrotherapy
2. Indications, Contra-indicaions,Precautions- Hydrotherapy

Co - ordination

1. Define co-ordination , Nervous control of co- ordination,
2. Inco- ordination – Definition, causes and its management, Frenkel's Exercise
3. Demonstrate Frenkel's Exercise
4. Describe in coordination due to : Lower motor neuron lesions (flaccidity), Upper motor neurone lesions (spasticity), Cerebellar lesions, loss of kinaesthetic sense (tabes dorsalis, syringomyelia, leprosy), Imbalance due to muscular disease.

Posture

1. Normal & Abnormal Posture
2. Good & Bad posture. Factors responsible for good posture causes for faulty posture.

Define balance (static & dynamic)

1. Re – education of balance
2. Re – education techniques for balance

UNIT IV **40**

Abnormal Gaits

1. Describe abnormal Gaits, Causes for Abnormal Gaits
2. Demonstrate Abnormal Gaits, Gait Training for Abnormal Gaits.

Mobility Aids

1. Describe Mobility Aids.
2. Describe the indications, Contra-Indications, Measurements, Advantages and Disadvantages, precautions of the Following Mobility Aids-canes, Crutches, Walking Frame, Wheel chair
3. Demonstrate the ambulation and transfers using the above Mobility Aids.

Hazards of bed rest

1. Hazards of prolonged bed rest
2. Principles & Methods of Maintenance
3. Individual & Group exercises – principles
4. Table & Scheme of exercises.

UNIT V MASSAGE 40

Describe briefly :

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

Define and describe the various manipulation techniques used in massage.

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

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

1. Massage for upper limb :
   a. Scapular region
   b. Shoulder joint
   c. Upper arm

d. Elbow joint
e. Forearm
f. Wrist joint
g. Hand

2. Massage for lower limb :
    a. Thigh
    b. Knee joint
    c. Leg
    d. Foot (including ankle joints and toes)

3. Massage for back:
    a. Neck and upper back
    b. Middle and lower back
    c. Gluteal region, arm & leg

4. Massage for the face:

Evaluation **Total Hours:200**

Text Books:

1. Dena Gardiner , Principles of Exercise therapy, , Bell and Hymes, 4th Ed, 1981.

2. Beard , Therapeutic Massage, , WB Saundres, 3 rd Ed, 1981

References:

1. Carolyn Kisner , Therapeutic Exercise, ,Jaypee Brothers , 6th Ed,2012

2. Margeret Hollis , Practical Exercise therapy, ELBS, 4 Ed, 2004

3. Cynthia Norkin , Practical Goniometry, MCgraw Hill, 3Ed, 2008

4.Kendell, manual Muscle Testing,ELBS, 2Ed, 1997

5.Sebastian, Principles of Manual Therapy, Jaypee Brothers , 2 nd Ed, 2013

7. Sinha, Principles and Practice of therapeutic Massage, Jaypee Brothers, 2 nd Ed, 2010.

15BPT011 ELECTROTHERAPEUTICS 8 0 2 6

Course Objectives

The objective of this course is that after 200 hours of lectures, demonstration, practicals and clinical the student will be able to list the indications and contra – indications of various types of electrotherapy, demonstrate the different techniques, and describe their effects.

Course outcome:

1. Knowledge about various types of therapeutic currents and its physiological , therapeutic effects gained.
2. Knowledge about pain and pain modulation mechanism gained.
3. Diagnosis of neuromuscular dysfunction by electro-diagnostic test is known.
4. Knowledge about different types of low and medium frequency currents. Its indication, contraindication, method of application gained.
5. Knowledge about high frequency currents and its effects , uses gained.
6. Knowledge about LASER therapy and its uses gained.
7. Effects of moist heat therapy and method of application is understood.
8. Knowledge about cryotherapy and its method of application, effect and uses gained
9. Practical application of electrotherapy modalities for various conditions gained.

UNIT I **40**

Muscle – Nerve Stimulation:

1.Low frequency stimulation current

a.Bio – electricity : electrical charge within body
b.Types of low frequency currents must be taught under the following sequence;
Definition : Production (Brief) waveforms – duration.
Physiological effects
Therapeutic effects
Uses (including contra indications)
Technique of application

i. Interrupted DC
ii. Faradic current
iii. Surged Faradic current
iv. Pain relieving current (TENS)
v. Diadynamic currents

c. Physiology of pain, pain modulation and gate control theory.
d. Overview pathophysiology of nerve lesion – principles of selection of modes for assessment of nerve Muscle function: galvanic – faradic test, S.D. curve – principles, technique and interpretation.

2.Medium frequency currents:

All types of medium frequency currents must be taught under the following sequence:
a. Definition; Production (Brief), waveforms, Duration and frequency
b. Physiological effects
c. Therapeutic effects
d. Uses (including contraindications).
e. Technique of application
    i. Russian current
    ii. Interferential current

Direct Current :
1. Physiological and Therapeutic effects.
2. Dangers of DC
3. Therapeutic uses – Iontophorosis
a. Theory
b. Physiological effects and uses of various iontophorosis
c. Effects of various ions,Techniques of iontophorosis for pain relief, reduction of oedema, wound healing and hyperhydrosis.

UNIT II **40**

High Frequency currents
I.Properties of High Frequency Currents
1. Sustained and unsustained
2. Damped and undamped
3. Impedance
4. heat production
5. Define Nodes and Antinodes. Explain with examples the fields, set up, etc.

II.Types of high frequency currents
1 .Short wave Diathermy
i. Production of High Frequency current
ii. Construction of apparatus with diagram
iii. Tuning of machine
iv. regulations of current
v. Physiological and therapeutic effects.

2. Methods
i. Condenser field
ii. Cable method
iii. Effects of 2 fields

3.Technique of applications.
i. Testing machine
ii. Preparation of patient
iii. Types of electrodes

iv. position and size of electrodes
v. Application of current
vi. Dosage

4.Specific Requirement – Application of SWD for various conditions.

i. Condenser field method
   - Spacing need and type
   - Position
   - Application

ii. Cable methods types of application.

5.Dangers and precautions

6.Pulsed diathermy : Indications and contra indications.

7. Long wave diathermy.

Practicals

Demonstrate the application of SWD to all joints for various conditions and the students should practice on model each other.

UNIT III **40**

Electromyography and Bio – Feedback

Principles, Instrumentation, Application and uses.

Practicals

All the techniques for low frequency and medium frequency current therapy must be demonstrated. The students must practice all the Technique taught to them on models/each other.
Records should be maintained by the students for skills practiced.

Actiontherapy

Describe the following:
a. Define heat and temperature (in brief).
b. Physical effects of heat. (in brief)
c. Transmission of heat (in brief)
d. Sources of therapeutic heating and its physiological effect.
e. Radiant energy and its properties.
f. Electro magnetic spectrum production and its properties.
g. Laws governing radiation
h. Skin
   i.Structure
   ii.Depth of penetration

I. Laser

Define laser and briefly outline its therapeutic indications, contra indications efficacy and precautions.

II. Infra red radiation

a. I.R. Rays wavelength and frequency
b. Types of generators and its working
c. Physiological effects
d. Therapeutic effects and uses
e. Technique of irradiation
    i. Choice of apparatus
    ii. Preparation of patient
    iii. Arrangement of lamp
    iv. Application of treatment
    v. Duration and frequency
f. Dangers
g. Indications and contra indications.

III.Ultra violet radiation

1. Physics
    - Electric arc
    - Process of ionization
    - Transmission of current through gases
2. Types of lamps
3. Construction of lamps
    - High pressure mercury vapour lamps
    - Kromayer lamp
4. Tridymite formation
5. Cooling
6. Spectrum – mercury vapour lamps(in brief)
7. Fluorescent tube for U.V. production
8. PUVA apparatus
9. Care of lamp
10. Physiological and therapeutic effects – in detail photosensitization
11. Indications, contra – indications and dangers.
12. Conditions (common) in which above treatment is given.
13. Sensitizers
14. Filters
15. Comparison between I.R. and U.V.

IV. Micro Wave Diathermy

- Definition, production, Physiological & therapeutic effects , contra indication

V. Traction

- Mechanism, types, instrumentation, Physiological & therapeutic effects , contra indication

UNIT IV **40**

Paraffin wax and moist heat

A. Methods of heating tissues.
B. Effects and indications
C. Circulatory effects
D. Effects on sensory nerves
E. Effects on skin
F. Indications and contra indications.
G. Its uses in various conditions.

Ultrasonic Therapy

A. Definition
B. Properties of U.S.
   1. reflection
   2. Transmission
   3. absorption (in detail)
C. Properties of ultrasonic fields: depth of penetration in relation to
   a. intensity and b.frequency

D. Effects on tissue (Both Physiological and therapeutic)
   1. Thermal
   2. Mechanical
   3. Chemical and biological
E . Contra indications
F . Coupling media
G. Pulsed ultra sound therapy
H. Principles of pulsed ultra sound
I. Differentiation between continuous US and pulsed US
J. Effects and uses of pulsed US.
K. Techniques of application:
   1. Methods
      a. Direct contact
      b. Water bath
      c. Water bag
   2. Dosage in acute and chronic conditions
L. Dangers
M. Indications and contra indications

Practicals

Demonstrate application of US to various tissues of the body and students should practice on each other on model

UNIT V **40**

Cryotherapy

A. Physical principles
B. Physiological effects and uses
    1. Circulatory responses and uses
    2. Normal response and uses
C . Techniques of application
    1. Preparation
    2. Application
    3. Modification
D. Methods of application
    1. Ice pack
    2. Ice towel
    3. Immersion
    4. Ice cube
E. Indications and contra indications to treatment.

Practical Records

Students should be maintaining records for practical classes in Electrotherapeutics II.

Evaluation

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

Total Hours:200

Text Books:

1. Clayton's Electrotherapy – Therapy and practice – Angela Forster, All India Traveler Book seller.9th Ed, 2012.

2. John Low and AneeReed ,Electrotherapy Explained –, Butterworth Heinmann Pub. 4th Ed, 2003

3. Edward BellisClayton , Nigel Palastanga, Claytons Electrotherpy:Theory and practice, 9th Ed, 1985

4.Valma, J.Robertson, Eletrotherpy explained, Butterworth , Heinmann, Elsevier, 4th Ed, 2014.

References:

1. Jagmohan Singh, Electrotherapy ,Jaypee Brothers, 2nd Ed, 2012.

2. Basanta Kumar Nanda, Electrotherpy explained, Jaypee Brothers, 1st Ed, 2006.

3. Tim Watson Electrotherpay evidence based practice, Churchill Livingston, 12th Ed, 2008.

15BPT012 GENERAL SURGERY, PLASTIC SURGERY & BURNS 5 0 0 4

Course Objectives

The objectives of this course is that after 100 hours of lectures and demonstrations, in addition to clinics the student will be able to demonstrate a general understanding of the diseases that therapists would encounter in their practice. They should have a brief idea of the aetiology and pathology, about the patient's symptoms and the resultant functional disability. This would help the candidates to understand the limitations imposed by the disease on any therapy that may be prescribed.

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

Course Outcome:

1. Knowledge of principles of surgery and the application of basic sciences to surgical treatment.
2. Describes abdominal surgical incisions.
3. Analysis the causes, indication, types of incisions, pre operative assessment , procedure, post operative assessment , its complications and management for various surgeries.
4. Evaluation of burns and its management.
5. Principles of plastic surgery and splinting procedures
6. Knowledge about Flap design, tissue handling, haemostasis and oedema control.
7. Role physiotherapy in general surgery.
8. The students assess, evaluate and frames physiotherapy management in Pre and post operative conditions.

UNIT I **20**

Describe the regions of abdomen and its surgical incisions.

UNIT II **20**

Outline the site extent of incision indications & post operative complications in

a. Nephrectomy
b. Appendicectomy
c. Herniorrhaphy
d. Mastectomy
e. Thyroidectomy
f. Colostomy
g. Adrenalectomy

h. Cystectomy
i. Hysterectomy
j. Prostatectomy
k. Cholecystectomy
l. Ileostomy.
m. Gastrectomy

UNIT III **20**

Structure and functions of skin.

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

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

UNIT IV **20**

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

UNIT V **20**

Physiotherapy goal setting in General Surgery, Plastic Surgery & Burns

Evaluation

Total Hours:100

Text Books:

1. Hemdon, Total burn care, , CBS publishers,4th Ed ,2012

2. Janis , Essentials of Plastic surgery, CBS Publishers, 2nd Ed, 2014.

3. Jeschkie, Handbook of burns , vol – I , CBS Publishers, 2012,

References:

1. S.Das , A practical guide to operational surgery,4th Edition SD publications,2004.

2. Grabb , Plastic Surgery , Jaypee Brothers , 2nd Ed, 2002.

3. Cash's text book of general medicine , JP, 3Ed, 2012

4. Tidys Physiotherapy, Mosby Pub, 15th Ed, 2013.

15BPT013 CLINICAL NEUROLOGY & PSYCHIATRY 8 0 2 6

Course Objectives

The objective of this course is that after 200 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of neurological conditions causing disability and their management.

