INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)
(Deemed to be University Estd. u/s 3 of the UGC Act, 1956)
PALLAVARAM - CHENNAI
ACCREDITED BY NAAC WITH 'A' GRADE
Marching Beyond 30 Years Successfully
INSTITUTION WITH UGC 12B STATUS

B.P.T
PHYSIOTHERAPY

Curriculum and Syllabus

Regulation 2022

(Based on Choice Based Credit System (CBCS)

and

Outcome Based Education (OBE))

Effective from the Academic year

2022-2023

School of Physiotherapy

DEPARTMENT OF PHYSIOTHERAPY
CURRICULUM 2022

I Semester

S.No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Core	22CBPT001T	Psychology - Theory	5	0	0	5	40	60	100
2	Core	22CBPT002T	Sociology - Theory	5	0	0	5	40	60	100
3	Core	22CBPT003T	Anatomy – I – Theory	5	0	0	5	40	60	100
		22CBPT003P	Anatomy – I – Viva	0	0	2	1	40	60	100
4	Core	22CBPT004T	Physiology – I - Theory	5	0	0	5	40	60	100
		22CBPT004P	Physiology – I - Viva	0	0	2	1	40	60	100
5	Elective	22DBPT101	DSE Elective – I - Theory	2	0	0	2	40	60	100
	Total			**22**	**0**	**4**	**24**			

II Semester

S.No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Core	22CBPT005T	Anatomy – II – Theory	5	0	0	5	40	60	100
		22CBPT005P	Anatomy – II – Viva	0	0	2	1	40	60	100
2	Core	22CBPT006T	Physiology – II - Theory	5	0	0	5	40	60	100
		22CBPT006P	Physiology – II - Viva	0	0	2	1	40	60	100
3	Core	22CBPT007T	Orientation in PT & First Aid - Theory	5	0	0	5	40	60	100
4	Core	22CBPT008T	Medical Electronics/Biophysics-Theory	5	0	0	5	40	60	100
5	Elective	22DBPT102	DSE Elective – II - Theory	2	0	0	2	40	60	100
	Total			**22**	**0**	**4**	**24**			

III Semester

S.No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Core	22CBPT009T	Clinical Medicine - Theory	5	0	0	5	40	60	100
2	Core	22CBPT010T	Exercise Therapy – I Theory	5	0	0	5	40	60	100
		22CBPT010P	Exercise Therapy – I Practical	0	0	2	1	40	60	100
3	Core	22CBPT011T	Electrotherapy Therapy – I Theory	5	0	0	5	40	60	100
		22CBPT011P	Electrotherapy Therapy – Practical	0	0	2	1	40	60	100
4	Core	22CBPT012T	Biomechanics I - Theory	5	0	0	5	40	60	100
		22CBPT012P	Biomechanics I – Practical	0	0	2	1	40	60	100
5	Elective	22ABPT201	AEC Elective – I - Theory	2	0	0	2	40	60	100
	Total			**22**	**0**	**6**	**25**			

IV Semester

S.No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Core	22CBPT013T	Microbiology/ Pathology - Theory	5	0	0	5	40	60	100

2	Core	22CBPT014T	Exercise Therapy – II Theory	5	0	0