Course outcome

The following were the outcome measures of this course

1. Identify, analyse and apply the neuro anatomical basis of brain for various clinical neurological conditions.
2. Becomes familiar with neuro physiological basis of neurological conditions which drives the students to evaluate the patients with certain disorders
3. Learns about the medical and surgical management of the congenital and childhood disorders and able to differentiate the clinical features between those conditions
4. Become beware of the causes, signs, symptoms, clinical management of the cerebro vascular accidents, head and spinal cord injury
5. Students can evaluate themselves about the congenital and acquired diseases of the spinal cord
6. Would be able to characterize the demyelinating and the degenerative disease of the brain
7. Recognizes the progression of the diseases like myopathies, infections and peripheral neuropathy
8. Can able to assess the neurological functions of the brain and spinal cord
9. They will come to know about the evaluation of the higher mental status posture and gait abnormalities.
10. Offer opportunities to know about the standards of case for psychiatric conditions, and physiotherapist and patient relationship.

UNIT I 40

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

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

UNIT II **40**

Clinical Features & Management

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

1. Congenital and childhood disorders.
    a. Cerebral palsy.
    b. Hydrocephalus.
    c. Spina Bifida.
    d. A.C. malformation, Dandy-Walker syndrome

2. Cerebrovascular accidents.
    a. General classification, thrombotic, embolic, haemorrhagic & inflammatory strokes.
    b. Gross localisation and sequelae.
    c. Detailed rehabilitative programme.

3. Trauma - broad localisation, first aid and management of sequelae of head injury and spinal cord injury – paraplegia, quadriplegia, neurogenic bladder – types

4. Diseases of the spinal cord.
    a. Craniovertebral junction anomalies.
    b. Syringomyelia.
    c. Cervical and lumbar disc disease.
    d. Tumours.
    e. Spinal arachnoiditis.
    f. T.B. Spine

5. Demyelinating diseases (central and peripheral).
    a. Guillain- Barrie Syndrome.
    b. Acute disseminated encephalomyelitis.
    c. Transverse myelitis.
    d. Multiple sclerosis.
6. Degenerative disorders.
    a. Parkinson's disease.
    b. Dementia.

UNIT III **40**

1. Infections.
    a. Pyogenic Meningitis sequelae.
    b. Tuberculous infection of central nervous system.
    c. Poliomyelitis.
    d. Brain abscess

2. Diseases of the muscle including Myopathies: Classification, signs, symptoms, progression and management.
    a. Myopathies
    b. Muscular dystrophy
    c. Spinal muscular atrophy

3. Peripheral nerve disorders.
    a. Peripheral nerve injuries, localisation and management.
    b. Entrapment neuropathies.
    c. Peripheral neuropathies including diabetic neuropathy

4. Disorders of Autonomic nervous system

5. Toxic and metabolic disorders of nervous system

6. Deficiency disorders

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

UNIT IV **40**

Assessment

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

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

UNIT V **40**

Introduction to Psychiatry

1. Introduction – classifying mental disorders (DSM – IV) – standards of case for psychiatric – psychiatric interviewing – Therapeutic and Non-therapeutic communication – legal and ethical issues Rights of the mentally ill – physiotherapist and patient relationship.

Disorders of children and Adolescents

1. Disorders of the Elderly
2. Schizophrenic disorders
3. Mood Disorders
4. Anxiety Disorder
5. Somatoform Disorders
6. Dissociative Disorders
7. Personality disorders
8. Eating disorder
9. Sleep Disorder
10. Therapies

Evaluation

Total Hours:200

Text books:

1. Susan B'O' Sullivan, Physical rehabilitation, Jaypee, 6th ed. – 2014
2. Kenneth W Lindsay, Neurology and Neurosurgery – illustrated, Churchil Livingston, 5Ed, 2010

References:

1. Sir Ruger Bannister, Brain and Bannister's Clinical Neurology, Oxford,7th Edition, 1992
2. Hokmes Bullock, Introduction to nervous System, WH Freeman and company,3rd Edition ,2002
3. Carpenter, Mental Health & Learning disability, Eurett Pub, 2nd Edition, 1998
4. Ropper, principles of Neurology, JP, 10th Edition, 2014
5. Raymond D. Adams, Principles of Neurology, 5th Edition, 1993

15BPT014 PHYSIOTHERAPY IN NEUROLOGY 8 0 2 6

Course Objectives

The objectives of this course is that after 200 hours of lectures, demonstrations, practical and clinics the student will be able to identify disability due to neurological dysfunction, set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situations to restore neurological function.

Course outcome:

1. Evaluate, differentiate, and comprehend the neuroanatomical and neurophysiological basis of the structure and functions of the brain and spinal cord.
2. Become well known about the analysis of the different aspects of the neurological physiotherapy assessment which includes assessment of Central nervous system and peripheral nervous system.
3. Learn about the principles of various treatment techniques and thereby students will be able to construct their own treatment protocol for neurological conditions.
4. Understand the clinical features and management of the paediatric, adult neurological conditions that includes congenital & acquired disorders.
5. Identify the motor, sensory perceptual dysfunction of the adult and paediatric neurological conditions.
6. Know about the clinical approaches to address the weakness, abnormal tone, posture and motor control deficits and lack of endurance.
7. Become beware of neuro-intensive care unit patients and physiotherapy management of the cerebrovascular accidents, Head injury and spinal cord injury in the intensive care unit.
8. Demonstrate the methods of evaluation for physical dysfunction & management of disabilities for conditions like SCI, polio, Brain injury, PNL, and chronic cardio-respiratory dysfunction
9. Practical application of integrated approach like MRP, Bobath, Brunnstroms and Roods approach.
10. Practical demonstration of the assessment and physiotherapy management of various neurological conditions.

UNIT I **40**

Review of Neuroanatomy and Physiology:

Review the structure and function of a) neuron b) synapse c) supporting tissue. Review the organisation and function of a) cerebral hemispheres b) cerebellum c) spinal cord d) peripheral nerves e) pyramidal system f) extrapyramidal system. Review the factors influencing alpha motor neuron activity. Review the neurological basic of muscle tone and movement and demonstrate the following a) hypotonia b) hypertonia - spasticity and rigidity c) ataxia d) athetosis e) chorea.

Principles of Assessment:

Review a) skills in history taking b) assessment of higher functions, cortical sensations, cranial nerves, dorsal column sensations and pain & temperature sensations c) assessment of motor function grading of muscle power, assessment of range of movement, balance and coordination d) assessment of superficial and deep reflexes e) assessment of reflex maturation in terms of stimulus, position, negative/positive reactions and their significance f) assessment of gait – both normal and abnormal (spastic, ataxic and paralytic patterns), Emphasis should be placed on teaching accurate assessment techniques and various recording methods (ex) Colour coding on body charts, graphs etc.

UNIT II **40**

Principles of Treatment: Review the treatment Principles as follows:

a) Sensory re-education: hypersensitivity, hyposensitivity and anaesthesia.

b) Treatment of altered tone: hypertonicity and hypotonicity

c) Moto re-education: strengthening exercises, co-ordination exercises, joint mobilisation exercises, use of equilibrium and labyrinthine systems, use of PNF patterns, controlled sensory stimulation to bias the spindle cells e.g. vibration, tactile, ice etc., use of stretch to elicit movement (facilitation), light joint compression (inhibition), use of reflex activity to improve motor function, phylogenetic sequence of motor behaviour.

d) Treatment to improve function: free exercises, gait training with and without aids, activities of daily living, l exercises and exercises in recreation.

UNIT III **40**

Cerebral Palsy:

1. Assessment options in paediatrics.
2. Identification of motor/sensory dysfunction in paediatrics. Including weakness, abnormal tone, posture and motor control deficit and lack of endurance
3. Clinical approaches to motor/sensory dysfunction in paediatrics including weakness, abnormal tone, posture and motor control deficits and lack of endurance
4. Application of assessment and treatment approaches in paediatric conditions including
    a. Cerebral palsy
    b. Development delay
    c. Branchial Plexus injury (Erb's Palsy, Klumpky's paralysis)
    d. Spina bifida
    e. Head injury
    f. Muscular dystrophy (all types)
    g. Poliomyelitis

UNIT IV **40**

1. Assessment options in adult neurological patients.
2. Identification of motor, sensory perceptual dysfunction in adult neurological patients including weakness, abnormal tone, motor control deficits and lack of endurance.
3. Clinical approaches to motor, sensory postural dysfunction in adult neurological patients including weakness, abnormal tone, postural and motor control deficits and lack of endurance
4. Application of assessment and treatment approaches in adult neurological conditions including:
   a. Stroke
   b. Monoplegia
   c. Brain tumour
   d. Parkinsonism
   e. Cerebellar lesions
   f. Motor Neuron Diseases
   g. Disorders of Spinal Cord
   h. Muscular dystrophies
   i. Head injury
   j. Guillain Barrie syndrome
   k. Peripheral nerve lesions/injuries
   l. VII cranial nerve palsy
   m. Low back pain syndrome
   n. Brachial neuralgia
   o. Laminectomy
   p. Neuro intensive care unit patients.

UNIT V **40**

Evaluation of Physical Dysfunction

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

Integrated Approach

Integrated neuro muscular control and physiotherapeutic prevention, curative and rehabilitative measures for sensory motor dysfunction, pain control, postural re-adjustment/control using following hypothetical theories

a. Motor development (Bobath)approach
b. Motor re-learning process (MRP)
c. Brunnstroms and Roods approach

Merits and demerits of each approach to be explained.

Practical:

Practical demonstration of assessment and physiotherapy management to be demonstrated in the class and students must practice on each other / model before applying them in clinicals under supervision.

Evaluation

Total Hours:200

Text books:

1. Susan B'O' Sullivan, physical rehabilitation, Jaypee, 6th edition. – 2014
2. Patricia. A. Downie, cash's text book of neurology for physiotherapist – Jaypee, 4th edition– 1993.
3. Sophie Levitt, treatment of cerebral palsy & motor delay, Wiley – Blackwell, 5th edition – 2013.

References:

1. Sophie Levitt, Cerebral Palsy – Treatment of cerebral palsy and motor delay, Blackwell sciences,5Ed, 2013

2. Catherine A Trombly, Occupational Therapy for physical dysfunction, Williams & Wilkins,4Ed, 1998

3. Roberta B. Shepherd, Physiotherapy in Neurology, William Heinemann Medical books Limited, 2nd Edition, 1974

4. Ida Bromley, Tetraplegia and paraplegia, a guide for physiotherapist, Churchill Livingstone, 5th Edition, 1998.

5. Jan Stephen Tecklin, Pediatric Physical Therapy, Lippincott Williams & Wilkins, 3rd Edition, 1999

15BPT015 CLINICAL ORTHOPEDICS & TRAUMATOLOGY 6 0 2 6

Course Objectives

The objectives of this course is that after 160 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of orthopaedic conditions causing disability and their management.

Course outcome:

1. Knowledge about fractures of various bones. Types, mechanism, clinical features, complications and management of fractures gained.
2. Dislocation of major joints and prevention are understood.
3. Knowledge about major surgical procedures in orthopaedics including amputations gained.
4. Knowledge about bone and joint infectious diseases gained.
5. Knowledge about tumors in bones and joints gained.
6. Knowledge about arthritis and other degenerative disorders of bones and joints gained.
7. Knowledge about various musculo-skeletal problems its clinical diagnosis and management gained.
8. Knowledge about congenital and postural deformities gained.
9. Sports injury mechanism, treatment and prevention are understood.
10. Knowledge about peripheral nerve injuries and deformities gained.

UNIT I **32**

Introduction to Orthopaedics

1. Introduction to orthopaedic terminology, types of pathology commonly dealt with, clinical Examination, common investigations and outline of non-operative & operative management.
2. Joint structure & function
3. Muscle structure & function

UNIT II **32**

Fractures & Dislocations: General Principles

Outline the following:

1. Types of Fractures including patterns, open and closed fractures and fracture-dislocations.
2. Differences between dislocations & 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 ischaemic contracture, Sudek's Atrophy, Carpal Tunnel Syndrome, Myositis ossificans,

and Shoulder – hand syndrome.
6. Fracture healing.

Upper Limb Fractures & Dislocations
1. Enumerate major long-bone fractures and joint injuries.
2. Briefly describe their clinical features, principles of management and complications.

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

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

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

UNIT III **32**

Amputations
10. Classify amputations, list indications for surgery.
11. Levels of amputation
12. Complications & medical approaches

Bone & Joint Infections
Outline the etiology, clinical features, management and complications of: Septic arthritis, Osteomyelitis, (Acute & chronic), Tuberculosis (including spinal T.B.)

Bone & Joint Tumours
Classify and outline the clinical features, management and complications of the following (benign / malignant) bone and joint tumours : osteomas, osteosarcomas, osteoclastomas, Ewing's sarcoma, multiplemyeloma.

UNIT IV **32**

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

Sprain & Strains
List common sites of sprains and muscle strains
Describe the clinical manifestations and treatment.

Lowback Ache, Painful Arc Syndrome, Tendonitis, Fasciitis & Spasmodic Torticollis
Outline the above including clinical features and management.

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

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

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) meningomyelocoele, Arthrogryposis multiplex congenita, osteogenesis imperfecta.

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

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

UNIT V **32**

Hand Injuries
Outline of clinical features, management and complications of skin and soft tissue injury, Tendon injury, Bone and joint injury.

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

Sports injuries Sports injuries (musculo skeletal/ open injuries) pathomechanics, preventive measures, testing/prescription,training Emergencies on the field management.

Principles of operative treatment
List indications, contraindications and Briefly outline principles of: Athrodesis, Arthoplasty, Ostetomy, Bone –grafting and tendon transfers.

Investigations in orthopaedic conditions

Evaluation

Total Hours: 160

Text Books:

1. MayilvahananNatarajan, Text book of orthopaedics and trumatology, Lippincott, 7th Ed, 2011.

2. Jayant Joshi, Essentials of Orthopaedics and applied physiotherapy, Elsevier, 2nd Ed, 2011.

3. Jhon Ebenezer, Text book of orthopaedics, Jaypee pub, 3rd ed-2006**.**

References:

1. John Crawford Adams , Outline of Orthopaedics,Churchill Livingstone,2007

2. Turek's orthopaedics , Mosby, 4Ed, 2004

4. John Crawford Adams, Outline of orthopaedics, Churchill Livingston, 13th Edition, 2001.

5. William A Mc Ardle, Exercise physiology, Lippincott, 7thed, 2010.

15BPT016 PHYSIOTHERAPY IN ORTHOPEDICS 7 0 2 6

Course Objectives

The objectives of this course is that after180 hours of lectures, demonstrations, practical's and clinics the student will be able to identify disability due to musculoskeletal dysfunction, set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situations to restore musculoskeletal function.

Course outcome:

1. Knowledge about assess , diagnose and plan the physiotherapy treatment for various musculo skeletal problems gained.
2. Physiotherapy management for various fractures are understood.
3. Knowledge about physiotherapy management for various orthopaedic surgeries gained.
4. To Know about the different types of postural deformities and correction of postural deformities.
5. Physiotherapy management for various degenerative disorders of bones and joints are understood.
6. Knowledge about physiotherapy management for amputation gained.
7. Knowledge about soft tissue injury diagnosis and physiotherapy management gained.
8. Knowledge about burns and physiotherapy management for burns gained.
9. Pre and post operative physiotherapy management for major orthopaedic surgeries are understood.

UNIT I **36**

Define fractures. Review the types, the signs and symptoms, first-aid measures, principles of immobilisation and healing of fractures.

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

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

Review manual, mechanical, skin, skeletal traction.

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

UNIT II **36**

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

1. Fractures clavicle, upper 1/3 of
   humerus, shaft of humerus, supra - and intercondylar fractures of the humerus.

2. Fracture head of radius, olecranon process, shafts of radius and ulna, Colles. 3. Fracture scaphoid,Bennett's and metacarpal neck. 4. Fracture and injuries of the knee joint & patella. 5. Fracture proximal tibia, both bones of leg, Pott's and Dupuytrens, calcaneum and metatarsal (march). 6. Dislocation of [a] hip (Congenital, Traumatic posterior & Central) [b] Shoulder (Anterior & Recurrent) [c] Patella.

3. Describe briefly the general and PT assessment of the vertebral column. Subjective history. occupation, symptoms, major problems, Objective examination.
   (1) Observation - body type, musculature, deformity & gait. (2) Palpation - Temperature swelling, bony Prominences, local tenderness. (3) Postural evaluation using a plumb line. (4) Active movements in the vertebral column - Flexion, extension, lateral flexion and rotation. (5) Specific test - straight leg raising, prone knee bend, passive neck flexion, Kernig's sign. (6) Proximal joints of pelvic and shouldergirdles. (7) Neurological tests - muscle strength, sensation and reflexes.

4. Review cervical and lumbar spondylosis, spondylolisthesis, TB spine and spinal fracture. Outline PT assessment. List PT aims and describe principles of management and a detailed home programme.

5. List the common postural abnormalities affecting the spine. Review Kyphosis, Lordosis and scoliosis, outline PT assessment and PT aims and management along with a home programme.

6. Review the clinical features and describe the PT management of Ankylosis spondylitis.

7. Intervertebral Disc Prolapse : Review basic anatomy and biomechanics of the spine. Review causes, signs, symptoms and investigations done for IVDP. Review the different types and degrees of IVDP. List its aims and demonstrate treatment techniques.

UNIT III **36**

1. Define the following terms, review their aetiology & clinical features and describe their treatment - strains, sprains (Medial ligament of knee and Lateral ligament of ankle), bursitis (Subacromial&Prepatellar) synovitis, tendonitis, tenosynovitis, fibrositis, fibromyositis, rupture and avulsion of tendons (Tendoachillis& Quadriceps), tennis elbow, torticollis, tendonitis (supraspinatus &bicepital), periarthritis shoulder, and shoulder - hand syndrome.

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

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

4. Define Cerebral Palsy. Review its causes, signs, symptoms, classification and common deformities. Outline PT assessment aims and management along with a home programme. Review common surgical corrections and its PT management.

5. Define Rheumatoid Arthritis. Review its signs, symptoms, radiological features, pathology, common deformities, Medical and Surgical management. Describe the PT assessment, aims and management in the acute and chronic stages and a detailed home programme.

6. Define Osteoarthritis. review its signs, symptoms, radiological features, pathology, common deformities, Medical and Surgical management. Describe the PT assessment, aims and management and a detailed home programme, with special emphasis on Osteoarthritis of hip, knee, ankle and shoulder joints.

UNIT IV **36**

1. Define leprosy. Review the incidence and mode of transmission of leprosy. Review the clinical features and common deformities and Medical management. Review the common tendon transfer operations and describe PT management before and following tendon transfers. Describe the risks of anaesthetic limbs and outline its care to prevent complications. review plantar ulcers in leprosy and its management (including foot wear).

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

UNIT V **36**

Protocols for major orthopaedic surgeries

- Reconstructions
- Replacement
- Tendon transfer

Evaluation

Total Hours:180

Text book:

1. David J Magee, Orthopaedic Physical assessment, Saundres, 5th thed, 2008.

References:

1. John Crawford Adams ,Outline of Orthopaedics ,Churchill Livingstone,2007

2. Turek'sorthopaedics , Mosby, 4th Ed, 2004

3. John Crawford Adams, Outline of orthopaedics, Churchill Livingston, 13th Edition, 2001.

4. William A Mc Ardle, Exercise physiology, Lippincott, 7thed, 2010

15BPT017 COMMUNITY MEDICINE 5 0 0 4

Course Objective

The objective of the course is that after 100 hours of lectures, demonstrations, practical and clinics, the student will be able to demonstrate and understanding of the influence of social and environmental factors of individual and society.

Course Outcome:

1. Epidemiological implications of impairment and handicap and disability, health statistics
2. National health schemes and its benefits.

3. Immunization programmes – malnutrition and early detection of disabling conditions and Intervention.
4. Categorizes various rehabilitations and describes its advantages and disadvantages.
5. Explains about communicable and non communicable diseases and its implications.
6. Influence of nutritional factors on disability.
7. Role of community leaders and health professionals in health education.

UNIT I **20**

1. Outline the natural history of diseases and the influence of social, economic and cultural aspects of health and diseases.
2. Outline the various measures of prevention and methods of intervention – especially for diseases with disability.
3. Outline the national care delivery system and the public health administration system at central and state Government level.

UNIT II **20**

1. Outline selective national health schemes.
2. Define occupational health and list methods of prevention of occupational hazards.
3. Outline the Employees State Insurance scheme and its benefits.

UNIT III **20**

1. Describe the social security measures for protection from occupational hazards, accidents, diseases, and workman's compensation act.
2. Outline the objectives and strategies of the national Family Welfare Programme.
3. Define Community based rehabilitation and Institution based rehabilitation. Describe the advantages and disadvantages of institution based and community based rehabilitation.

UNIT IV **20**

1. Describe the following communicable diseases with reference to water reservoir, mode of transmission, route of entry and levels of prevention. a. Poliomyelitis, b. Meningitis, c. Encephalitis, d. Tuberculosis, e. Filaria, f. Leprosy, g. Tetanus & h. Measles.
2. Describe the Epidemiology of Rheumatic heart disease, cancer, chronic degenerative disease and Cerebrovascular accident.
3. Outline the influence of nutritional factors such as protein Energy Malnutrition, Anemia, Vitamin deficiency and mineral deficiency on disability.

UNIT V **20**

1. List the principles of health education, methods of communication, and role of health education in rehabilitation services.
2. Define the role of community leaders and health professionals in health education.
3. Outline the role of international health agencies in rehabilitation of the disabled.

Evaluation

Total Hours: 100

Text Books:

1. Park's Text Book of preventive and Social Medicine – K Park, 24TH ED, BDB Publishers,2017.

2. Prabhakar, Short text book of preventive and social medicine, , Jaypee, 2nd Ed 2012,

Reference:

1. Retan, Handbook of preventive and social medicine, 9th ed, 2007.

15BPT018 PHYSIOTHERAPY IN OBSTETRICS & GYNECOLOGYAND WOMEN HEALTH **6 0 2 6**

Course Objective

After 160 hours of lectures and demonstrations the student will be able to give physiotherapeutic techniques in Obstetrics and Gynecological conditions for relief of pain, relaxation, conditioning and posture.

Course outcome:

1. The students can know about the musculoskeletal changes during pregnancy and during delivery.
2. Become familiar with developmental anatomy of embryonic and fetal periods.
3. Learn about difference between normal, forceps and caesarean section.
4. Understand the antenatal and postnatal complications and its management.
5. Become well versed with antenatal, prenatal and post-natal physiotherapy management.
6. Recognizes the common gynecological problems in adolescence and adults.
7. Comprehend the physiotherapy management of various conditions like infections, urogenital dysfunction and prolapse of uterus.
8. Demonstrate the exercise protocol to relive pain during the prenatal and postnatal period
9. Able to define the exercise program for obesity related sterility.
10. Become familiar with the hydrotherapy and yoga for treating the gynecological conditions.

UNIT I **32**

1. Review of anatomy related to OBG
2. Developmental Anatomy – Embryonic and fetal periods
3. Musculo-skeletal changes: during pregnancy, during delivery

UNIT II **32**

1. Preparation for labour – antenatal training, breathing, relaxation
2. Lower extremity exercises, abdominal and pelvic floor exercises
3. Mechanism of labour
4. Normal delivery, Forceps delivery, Caesarian section including management, care of the scars
5. Postnatal period, Postnatal complications & management
6. Episiotomy & wound care

UNIT III **32**

1. Common Gynecological problems in adolescence & adults
2. Post-surgical management

UNIT IV **32**

1. PT management in OBG, obstetric TENS
2. Pelvic inflammatory diseases salpingitis
3. Prolapse of uterus
4. Urogenital dysfunction – incontinence

UNIT V **32**

Women's Health

1. Physiological adaptation and consideration of exercise during puberty; pregnancy and menopause, choice of concern, evaluation, planning and management.
2. Prenatal and antenatal exercises-relief of pain. Post-natal care including care of the breasts use of special garments.
3. Diastases recti-management.
4. Diet & Nutrition
5. Exercise program for obesity related sterility.

Approaches: Hydrotherapy, Yoga

Evaluation

Total Hours:160

Text books:

1. Margaret polden, Jill Mantle, Physiotherapy in Obstetrics and Gynecology –Jaypee Brothers, 1st Edition – 2007.

2. Carolyn kisner, therapeutic exercise – foundation & techniques, Jaypee, 6th edition- 2012.

References:

1. D.C. Dutta, textbook of obstetrics, central – 2004.

2. G.B. Madhuri, textbook of physio9therapy for OBG, Jaypee 1st edition – 2007.

3. Patricia Downie, Cash's Text Book of General Medical and Surgical Conditions for physiotherapists, Editor Jaypee Brothers,2nd Edition,1994

4. Cesarean Section – Therapeutic Exercise – Carolyn Kisner, Lynn Allen Colby.
5. Jean M. Irion, Glenn L. Irion, Women's Health in Physical Therapy, Lippincott Williams & Wilkins, 2010

15BPT019 CLINICAL CARDIO – PULMONARY DISEASES 8 0 2 6

Course Objectives

The objectives of this course is that after 200 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of cardio respiratory conditions causing disability and their management.

Course outcome:

1. The cardiac conditions pathology like infectious diseases ischemic diseases
2. Lung infections and diseases its pathology are clearly studied.
3. Cardio pulmonary resuscitation, uses of defibrillators.
4. Intensive care for pediatric cases.
5. Management of pulmonary surgeries, transplantation and ventilator care.
6. Endotracheal tubes, tracheostomy care.
7. Cardiac transplantations and investigative procedures
8. Chest deformities and spinal deformities.
9. Movements and muscles responsible for respiration and thoracic cage

UNIT I **40**

Anatomy and Physiology

1. Respiratory system & cardio vascular
2. Skeletal aspects of thorax and abdomen.
3. Describe the movements of the thorax: Bucket handle, Pump handle.
4. List the muscles of respiration involved in inspiration and expiration (including accessory muscles that are involved)
5. Applied aspect of chest & spinal deformities.

UNIT II **40**

1. Describe in brief the anatomy of the heart & its blood supply and briefly outline the electrical activity of the myocardium and a normal ECG.
2. Describe the physiological control of respiration and highlight the function of Medullary and pontine respiratory centres and central and peripheral chemo receptors.
3. Describe the mechanism for maintenance of blood pressure.
4. Describe in detail the cough reflex.
5. List the mechanical factors involved in breathing. Describe briefly the factors affecting lung compliance & air way resistance.
6. List the factors affecting diffusion of oxygen and carbon-di-oxide in the lungs. Explain ventilation, perfusion and their interrelationship.
7. Outline the energy expenditure of various common activities of daily living.
8. Pulmonary function assessment : Briefly describe the pulmonary function tests and their use, Briefly outline the basis and value of blood gas analysis
9. Briefly outline the principles of cardiovascular stress testing.
10. Discuss briefly Pulse and different types of pulses in normal and in diseased conditions.

UNIT III **40**

Cardiac conditions

1. Acquired heart diseases : Cardiomyopathy, Infectious diseases, Ischemic heart diseases, Angina
2. Congenital heart diseases :Patent ducts arteriosus, Coarctation of aorta, Fallot's Tetrology,Atrial septal defect,Ventricular septal defect.
3. Valvular diseases: Mitral stenosis, Mitral regurgidation, Aortic stenosis & Aortic regurgidation.
4. Cardiac surgeries: CABG,PTCA, Cardiac transplantation, Open & closed heart procedures.
5. Investigative procedures.

UNIT IV **40**

Respiratory conditions.

1. Describe very briefly the clinical features and management of the following : Fracture ribs, Flail chest, Stove - in Chest, Pneumothorax, Haemopneumothorax, Lung contusion

& Laceration, Injury to Heart, Great vessels & Bronchus.

2. List the causes of empyema and its treatment. Describe briefly : Intercostal drainage, Rib resection, Decortication & Window Operation.
3. List the manifestations of Pulmonary Tuberculosis and briefly describe tuberculoma, Bronchiectasis sicca, Bronchostenosis, Massive haemoptysis, Empyema & Destroyed lung.
4. Outline Briefly the clinical features and management of the following supportive lesions of the lung : Bronchiectasis, Lung abscess, Bronchopneumonia & Aspergillosis.
5. Outline briefly the clinical features and management of Carcinoma lung.
6. Briefly outline the management of a patient with chronic obstructive airway diseases, occupational lung disorders and restrictive lung disorders.
7. Describe the post operative management of patients with : Segmentectomy, Lobectomy, Bilobectomy, Pneumonectomy, Pleuropneumonectomy & Tracheostomy.
8. Lung transplantation
9. Management of endotracheal/endonasal tubes, tracheal suction, weaning the patient from the ventilator extubation technique & post extubation care
10. Upper Respiratory surgical conditions**.**

UNIT V **40**

1. Outline the extent, use and complications of the following surgical incisions : Anterolateral thoracotomy, Posterlateral Thoracotomy and Median Sternotomy.

2. Outline briefly the principles of various ventilators and their use.

3. Describe the principles of Cardio-pulmonary resuscitation: Cardiac massage, Artificial respiration, defibrillators and their use.

4. Describe the clinical features and management of : Pulmonary embolism. DVT, arterial and venous pathological conditions, lymphatic pathological conditions, Hypertension, Peripheral Vascular diseases, Syncope, Diabetes mellitus.
   Intensive surgical care for paediatric cases.

Evaluation

Total Hours:200

Text Books:

1. Crofton & doogles Respiratory Diseases Vol – I & II, SEATON,1 Ed, 2003

3. Downie , Cash text book of chest, Heart & Vascular disorders –ELBS, 1 Ed, 2005

4. Berne , Cardio Vascular Physiology ,Mosby, 4Ed, 2012.

References:

1. Nelson, ECG interpretation, Jaypee, 1st ed, 2011.
2. Bhalrao, Essentials of clinical cardiology, Jaypee, 1st ed , 2013
3. Chattergee, Cariology an illustrated Text book , Jaypee,1st ed, 2012.
4. Beachey, Respiratory care- Anatomy and physiology :foundation, CBS ,3rd ed, 2013.
5. George Mathew & Praveen Aggarwal – Manual for UG, Medicine ed,2015.

15BPT020 PHYSIOTHERAPY IN CARDIO PULMONARY DISEASES 8 0 2 6

Course Objectives

The objective of this course is that after 200 hours of lectures, demonstrations, practical and clinics the student will be able to identify cardio respiratory dysfunction, set treatment goals and apply their skills in exercises therapy, electrotherapy and massage in clinical situations to restore cardio respiratory function.

Course outcome:

1. Basic anatomy , physiology of heart and lungs
2. Basic treatment for all cardiac and pulmonary diseases are deeply
3. Importance of physiotherapy intervention for cardiac and pulmonary disease.
4. Pre and post operative care for all surgery
5. Importance of ICU and its various treatment methods
6. Assessment of both cardiac and pulmonary patients
7. Adjuncts used along with physiotherapy and ventilators
8. Deep knowledge about investigative procedures

UNIT I **40**

Respiratory system:

1. Structure and function of respiration system
2. Skeletal aspects of thorax and abdomen
3. Movements of thorax, cough reflex and lung compliance
4. Lung volume and capacities
5. Muscles of respiration, breathing pattern (rate, rhythm, use of accessory muscles)
6. Applied aspect of chest and spinal deformities (Barrel chest, Pigeon chest, scoliosis, kyphosis, kyphoscoliosis),

7. Regulation of respiration
8. Respiratory investigations (PFT, X-ray, ABG, RPE, exercise tolerance)
9. Auscultation, Normal and abnormal breath sounds. Measurement Chest expansion at different levels (axillary, nipple, xiphoid),
10. Physiotherapy assessment in respiratory conditions

Cardiovascular system:

1. Structure of function of Cardio vascular system
2. Hemodynamic, pressure at chamber
3. Conduction and regulation
4. Cardiac output, pulse, blood pressure
5. CVS investigations – ECG, Echo, Stress testing, Angiography, EECP
6. Physiotherapy assessment in Cardiac conditions

UNIT II **40**

Physical Treatment

1. Describe indications, goals and procedure of breathing exercises, Describe diaphragmatic breathing, localised basal expansion, apical expansion, specific segmental exercise raising the resting respiratory level, controlled breathing exercise.
2. Describe chest mobilisation exercises.
3. Describe relaxation positions for the breathless patient - high side lying, forward lean sitting, relaxed sitting, forward lean standing, relaxed standing.
4. Describe controlled breathing during walking and during functional activity.
5. Describe exercise for the breathless patient, exercise tolerance testing and exercise programme.
6. Describe the techniques of huffing and coughing, forced expiratory technique, vibratory chest shaking and percussion.
7. Describe techniques of Postural drainage, including indications, general precautions and contra indications, preparation, drainage of individual bronchopulmonary segments, modified postural drainage and continuing postural drainage as a home programme.
8. Cardio pulmonary resuscitation

UNIT III **40**

Physiotherapy In Obstructive Lung Diseases :

Assess : Effort of breathing, extent of wheeze, pattern of breathing, sputum production, chest deformity, exercise tolerance (Patients Effort Tolerance).
Identify problems : Decreased outflow due to bronchospasm, anxiety due to difficulty in ventilation, exhaustion due to increased work of disturbed breathing, increased secretions which are difficult to remove, decreased exercise tolerance.
Demonstrate treatment techniques. Relaxation postures and techniques, reassurance and education about diseases, controlled breathing, breathing exercise, postural drainage, vibratory shaking, huffing and coughing, graduated exercise programme and posture correction.

Physiotherapy In Chest Infection :

Assess : sputum, cough, fever and dyspnoea.
Identify problems : Productive cough with risk of hemoptysis, exhaustion due to increased work of breathing, chest deformity, decreased exercise tolerance.
Demonstrate treatment techniques : Postural drainage with use of adjuncts, percussion, vibration, huffing and coughing to expectorate, mobilising exercises to thorax and graduated exercises.

Physiotherapy In Restrictive Lung Disorders :

Assess : Chest expansion at different levels, mobility of thorax and spine, posture (Kyphosis or scolisis) and test for exercise tolerance (six minutes walking test).
Identify problems : Decreased expansion of lung due to restriction of chest wall movement causing decreased ventilation, defective posture and decreased exercise tolerance.
Demonstrate treatment techniques : Vigorous mobilising exercises to thorax and spine, breathing exercises to increase ventilation and drain secretions, exercises for posture correction, graduated exercises to increase exercise tolerance.

Principles Of Intensive Care Physiotherapy :

Describe the principles of intensive care therapy. Demonstrate Knowledge of the following equipment : Endotracheal tubes, Tracheostomy tubes, Humidifier, Ventilators, High frequency ventilators, Differential ventilators, CPAP masks, venturi mask and its effects, Suction pump, Electrocardiogram, Pressure monitors - arterial, central venous, pulmonary artery and pulmonary wedge, intracranial and temperature monitors.
Assess : Special instruction pertaining to any operation performed, respiration, level of consciousness, colour, blood pressure, pulse, temperature, sputum expectorated (colour and quantity), drugs (time last dose of analgesic given), drains, presence of Pacemaker or Intra aortic balloon pump, ECG and blood gas results. Describe chest radiograph with respect to expansion of lungs, size of heart, presence of secretions and placement of chest tubes.

Physiotherapy In Rehabilitation After Myocardial Infarction :

Describe the role of the Physiotherapist in a Coronary Care Unit during the first 48 hours. describe the principles of formulation of an exercise programme. bed exercises, walking, stair climbing. Describe a home exercise programme and advice on leisure activities. Describe physiotherapy for complications after myocardial infarction, chest infections, cerebral embolism and shoulder hand syndrome.

UNIT IV **40**

Physiotherapy in Pulmonary Surgery:

Pre-operative : Demonstrate treatment techniques, explanation to patient, care of incision, mechanical ventilation, breathing exercise, huffing and coughing, mobilising exercise, posture correction, graduated exercise programme.
Post-operative : Assess : Special instructions pertaining to operative procedure performed, breath sounds, cyanosis, respiratory rate, temperature and pulse, blood pressure, drainage from pleural drain (bubbling or swinging), sputum expectorated, analgesia, movements of chest wall (symmetry), position of patient and effort of breathing, chest radiograph and blood gases. Identify problems : Pain, intercostal drains in situ, decreased air entry, restrained secretions, decreased movement of the shoulder of affected side, decreased mobility and poor posture.

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

Physiotherapy in Cardiac Surgery :

Pre-operative : Assess patients medical history, normal breathing pattern of patient, pulse respiratory rate, BP, thoracic mobility, posture and patients exercise tolerance.
Identify problems : excess secretions, decreased mobility of thorax, defective posture, decreased exercise tolerance.

Demonstrate treatment techniques : Explain to the patients about their operation and about the incision, ICU, Endotracheal tube, central lines, nasogastric tube, catheter, ECG leads, drains, peripheral lines, temperature probe etc. Teach breathing exercises, splinting of incision, huffing and coughing, correct posture, range of motion exercises to trunk and shoulders, active exercises to ankle and foot.

Post-operative : Assess Special instructions pertaining to operative procedure performed, type of incision, blood pressure, pulse rate, respiration, colour, time of last analgesic dose, drains, temperature, ECG, chest X-ray and blood gases. Identify problems : pain, decreased air entry, retained secretions, reduced arm and leg movements, decreased mobility. Demonstrate treatment techniques . Deep breathing exercises, suctioning, active / assisted exercises to arm and leg, graduated exercise programme.

Physiotherapy In General Surgery :

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

UNIT V **40**

Outline the history of mechanical respiration. Define the following terms
a) Respirator b) Lung ventilator c) Resuscitators d) Body ventilator

e) Electrostimulator f) IPPB g) PEEP h) CPAP i) SIMV j) NEEP k) NIV.

Classify ventilators by their cycling control (volume cycling, pressure cycling, time cycling and mixed cycling).

Describe the principles of operation of commonly used ventilators and outline the use of the following common types. i) Bear ii) Bennett iii) Emerson iv) Bird.

Outline the principles of Aerosol Therapy,

Describe the physical properties of aerosol and their deposition in the alveoli.

Describe the principles of operation of nebulisers.

Outline the principles of humidification therapy and methods of correcting humidity deficits.

Describe the principles of operation of pass-over humidifiers and bubble - diffusion humidifiers.

Describe techniques of sterile nasopharyngeal and endotracheal suctioning.

Adjunct to chest physiotherapy
Common drugs in cardio pulmonary conditions and its effects

Interpretation of various investigations in cardio pulmonary conditions

Evaluation

Total Hours:200

Text Books:

1. Amrohit , Text book of chest physiotherapy, Jaypee ,1st ed, 2010,
2. Madhuri , Text book of physiotherapy for cardiothoracic surgery condition ,CBS, 1st ed , 2008,

References:

1. Patricia Downie , Cash's Text Book of chest heart and vascular disorders for Physiotherapists , Jaypee, 4th ed, 1993.

2. Joanne Watchie , Cardio-pulmonary physical therapy , Jaypee ,3rd ed, 1998

3. Brompton , A-Clinical guide to chest PT, Jaypee, 2nd ed,1992

15BPT 021 COMMUNITY BASED REHABILITATION & DISABILITY EVALUATION **6 0 2 6**

Course Objective

The objective of this course is after 160 hours of lecture demonstration the student will be able to have a community based perspective with Physiotherapeutic approach.

Course outcome:

1. One can very well understand about the members of rehabilitation team and their role in Rehabilitating the patient.

2. Geriatric assessment, evaluation and rehabilitation can be known

3. Student can under stand about the importance of therapeutic exercise in treating various condition like diabetes, hypertension, obesity etc.,

4. Communication and behavioral disorders can be well understood

5. The student can understand about the principles of disability evaluation

6. The knowledge of role of physiotherapy in managing cancer patients can be gained

UNIT I **32**

1. Define Rehabilitation. explain its aims & principles
2. Describe about rehab team and its role of team members
3. Define and difference between Community based rehabilitation & Institute based rehabilitation

UNIT II **32**

Geriatrics

1. Physiology of aging process.
2. Degenerative systemic changes; musculo skeletal changes (atrophy, osteoporosis, stiffness, hypotonia), cardio respiratory problems, post menopausal changes; neurological changes – senile mental changes; role of physical therapists.
3. Psycho socio economical aspects of aging.
4. Assessment and evaluation, prescription of exercise and training.
5. Institutionisation of the aged; role of physiotherapist in planning, developing and management.

UNIT III **32**

Exercise In Various Conditions

- Exercise principles & training
- Exercise in diabetes
- Exercise in Hypertension
- Exercise in obesity
- Exercise in renal condition

UNIT IV **32**

1. Architectural barriers
2. Communication disorders
3. Behavioural disorders

UNIT V **32**

Disability Evaluation

1. Outline the principles of disability evaluation & discuss its use.
2. Outline legal aspects of disability in terms of compensation for disability and benefits available to the disabled.
3. Outline the social implications of disability for the individual and for the community.
4. Role of Physiotherapy in the management of cancer patients undergoing treatment.

Evaluation

Total Hours:160

Text books:

1. Mutani, Principles of Geriatric physiotherapy, Jaypee, 1st ed, 2008
2. Valeric J Berg Rice, Ergonomics in health care and rehabilitation, Butter worth, 1998.
3. Willian D Mc ardle, Essentials of exercise physiology, Lippincott , 3rd ed ,2006.

References:

1. Judith Pitt-Brooke , Rehabilitation of movement – Theoretical Basis of clinical practice, W.B.Saunders,2 Ed, 2002
2. OSA Kackson, Physical Therapy of the Geriatric patient, Churchill Living Stone. 3 Ed, 2009
3. Waqar Naqvi, Physiotherapy in community health and rehabilitation, JP Brothers, 1st Ed, 2011

15BPT022 PRINCIPLES OF BIO ENGINEERING / GERIATRICS/ ERGONOMICS

5 0 2 6

Course objective:

The objective of this course is after 140 hours of lecture demonstration the student will be able to acquire knowledge & skill about biomechanical principles of application of aids & appliances used for ambulation, protection & prevention.

Course outline:

1: Students should have understood the principles and mechanics behind the construction of orthotics and prosthetics, should be able answer what are the other mobility aids which are available in the market.

2: Students should be able to answer biomechanical principles behind the construction of each and every orthotics and prosthetics.

3: students should have understood the differentiation of both the upper motor and lower motor neuron lesion and cerebellar dysfunction & should be able to explain the safety measures to the patient should understand while using this devices.

4: Student should have understood the basis of ergonomics and how it is going to be important in diagnosis & should have understood how to perform a quick ergonomic evaluation in a work place of a person.

5: Student should have understood the basics about the yogic exercises, will have better understanding about patanjali and tirumantram exercises and the repetitions.

5. Students should have understood how yogic exercises can be helpful in case of few systemic diseases like diabetes and hypertension.

UNIT 1 **28**

Orthotics & prosthetics

Principles & Mechanics of orthotics, prosthetics, mobility Aids.
Classification of Aids & appliances.
Indications for orthotics, prosthetics, mobility Aids.
Application and training of orthotics, prosthetics & mobility aids and their function.

UNIT II **28**

Bio mechanical principles

Bio mechanical principles involved in the designing of static and dynamic alignment of the following Aids & Appliances, Splints & orthotic devices for spine upper & lower limbs.

UNIT III **28**

Uses of Ambulatory Aids

Review the use of ambulatory aids in neurological conditions: inspastic upper motor neuron lesions, in lower motor neuron lesions, in dorsal column dysfunction and cerebellar dysfunction .

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

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

UNIT IV **28**

Ergonomics

Introduction, definition , History, Domain, Environmental factors, work related musculoskeletal disorders, PT intervention (Prevention & management)

UNIT V **28**

Yoga

1. Principles of Yoga, Physical Education and value education

2. Introduction to Yoga-The Origin of Yoga, Definitions, Concepts, Aims and objectives of Yoga, ideal practice of yoga in the new millennium, Thirumanthiram, Patanjali

3. Yoga-Classifications

4. Streams of yoga, Karma Yoga, Bhakti Yoga, Janana Yoga, Raja Yoga (Astanga Yoga), Hatha Yoga, Yoga and diet, Shat Kriyas, Suryanamaskar, asanas, pranayama, Bandha , Mudras, Yoga and diet.

5. Role of Yoga in diseases

6. Yogic Concept of human body, Five koshas, Asthma, Diabetes, Hypertension, Obesity, coronary Heart disease, Arthritis.

Evaluation

Total Hours:140

Text books:

1. Susan. O. Sullivan, physical rehabilitation, jaypee, 6th ed, 2014.

2. Multani, principles of geriatric physiotherapy, jaypee, 1srt ed, 2008.

References:

1. Valevie, J Berg rice ergonomics in health care & rehabilitation, butter worth, 1998.

1. Sunder, textbook of rehabilitation, jaypee, 3rd ed, 2010.

2. Karen Jacobs, ergonomics for therapists, mosby Elsevier, 3rd ed, 2008.

15BPT023 EVIDENCE BASED PRACTICE 6 0 0 4

Course objective

The objective of this course is after 120 hours of lecture demonstration the student will be able to clearly outline the need to make clinical decisions in today's context of Physiotherapy, the methodology in making clinical decisions and also the need to upgrade knowledge with recent advances in skills through research literature.

Course outcome

1. Student will be able to Define evidence based practice & Gain confidence in making clinical decisions on diagnosis and treatment

2. Student will be able to Make complex decision from heuristic decision

3. Student will be able to Make decisions based on prescriptive, descriptive and artificially added approach & Categorize the subjects and objects of knowledge

4. Student will be able to Differentiate between screening and diagnosis & understand the importance of history taking and physical examination

5. Student will be able to differentiate types of research methods, Modification and justification of physiotherapy treatment approaches & Identify and manage ambiguity and ambiguous patient problem

6. Student will be able to Identify and appreciate ethical principles in physiotherapy, Emphasize the importance of patient consent, & Identify situations beyond the scope of physiotherapists

UNIT I **24**

Clinical Decision Making

Basic Concepts and Definitions

1. Evaluation
2. Assessment (Subjective and Objective)
3. Clinical Data, Analysis, Diagnosis, Goals, Treatment.

UNIT II **24**

Classification

1. Prescriptive approach
2. Descriptive approach
3. Problem Solving
4. Categorization
5. Organization and content
6. Artificially aided approach

UNIT III **24**

Methodology

1. Screening – Definition, Need for screening, Focus on screening.

2. History and Physical examination – The importance of clinical Examination, Relevance and Accuracy of clinical data.

3. Selection and Interpretation of Tests – General Principles, Uses of Tests, Criteria,Common Problems and Cautions regarding the Criteria, Interpretation of Tests – Sensitivity and Specificity.

4. Management – The importance of making therapeutic prognosis in relation to the Movement impairment/dysfunction obtained through the Assessment, Selection of appropriate treatment approaches.
5. .Justification of treatment approaches – The use of Clinical Research Literature, review of accumulated clinical observation.

UNIT IV **24**

Professional Growth and Research

1. Process of Journal reviews and presentation of latest research literature through assignments related to Physiotherapy subjects.

2. Opportunity to assist the staff Physiotherapist in patient assessment treatment and thereby improving clinical skills for practice.

3. Process of identifying/evaluating unique or ambiguous patient problems while implementing treatment and thereby reaching clinical assumptions and the need for research.

4. Developing the skill of reevaluation of treatment outcome/ effectiveness and the ability to suggest modification to treatment methods (under supervision until residency).

UNIT V **24**

Ethical Issues

1. Definitions – Ethics, Law, Beneficence, Autonomy, Disclosure, Surrogate

2. Therapist – patient relationship
3. Communicating Skills
4. Patient Consent and methods used for obtaining consent
5. Skills in identifying situations that is beyond the scope of the Physiotherapist and seeking

Evaluation

Total Hours: 120

Text books:

1. Sackeit DL, Evidence Based Medicine-How to practice and teach, Churchill livingstone,2ED 1995
2. Bury TJ, Mead JM,Evidence based health care: a practical guide for therapists. Butter worth – Heinemann, oxford Pub,1998

References:

1. Koehn D –. The ground of professional ethics, Routledge, London.1994
2. Edwards A, Elwyng –Evidence based patient choice, oxford university press, oxford 2001

15BPT024 CLINICAL REASONING IN PHYSIOTHERAPY MANAGEMENT

0 0 2 2

Course Objective

After 40 hours of lectures and clinical practice, students should be able to
i) Explain the concepts and principles of various approaches.
ii) Demonstrate assessment of patients using various Principles.
iii) Conclude physical diagnosis.
iv) Analyze the patient's problems and come to a clinical diagnosis.

Course outcome:

1: Students should have through understanding of patients medical record.
Students should have a good communication skills in gathering the required subjective data in framing the hypothesis and reasoning out the hypothesis.

2: Students should have understood the various concepts of orthopaedic manual therapy
Students should understand the grades of mobilizing techniques on based on different concepts.

3: Students should understand the different approaches available for the treatment of neurological conditions.

4: Student should have understood the assessment of cardio-respiratory patients & should have a clear understanding in interpretating the investigations and reasoning out the differential diagnosis.

5:Students should have understood the differential test procedure available in field of cardio-respiratory.

6: student should have understood the rehabilitation protocols available in the field of cardio-respiratory & should have understood the guidelines available for exercise prescription for individual patients

UNIT I **8**

Recording and communication.

1. Problem oriented Medical Record, History, Concept and Advantages.
2. Communication with the patient – Principles and methods.

UNIT II **8**

Physical Diagnosis

Musculo skeletal system

a. Maitland's Concept
b. Cyriax Concept
c. Mckenzie's concept
d. Kaltenbone concept
e. Neural tension tests – Normal and abnormal findings.

UNIT III **8**

Neuro Muscular system : (for CNS Problems)

a. Bobath's approach (Normal movement concept)
b. Motor Relearning process (MRP)
c. Voijta approach
d. Clinical resoning and clinical decision and clinical making in neurological conditions.
e. Rationale of plan of treatment for neurological conditions.

UNIT IV **8**

Cardio respiratory system:

a. Clinical Reasoning in Cardio pulmonary patients.
b. Concepts of cardio pulmonary evaluation and analysis (subjective, objective & Physical examinations)
c. Analysis and Interpretation of Investigations in relevance to prescribe exercises
d. ECG, echo, lipid profile, ABG analysis, pulmonary function testing, chest x-ray

UNIT V **8**

Various protocols followed in stress testing (Bruce Balk, Naughton, Howard step test, 12 minute walking test, six minute walking test, shuttle walking test)

1. Cardiac Rehabilitation
2. Pulmonary Rehabilitation

Evaluation

Total Hours: 40

Text books:

1. Janet H carr, a motor re leaning programme for stroke, aspen publishers,2nd , 1987

2. Berta bobath, adult hemiplegia, butterworth Heinemann, 3rd ed, 1990.

Reference:

1. David J. magee, orthopeadic physical assessment, saunders ,5th ed,2008.

2.Maitland textbook of pheripheral and vertebral manipulation 4th edition.

3.Robin mckenzie textbook of mechanical diagnosis and therapy for cervical, thoracic and lumbar spine volume 1.

4.Freddy .M. kalternborn textbook of manual mobilization volume 1

15BPT025 PROJECT 0 0 15 12

Course Objectives

This assignment of clinical study / review of literature is designed to develop the aptitude among students towards further reading and selecting references and present a written dissertation, or conduct a comparative study of the value / efficacy of a physiotherapy procedure in selective group of patients and normal subjects or justify the chosen procedure.

Thus the student will submit to the University a written project work/ case study report at the commencement of eights semester of the four and half years B.P.T. degree course.

Guidance

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

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

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

Evaluation

Total Hours: 300

Syllabus

Elective Courses

Discipline Specific Electives

Discipline specific elective I

15BPT101 ENGLISH FOR COMMUNICATION 6 0 0 4

Course Objective:

At the end of 120 hours of lectures the student will be able to:

1. Speak fluently, intelligibly and appropriately to teachers, Colleagues, Doctors, Patients and friends at the college, Hospital and hostel etc. about academic or (occupational) areas of interest.
2. Develop flexibility in reading; improve speed and rate of comprehension while tackling textbooks or reference material.
3. Write official letters to the warden, principal and other officials in the bank, post office etc.
4. Write reports about patients care.
5. Overcome the common errors in pronunciation and grammatical and idiomatic usage.

Course outcome:

1. Become fluent in speaking and enhance the ability to communicate effectively with colleagues, doctors, patients etc.
2. Well versed with comprehension skills and vocabulary enhancement.
3. Become familiar with writing various official letters, writing patients reports and summarise scientific sessions.
4. Understand about the grammatical and idiomatic usages.
5. Well versed with various methods of teaching by involving in group activities, role plays etc.
6. Gain knowledge about various methods of evaluation.

UNIT I SPOKEN COMMUNICATION 24

1. Learning to read the phonetic symbols
4. Stress
5. Intonation
6. Rhythm
7. Commonly mispronounced words
8. Correct pronunciation of important commonly used words in clinical practice
9. Note taking in lecture classes

UNIT II VOCABULARY AND READING 24

1. Special features of English vocabulary
2. Common errors in choice of word

3. Semi technical vocabulary
4. Collecting material from library on scientific topics
5. Comprehensive exercises

UNIT III WRITING 24

1. Writing letters regarding permission, Leave, opening bank account etc.
2. Note making from lecture / reading material
3. Writing reports on patient care
4. Summarizing scientific passages

UNIT IV GRAMMATICAL AND IDIOMATIC USAGE 24

1. Correction of errors
2. Types of interrogative sentences
3. Active – Passive voice
4. Tense
5. Principles of precision, Clarity and specificity

UNIT V 24

1. METHODS OF TEACHING

Lecture, pair work, group activities, role plays, simulations, debates, quiz, exercises and essay writing.

2. METHODS OF EVALUATION

Oral presentations
Panel Discussions
Summary/Essay writing
Comprehension exercises

Evaluation

Total Hours: 120

Text books:

1. Bhaskar, W.W.S. and Prabhu, N.S, English through reading, Macmillan & Co of India Ltd, 4 Ed, 1993

2. Gimson A.E., An introduction to the pronunciation of English, Wing King Tong Co Ltd.5 Ed,1995

3. Randolph and Green Baum, A University Grammar of English ,Quick,Group (FE) Ltd.3Ed,1997

4. Thomson, A.J., And Martinel A.V.V - Practical English Grammar –.,Oxford University press, Delhi,2003

References:

1. Water F.V.A , Proficiency Course in English,Hodder and Stronghton Pub., London,1994

2. Tone Daniel, I.M. , English Pronouncing Dictionary,Dent and sons Ltd. London.2004

3. O' Connor, I.D., Better English Pronunciation , Cambridge University.2009

Discipline specific elective II

15BPT102 COMPUTER & ITS APPLICATION IN PHYSIOTHERAPY 6 0 0 4

Course objective:

The objective of this course is that after 120 hours of L,D,P the student shall be able to understand the basic knowledge about computer & its language, components, functions and networks

Course outcome:

1. Able to explain various types of computers.
2. Become familiar with various aspects of computer.
3. Become familiar with various operating systems.
4. Know and explain about various aspects of looping.
5. Able to handle various computer applications.
6. Able to use effectively computer graphics and other computer applications for better understanding in the field of physiotherapy and clinical studies.

UNIT I INTRODUCTION TO COMPUTERS 24

Introduction to computers
Types of computers
Characteristics and Hardware aspects of computer.

UNIT II OPERATING SYSTEMS 24

Operating systems
Definition &Types of operating systems
MS DOS
UNIX
LINUX
Memories, RAM, ROM, Secondary Memory.

UNIT III LOOPING 24

Decision making and Looping
Which statement
Do statement
FOR statement Arrays
String handling functions
User defined functions.

UNIT IV **COMPUTER PACKAGES** **24**

Computer packages
MS Office
MS word
MS Excel
MS PowerPoint
Advantages and uses.

UNIT V **COMPUTER NETWORKS & GRAPHICS** **24**

Introduction to computer networks – Definition LAN, WAN advantage of Internet – worldwide web.
Computer Graphics: Definition – display devices – graphical input and output devices – multimedia – definition and application – computer applications in physiotherapy and clinical studies.

PRACTICALS

Exercises based on the following are to be dealt:
1. Computer operating systems like UNIX, MS-DOS etc.
2. Simple program In C.
3. MS-Office (MS-Word, MS-Excel, MS-Access, MS-PowerPoint)

Evaluation

Total Hours: 120

Text Books:

1. C.Nellai Karunan, MS Office, CBS,4th Ed, 2006

2. Hunt N and Shelly J., Computers and commonsense, Prentice - hall of India New Delhi,2011

References:

1. E.Balaguruswamy – Programming in ANSI –C Tata Mc.Graw Hill-1997

2. Byron Gottfield – Programming with C, Prentice - hall of India,2nd Ed, 2000

3. Popst and Perrum, computer aided drug design, Academic press New york.1999

4. Writh, systematic programming- an introduction, Prentice Pub,3rd Ed,2005

5. Tanen Baum, Computer networks,2 Ed, 2012

6. Rajaraman ,Computer Graphics, Mc Graw Hill, 6 Ed, 2009

Discipline specific elective -III

15BPT103 BIOSTATISTICS / RESEARCH METHODOLOGY 5 0 0 4

Course Objective

The objective of this course is after 100 hours of lectures the student should be able to have basic knowledge on Research Methodology and Bio Statistics.

Course Outcome:

1. The student will be able to implement hypothesis testing
2. Important concepts relating to research design and measurements and scaling techniques.
3. To analyze experimental and observational study
4. Knowledge of Processing and analyzing data can be gained
5. To implement and calculate frequency distribution.
6. Interpretation and Report Writing can be well understood
7. Desire to face the challenge in solving the unsolved problems and to be of service to society

UNIT I **20**

Introduction to Biostatistics

1. Introduction to Biostatistics
2. Frequency distribution
3. Measures of central tendency
4. Measures of dispersion

UNIT II **20**

Statistical Tool

1. Probability
2. Correlation & regression
3. Statistical inference

UNIT III **20**

Community and Hospital Statistics

1. Vital statistics
2. Health statistics

UNIT IV **20**

Research Methodology

1. Introduction to research methodology
2. Steps in research process

UNIT V **20**

Research Report

1. Writing research report
2. Pilot Study

Evaluation **Total Hours: 100**

Textbooks:

1. B.L Agarwal, Basic statistics , New Age International Publication.2012.

Reference:

1. Sundarrao, Introduction to biostatistics and Research Methodology, CBS, 1Ed, 2002.
2. C.R Kothari, Research methodology, New Age international publication, 3Ed, 2014.

Discipline Specific Elective -IV

15BPT104 **CLINICAL TESTING** **5 0 0 4**

Course objective The objective of this course is that after 100 hours of lectures & demonstrations, the student will be able to understand the knowledge about importance of special tests and its implication to various conditions / problems / diseases.

Course Outcome:

1. To understand the concept of clinical testing and its significance

2. To clearly explain the special tests of need

3. To be well versed in implications and significance of special tests

4. To be well versed in special tests of upper limb joints

5. To understand the special tests of spinal joints

6. To clearly explain the special tests of lower limb joints

UNIT I **20**

Clinical test and its Significance

1. Introduction to clinical tests
2. Importance of clinical testing

UNIT II **20**

Implications of Special Tests

1. Special tests of need
2. Implication and Significance of Special Tests

UNIT III **20**

Upper Limb Joints

Special tests of upper limb joints
-Shoulder Joint
-Elbow Joint
-Wrist Joint

UNIT IV **20**

Spinal Joints

Special testsof spinal Joints
-Cervical Joint
-Thoracic Joint
-Lumbar Joint

UNIT V **20**

Lower Limb Joints

Special tests of lower limb joints
-Hip Joint
-Knee Joint
-Ankle Joint

Total Hours: 100

Textbook:

1. MC Rae , Clinical orthopaedic examination – ELBS, 2 Ed, 2003

Reference:

1. David Magee , Orthopaedic physical assessment , MC GrawHill, 3Ed, 2005

Discipline Specific Elective –V

15BPT105 ERGONOMICS 3 0 0 2

Course objective

The objective of this course is that after 60 hours of lectures & demonstrations, the student will be able to understand the knowledge about ergonomics issues, evaluation and safe practice standards.

Course outcome:

1. Student should have understood the different types of work nature and its impact towards the human body.

2. Student should have understood how to perform the ergonomic evaluation & should also be aware of mandatory questions which needed to be asked related to the profession.

3. Student should also be aware of pre examination procedures and examination for a person before appointing them in to the work.

4. Student should be aware to perform a workplace assessment for all the profession & should have understood about all nature of work how it affects the normal system, body mechanics, and psychological level of the person.

5. Student should be able to differentiate the work nature of software and hardware professionals.

6. Students should have understood what are the legal bodiesexsiting in constructing the work place.

UNIT I 12

Introduction

1. History of ergonomics

2. Need of ergonomics
3. Domains in ergonomics

UNIT II **12**

Ergonomic Assessment

1. Ergonomic cycle
2. Evaluation of ergonomic issues
3. Assessment tools
4. Exit assessment

UNIT III **12**

Job analysis

1. Requirement of job
2. Profile and candidate selection
3. Pre employment screening

12

Analysis

1. Job site analysis
2. Job task analysis
3. Avenues and benefits of ergonomics
4. Work hardening

UNIT V **12**

Current Trends in Ergonomics

1. Software in ergonomics
2. Regulatory bodies
3. Professionals in ergonomics
4. Legal issues and insurance policies

Evaluation **Total Hours: 60**

Textbook:

1. Salvendry**,** Handbook of Human Factors and Ergonomics, Mosby, 1Ed, 2012

Reference:

3. Valevie, J Berg rice ergonomics in health care & rehabilitation, butter worth, 1998.

Discipline Specific Elective –VI

15BPT106 APPLIED PHYSICS 5 0 0 4

Course objective:

The objective of this course is that after 100 hours of L,D,P the student shall be able to understand the basic knowledge about the forces acting in human body, gravity, electricity and magnetism.

Course outcome:

1. Students will know about the human body functions applied by the force gravity

2. Recognize how observation, experiment & theory work together to continue to expand the frontiers of knowledge of the physical universe

3. Analyze interpret and evaluate scientific hypotheses and theories , laws using rigorous methods

4. Students can understand the basic scientific principles, theories & laws as was as an awareness of the changing nature of science

5. Students aid gain knowledge about the current elasticity to differentiate the mode of transmission

6. They will understand and know how the applied the electrical in students to the human.

7. Students will know about the personality styles applied by physics movement etc.,

UNIT – I **INTRODUCTION** **20**

1. Forces in human body
2. Gravity, LOG, COG
3. Levers of the body
4. Anatomical pulleys
5. Body torque
6. Types of motion, Planes of motion, Axis, direction and quality of motion

UNIT – II **MUSCLES** **20**

1. Elasticity- Hook's law.
2. Stress / strain curve
3. Angle of pull & the mechanical efficiency of muscle
4. Types of muscle work

UNIT – III **HYDROTHERAPY AND HEAT** **20**

1. Laws of hydrotherapy & its application
2. Heat & its application

UNIT – IV **ELECTRICITY** **20**

1. Static electricity
2. Current electricity
3. Working & importance of current in clinical practice
4. Electromagnetic spectrum

UNIT – V **MAGNETISM** **20**

1. Definition
2. Properties of magnets
3. Electromagnetic induction
4. Magnetic forces and field

Total Hours: 100

Text Books:

1. Claytons , Electrotherapy Explained – CBS, 9 Ed, 2013
2.John Low and Anee Reed , Electrotherapy Explained –, Butterworth Heinmann pub, 1Ed, 2000

Reference:

1. Dena Gardiner, Principles of Exercise therapy, Bell and Hymes, 4th Ed, 1981.

Discipline Specific Elective -VII

15BPT107 APPLIED CHEMISTRY 5 0 0 4

Course objective:

The objective of this course is that after 100 hours of L,D,P the student shall be able to understand the basic knowledge about the ATP production, energy source & body and other biochemical activity / changes that occur in our body.

Course outcome:

1. Student will know about the energy source that invalid in human body
2. Student will know about the acidic reaction & mechanism
3. They will know about the metabolism of the body and how the process occur
4. Student will know about the nutrition and the deficiency
5. Student will know about the clinical tester to identify the internal function of the organs
6. Student will know how the chemical reaction occur in our human body

UNIT – I INTRODUCTION 20

1. Energy source of body
2. Carbohydrates
3. Protein
4. Fat

UNIT – II **ENERGY SYSTEMS** **20**

1. ATP Production
2. Aerobic & Anaerobic Metabolism
3. .Lactic acid production
4. Lactic acid clearance mechanism

UNIT – III **METABOLISM** **20**

1. Protein metabolism – Digestion, absorption, Urea cycle
2. Carbohydrate metabolism
3. Fat metabolism

UNIT – IV **NUTRITION** **20**

1. Composition of food
2. Balanced diet
3. Nutritional deficiency disorders
4. Major dietary constituent & their importance

UNIT – V **CLINICAL BIOCHEMISTRY** **20**

1. Metabolic equivalence
2. Types of energy expenditure
3. Liver function test
4. Renal function test
5. Lipid profile in serum

Total Hours: 100

Text Book:

1. B.E. Deb, Basics in Bio chemistry – JP, 2Ed, 1997

Reference:

2. Chatterjee, Text book of medical biochemistry, JP, 8 Ed, 2012

Generic Electives

Generic elective I

15BPT151 MEDICAL ELECTRONICS & BIO - PHYSICS 5 0 0 4

Course Objective:

The objective of this course is that after 100 hours of Lecture, the student will be able to understand about the knowledge of mechanics, muscle action, Electricity, magnetism and ionization.

Course outcome:

1. Become familiar with mechanics and laws related to hydrotherapy.
2. Well versed with muscle work, types of muscle work and forces involved and equilibrium.
3. Know about electricity, its therapeutic uses and importance of currents in treatment.
4. Explain about electromagnetic spectrum.
5. Explain thoroughly about alternating and static currents along with its physiological and therapeutic effects.
6. Explain in detail about magnetism the effectiveness of magnetic field and magnetic forces in therapeutic interventions.
7. Well versed with the techniques of medical and surgical ionisation.
8. Effectively explain various types of electrodes and making of electrodes.

UNIT I **20**

Mechanics, Laws related to Hydrotherapy

- Types of motion, planes of motion, axis, direction, quality of motion.
- Forces types, Components, forces in human body.
- Gravity, LOG, COG, Segmental centers of gravity, Stability of centre of gravity, relocation of COG.
- Reaction forces, Newton's Law of equilibrium
- Law of acceleration
- Anatomic pulleys
- Work done, Torque of moment arm
- Force system – Linear force system In action
- Concurrent force system 1. Convergent 2. Divergent
- Parallel force system e.g. Levers in relation with human body.
- Springs
- Tension
- Elasticity – Hooks Law.
- Archimedes principle
- Pascal law
- Buoyancy

- Surface tension
- Hydrostatic pressure.

UNIT II **20**

Muscle

- Definition
- Types
- Muscle work
- Angle of pull & the mechanical efficiency of muscle
- Starting position
  Types, Muscle work, forces involved, Equilibrium
- Derived position
  Types, muscle work, forces involved, Equilibrium

UNIT III **20**

High Frequency

Physics of heat & Radiation

- Cosmic Law
- Grother Law
- Inverse Square law.

Introductory Physics

a. Electricity
Definition, types, laws, therapeutic uses, Basic Physics, Working and Importance of Currents in treatments.

b. Electromagnetic Spectrum.

c. Static Electricity
   a. Production of electric charge.
   b. Characteristics of a charged body
   c. Characteristics of line of forces
   d. Potential energy and factors affecting it.
   e. Potential difference & EMF
   f. Effects of environmental & Man made EMF at the cellular level & risk factors on prolonged exposure

d. Current Electricity
   a. Units: farad, volt, ampere, coulombs, Watt.
   b. Resistance: in series & in parallel
   c. Ohm's law
   d. Potentiometer
   e. Fuse
   f. Transmission of electrical energy through solids, liquids, gases & Vacuum.
   g. Direct current: Definition, physiological effects, Chemical effects, Therapeutic & polar effects, Dangers – shock, Safety precautions & Management.

h. Burns: Electrical & Chemical
i. Condensers
j. Main Electrical Supply.
k. Alternating currents
- Faradism
- Surged Faradism
- Physiological & Therapeutic effects.

UNIT IV **20**

Electromagnetic Induction

a. Magnetism:

Definition, Properties of magnets, Electromagnetic induction, Transmission by contact, Magnetic field and Magnetic forces, Magnetic effects of an electrical field.

b. Moving coil milliammeter
c. Voltmeter
d. Transformer
e. Chokes
f. Electric valves or Therapeutic valves
- Types: Diode, Triode, Double anode diode
- Principles of valves
- Construction & working
- Uses

g. Metal oxide Rectifier

UNIT V **20**

a. Ionization:

- Theory
- Effects of Various ions.
- Techniques of medical ionization and surgical ionization

b. Potentionmeter.
c. Oscilloscope
d. Electrodes :
- Types
- Making of electrodes.

Evaluation

Total Hours:100

Text Books:

1. M.Dena Gardiner, The Principles of Exercise therapy, Bell & Hymes, 4th Ed,1981

2. Edward Bellis Clayton, Clayton's Electrotherapy , Baillier Tindill , 9th Edition, 1985

References:

1. Carolyn Kisner ,Therapeutic Exercise,Jaypee Brothers , 6th Ed,2012

2. Low & Read ,Electrotherapy Explained, Butterworth- Heinminn , 4th Ed, 2006

Generic elective II

15BPT152 CARDIO - PULMONARY RESUSCITATION 5 0 0 4

Course objective:

Upon successful completion of 100 hours, the student will be able to apply first aid and perform cardio-pulmonary resuscitation (CPR).

Course Outcome:

1. To be wellversed in defining CPR

2. To understand the Principles of CPR

3. To be wellversed in checking and positioning the victims

4. To clearly explain the procedures in CPR

5. To understand the concept of signals of a heart attack

6. To clearly explainthe concept of Adult, Child and infant CPR

UNIT I INTRODUCTION TO CPR 20

1. Definition of CPR

2. Health concerns as it relates to performing Community CPR or First Aid.

UNIT II PRINCIPLES OF CPR 20

1. Check, Call, and Care techniques.

2. Good Samaritan Laws and getting permission from victims.

UNIT III INDICATIONS FOR CPR 20

1. Checking an unconscious victim.

2. Positioning victims.

UNIT IV PROCEDURES IN CPR 20

1. Steps in determining care of a victim. Examples: rescue breathing, CPR, etc.
2. Matt work on all skills related to Community CPR.

UNIT V TYPES OF CPR 20

1. Signals of a heart attack.
2. Adult, child, and infant CPR.

Total Hours:100

Textbook:

1. Chandra, Handbook of Interventional Cardiology, JP, 1 Ed, 2015

Reference:

1. Davidson,A Text Book of Medicine, Churchill Livingston, 21 st Ed, 2010.

Generic Elective -III

15BPT153 PT Evaluation 5 0 0 4

Course objective

The objective of this course is that after 100 hours of lectures & demonstrations, the student will be able to understand the knowledge about Physiotherapy evaluation of various conditions including orthopeadics, neurology, cardio respiratory, sports and Hand conditions.

Course Outcome:

1. To understand the importance of evaluation and screening
2. To be wellversed in clinical decision making
3. To clearly explain the methods of evaluation and general evaluation formats
4. To be wellversed in PT evaluation in orthopaedic conditions
5. To understand PT evaluation in cardio-pulmonary conditions
6. To be wellversed in PT evaluation in Neurological conditions
7. To clearly explain the concept of PT evaluation in sports and Hand conditions.

UNIT- I **INTRODUCTION** **20**

1. Importance of evaluation
2. Importance of screening
3. Clinical decision making
4. Methods of evaluation
5. General evaluation formats

UNIT – II **ORTHOPEDIC EVALUATION** **20**

1. PT Evaluation in orthopedic conditions
2. Range of motion
3. Limb length measurement
4. End feels

UNIT – III **CARDIO - PULMONARY EVALUATION** **20**

1. PT Evaluation in Cardio-pulmonary conditions
2. Normal & abnormal heart sounds
3. ECG waveforms – normal & abnormal
4. Auscultation techniques

UNIT – IV **NEUROLOGICAL EVALUATION** **20**

1. PT Evaluation in Neurology conditions
2. Myotomes
3. Dermatomes
4. Reflex testing
5. Tone assessment

UNIT – V **SPORTS AND HAND EVALUATION** **20**

1. PT Evaluation in Sports & Hand conditions
2. Common sports injuries
3. Hand functions
4. Ergonomic measures

Total Hours: 100

Text Books:

1. David Magee , Orthopaedic physical assessment , MCgH, 3rd Ed, 2005.
2. Frown Felter, Cardiopulmonary evaluation, ELBS, 2nd Ed, 1997.

Reference:

1. Lindsay ,Neurology Assessment – Mosby, 3rd Ed, 2009.
2. David , Sports Injuries assessment and Rehab – CBS, 1st Ed, 2004.

Generic Elective – IV

15BPT154 CLINICAL DIAGNOSIS 5 0 0 4

Course objective:

The objective of this course is that after 100 hours of L,D,P the student shall be able to understand the basic knowledge about Clinical diagnosing Ortho,Neuro and Cardio-respiratory Conditions.

Course outcome:

1. One can understand the knowledge about clinical diagnosis of orthopaedic conditions

2. One can understand the knowledge about clinical diagnosis of neurological conditions

3. One can understand the knowledge about clinical diagnosis of cardiac conditions

4. One can understand the knowledge about clinical diagnosis of respiratory conditions

5. One can understand the knowledge about clinical diagnosis of OBG conditions

UNIT I CLINICAL DIAGNOSIS OF ORTHOPAEDIC CONDITIONS 20

1. Fracture
2. Congenital disorders
3. Deformities
4. Trauma & injury
5. Orthopedic disabilities arising due to neurological conditions

UNIT II CLINICAL DIAGNOSIS OF NEUROLOGICAL CONDITIONS 20

1. Stroke
2. Brain tumours
3. Psychiatric disorders

4. Cerebellar dysfunction
5. Epilepsy
6. Demyelinating disorders

.UNIT III CLINICAL DIAGNOSIS OF CARDIAC CONDITIONS 20

1. Congenital heart diseases
2. Circulatory disorders
3. Arrhythmias
4. Cardiomegaly

UNIT IV CLINICAL DIAGNOSIS OF RESPIRATORY CONDITIONS 20

1. Abnormal breathing patterns
2. COPD
3. Occupational lung diseases
4. TB & Tumours

UNIT V CLINICAL DIAGNOSIS OF OBG CONDITIONS 20

1. Prolapse of uterus
2. Hernia
3. Mastectomy
4. Antenatal complications
5. Post natal complications

Total Hours: 100

Text Book:

1. Davidson,A Text Book of Medicine, Churchill Livingston, 21 st Ed, 2010.

Reference:

1. Magee, Texbook of orthopaedics, ELBS, 7Ed, 2002

Ability Enhancement Compulsory Electives

Ability enhancement compulsory elective I

15BPT201 FOOD AND NUTRITION 5 0 0 4

Course objective:

The objective of this course is that after 100 hours of L,D,P the student shall be able to understand the basic knowledge about Diet, balanced diet, metabolism, malnutrition, under-nutrition, overnutrition, deficiency disease.

Course outcome:

1. Become familiar about the nutritive values of food.
2. Explain about the food sources from which we obtain vitamins.
3. Become familiar with various compositions of food.
4. Well versed with digestion at each stages of digestive system.
5. Become familiar with different cooking methodologies.
6. Know and explain about food preparations by food manufacturer.
7. Explain thoroughly about the advantages and disadvantages of various convenience foods.

UNIT I SOURCES OF FOOD 20

1. Nutritive value of foods,
2. Food Sources from which key vitamins are derived

UNIT II DIGESTIVE SYSTEM 20

1. Digestion and absorption –Digestion at each stage of the digestive system
2. Dietary guidelines- Factors affecting food requirements. Planning and serving of family meals. Meals for all ages and occupations.

UNIT III COMPOSITION OF FOOD 20

Composition and value of the main foods in the diet -
Milk, meat, fish, cheese, eggs, margarine and butter
cereals (wheat, rice, maize, millets, oats)
fruits and vegetables

UNIT IV PROCESSING OF FOOD 20

1. Cooking of food -Transfer of heat by conduction, convection and radiation.
2. Principles involved in the different methods of cooking – boiling, stewing, grilling, baking, roasting, frying, steaming, pressure cooking, cooking in a microwave oven.

UNIT V FOOD PREPARATION 20

1. Convenience foods- Foods partly or totally prepared by a food manufacturer – dehydrated, tinned, frozen, ready to eat. Intelligent use of these foods.
2.Advantages and disadvantages. Total Hours:100 Text Book:

2. Agarwal, Textbook of human nutrition, JP, 1 Ed, 2014

Reference:

1. Kenneth F. Kiple, Kriemhild Coneè Ornelas, The Cambridge world history of food,Cambridge University Press,Ist ed,2000

Ability Enhancement Compulsory Elective - II

15BPT202 HOSPITAL MANAGEMENT 5 0 0 4

Course objective

Students can explore public policy, community relations, human resource management, hospital finance, fundraising, physician relations and collective bargaining after completing 100 hours of teaching.

Course Outcome

1. To understand the concept of principles of management

2. To be wellversed in the types of management

3. To clearly explain the research methods for management

4. To be wellversed in Hospital Architecture, planning and Design

5. To understand the concept of materials management

6. To be wellversed in Ethics and laws in Hospital management

UNIT I PRINCIPLES OF MANAGEMENT 20

1. Principles of Management
2. Organizational Behaviour

UNIT II TYPES OF MANAGEMENT 20

1. Accounting and Finance for Managers
2. Marketing Management
3. Human Resource Management
4. Quantitative Techniques for Management

UNIT III IMPORTANCE OF MANAGEMENT 20

1. Research Methods for Management
2. Corporate Communication
3. Operations Management

UNIT IV HOSPITAL MANAGEMENT 20

1. Hospital Architecture, Planning And Design
2. Materials Management
3. Hospital Operation – I (Patient Care)
4. Hospital Operation – II (Supportive Services)

UNITV ETHICS & LAWS IN HOSPITAL MANAGEMENT 20

1. Bio-Sciences & Epidemiology
2. Hospital Information System
3. Health Laws & Policies
4. Hospital Environment and Ethics

Total Hours:100

Textbook:

1. Wallace J. Hopp , Hospital Operations: Principles of High Efficiency Health Care, Pearson higher education Publication, 2nd Ed,2012

Reference:

1.Goyal&Sharma,Hospital Administration and Human Resource Management,PHIPublisher,2013

Ability Enhancement Compulsory Elective – III

15BPT203 ACUPUNCTURE 5 0 0 4

Course objective:

The objective of this course is that after 100 hours of L,D,P the student shall be able to understand the basic knowledge about importance of acupuncture and various effects and techniques.

Course outcome:

1. The student will understand the history of acupuncture & how it works, meridians of the human body

2. The theory of acupuncture is when the systems work more efficiently and how long it can be done

3. Surface anatomy is to know where to needle should be done & area of the involvements how clinically it works

4. How effectively the acupuncture works and how to stimulate the points

5. The students will know whom to treat and not to treat and for which conditions is complicated

6. Acupuncture points for selecting the affected parts

UNIT – I INTRODUCTION 20

1. Introduction to Acupuncture
2. History of acupuncture
3. The doctrine of five elements
4. Meridians

UNIT – II THEORIES OF ACCUPUNCTURE 20

1. Yin – yang theory
2. Organ clock theory
3. Zang – fu theory
4. Philosophies in acupuncture

UNIT – III CLINICAL ASPECTS OF ACUPUNCTURE 20

1. Surface anatomy in acupuncture
2. Tools in acupuncture(needle/stimulator)
3. Types of acupuncture

UNIT- IV EFFECTS OF ACUPUNCTURE 20

1. Effects of acupuncture
2. Techniques of acupuncture
3. Stimulation
4. Contraindications
5. Complications

UNIT – V SCIENTIFIC BACKGROUND IN ACUPUNCTURE 20

1. Acupuncture points
2. Extra ordinary points
3. Moxibustion
4. Selection of points

Total Hours: 100

Text Book:

1. Kothari / clinical acupuncture/ 2 ed / IIAA/ 2000

Reference:

1.Anton jayasuriya/Hand book of acupuncture/ 6ed/AAC/1996

Ability Enhancement Compulsory Elective – IV

15BPT204 MEDICAL TRANSCRIPTION 5 0 0 4

Course objective

The objective of this course is that after 100 hours of lectures & demonstrations, the student will be able to understand the knowledge about transcription, documentation and medical records.

Course outcome:

1. The students can clearly understand the about medical transcription.

2. Medical transcriptions and education degree requirements are well understood

3. Language and short forms can be studied

4. Common medical terminologies can be understood properly

5. Legal transcription is performed by licensed court reports known as stenographers

6. The student can understand the types of hazards health hazards – there are many types of hazardous chemicals, including neurotoxins, immune agents, etc.

UNIT – I INTRODUCTION 20

1. Introduction to medical transcription
2. Need of transcription
3. Global and Indian trends

UNIT – II DOCUMENTATION 20

1. Documentation of medical records
2. Requirements for transcriber
3. Language and short forms
4. Common medical terminologies

UNIT – III **ADJUNCTS TO TRANSCRIPTION** **20**

1. Tools on transcription
2. Hardware requirements
3. Software
4. Protective gadgets

UNIT – IV **ASPECTS IN TRANSCRIPTION** **20**

1. Legal aspects in transcription
2. Job levels in transcription
3. Scope of medical transcription

UNIT – V **HEALTH HAZARDS** **20**

1. Ideal transcriber
2. Health hazards
3. Ergonomics for transcribing

Total Hours: 100

Text Book:

1. Blanche Ettinger, Medical Transcription Paperback, Penguin Books Ltd; First edition (2005) – 2005

Reference:

1. Rachelle, Medical Transcription Handbook, Cengage Learning, 1997

Ability Enhancement Compulsory Elective – V

15BPT205 BASIC STATISTICS 5 0 0 4

Course objective:

The objective of this course is that after 100 hours of L& D the student shall be able to understand the basic knowledge about concept of statistics, calculations and data analysis that could be useful for research analysis.

Course Outcome:

1. The student will be able to implement hypothesis testing
2. Important concepts relating to research design and measurements and scaling techniques.
3. To analyze experimental and observational study
4. Processing and analyzing data
5. To implement and calculate frequency distribution.
6. Desire to face the challenge in solving the unsolved problems and to be of service to society

UNIT – I INTRODUCTION 20

1. Biostatistics Introduction
2. Data collection
3. Variables
4. Test of Hypothesis
5. Limitations

UNIT – II ROLE OF STATISTICS IN CLINICAL MEDICINE 20

1. Uses of statistics
2. Areas of application of statistics
3. Statistical data representation
4. Early samples

UNIT – III FREQUENCY DISTRIBUTION 20

1. Correlation
2. Regression
3. Probability
4.Graphical representation
5.Chi-Square Test

UNIT – IV MEASURES OF CENTRAL TENDENCY AND LOCATION 20

1. Arithmetic mean
2. Median
3. Mode
4. Percentile

UNIT – V FURTHER STATISTICAL METHODS 20

1. Biological Assay
2. Sequential medical trails
3. Vital statistics
4. Health statistics

Total Hours: 100

Text Book:

1. Pal Nabendu, Statistics: Concepts and Applications, PHI School Books; 2 edition (2007)

Reference :

1. Sundar Rao, Introduction to Bio statistics – JP, 3 Ed, 2013

Skill Enhancement Electives

Skilled Enhancement Courses – Elective I

15BPT251 YOGA 2 0 0 2

Course Objective

The objective of this course is that after 40 hours of lectures & demonstrations, the student will be able to understand the basic concepts about Asanas and its effects, therapeutics effects of Yoga.

Course outcome:

1. Demonstrate the introduction and principles of yoga.

2. Knowledge of history of yoga and yoga in modern India.

3. Outline of yoga background and importance of yoga in modern world.

4. Learning the types and forms of asanas and description of physiological effect of yoga.

5. Understanding the role of yoga in physiotherapy.

UNIT I **8**

Introduction to Yoga

1. Introduction to Yoga
2. Principles of Yoga

UNIT II **8**

Patanjali

1. History of Yoga
2. Yoga in Ancient and Modern India

UNIT III **8**

Folds of Yoga

1. Types & Forms of Yoga
2. Asanas & its physiological effects

UNIT IV **8**

Yogic Science

1. Scientific background of Yoga
2. Yoga in modern world

UNIT V **8**

Advantages of Yoga

1. Physiological Effects of Yoga
2. Therapeutic Uses of Yoga

Evaluation **Total Hours: 40**

Textbook:

1. BKS Iyengar, Light of Yoga, JP, 1st Ed, 2012.

Reference:

1. Payal Gidwani Tiwari, Body Gaurders, CBS, 2nd Ed, 2009.

Skilled Enhancement Courses – Elective II

15BPT252 FITNESS 2 0 0 2

Course objective

The objective of this course is that after 40 hours of lectures & demonstrations, the student will be able to understand about the importance of fitness, exercise and its importance to human body.

Course outcome

1. Definition of fitness, principles of exercises and testing of endurance and strength.

2.Understand the types of exercises and detail knowledge of aerobics and anaerobic exercises.

3. Knowledge of appropriate selection of exercises and advantages of exercises.

4. Understand the different type of muscle strengthening.

5. Understand the therapeutic effects of aerobic and Zumba dance.

UNIT I **8**

Introduction to Fitness

1. Fitness - Introduction to health
2. Principles of exercise, tests of endurance & strength

UNIT II **8**

Fitness and Exercise

1. Types of exercises
2. Aerobic
3. Anaerobic

UNIT III **8**

Importance of Exercise in Fitness

1. Selection of appropriate exercises

2. Beneficial & adverse effect of exercise

UNIT IV **8**

Fitness Training

1. Resistance Training
2. CWT
3. Incremental exercise
4. Agility

UNIT V **8**

Forms of Fitness

1. Aerobic Dance
2. Zumba

Evaluation **Total Hours: 40**

Textbook:

1. Mcardal, Exercise Physiology , ELBS, 5th Ed, 2011.

Reference:

1. Mary Beth Allan, Sports, Exercise, and Fitness: A Guide to Reference and Information Sources, Libraries unlimited publishers, 1st Ed, 2005.

Skill Enhancement Courses Elective-III

15BPT253	**Computer Languages**	**2**	**0**	**0**	**2**

Course objective:

The objective of this course is that after 40 hours of L,D,P the student shall be able to understand the basic knowledge about computer & its language, components, functions and networks

Course outcome:

1. To know about basic computer knowledge and their programs
2. The level of languages and the advanced languages
3. The student can know applications of computer languages and how to copy

right

4. To know about the animations and for graphic designing
5. It make the therapist to maintain clinical records in hospitals or clinic
6. To design the exercise protocol and to plan the exercise

UNIT – I INTRODUCTION 8

1. History of computer languages
2. Significance of softwares
3. Computer language significance
4. Common programming languages

UNIT – II LEVELS OF COMPUTER LANGUAGE 8

1. Low level language
2. High level language
3. Advanced high level language

UNIT – III APPLICATION OF COMPUTER LANGUAGE 8

1. Internet
2. Copy right
3. Application in clinical medicine

UNIT – IV SIGNIFICANCE OF COMPUTER LANGUAGE 8

1. Animations
2. Graphics designing
3. Software programming

UNIT – V APPLICATION IN PHYSIOTHERAPY 8

1. Applications in Physiotherapy education & practice
2. Clinical records maintenance
3. Designing of exercise protocol
4. Updates about the clinical condition.

Total Hours: 40

Text Book:

1. Hunt N, Computers and commonsense, JP, 2012

Reference:

1.Tanen Baum, Computer networks- Cb, 2 Ed, 2006

Skill Enhancement Courses Elective-IV

15BPT254	**EFFECTIVE ENGLISH**	**2 0 0 2**

Course Objective:

1. The objectives of this course is that after 40 hours of lectures, demonstrations and practicals the student will be able to Speak fluently, intelligibly and appropriately to teachers, Colleagues, Doctors, Patients and friends at the college, Hospital and hostel etc. about academic or (occupational) areas of interest.

Course Outcome:

1. Students can gain knowledge about the various traditions writer and followed in English

2. Individuals can gain self – confidence in their own voice and speak out their opinions with confidence

3. Students will gain the ability to become a accomplished active readers

4. Helps to build the knowledge and understanding simultaneously through listening and give their point of view

5. Students will be able to write effectively in variety of professional and social setting

6. Acquire the ability to read and understand the literature and have the ability to identify the topics and formulate questions

7. Good communication skills which helps in easy rapport between the patient and therapist

8. Gain the fluency in speaking which helps in easy teaching method and presentation

UNIT – I	**INTRODUCTION**	**8**

1. History of the language
2. Regional distribution
3. Variation in dialect and accent

UNIT – II **PHONOLOGY** **8**

1. Consonants and vowels
2. Phontactics
3. Stress, rhythm and intonation
4. Regional variation

UNIT – III **GRAMMER** **8**

1. Noun, Pronoun
2. Verb, Tense
3. Adjuncts
4. Adjectives

UNIT – IV **SYNTAX** **8**

1. Clause syntax
2. Auxillary verbs
3. Vocabulary
4. Word formation
5. Pronounciation

UNIT – V **PRESENTATION** **8**

1. Oral presentation & Panel discussion
2. Interview preparation
3. Clarity and specificity

Total Hours: 40

Text Book:

1. O' Connor, I.D., Better English Pronunciation - Cambridge, Cambridge University.2009

Reference:

1. Water F.V.A , Proficiency Course in English – Hodder and Stronghton, London.1994
2. Tone Daniel, I.M. , English Pronouncing Dictionary –Dent and sons Ltd. London.2004

INTERNSHIP (6 MONTHS)

Hours	-	**1248 Hrs**

Postings

1. Department of Orthopaedics	-	1 month
2. Department of Neurology & Paediatrics	-	1 month
3. Department of Cardiology	-	1 month
4. ICU Training	-	15 days
5. Geriatric & Pediatric rehabilitation	-	15 days
6. Oncology & palliative care	-	15 days
7. Department of Plastic Surgery & Burns	-	15 days
8. Orthotic & prosthetics	-	7 days
9. Fitness training	-	7 days
10. Department of OBG	-	15 days
		----------
		6 Months

EVALUATION OF THE INTERNSHIP

1. ATTITUDE: The student shall put up 100 % attendance during EACH assignment. Student's performance shall be graded by the respective clinic section in – charge at the end of each assignment. The candidates shall Repeat the particular assignment if the performance is found unsatisfactory (Grade – C or D)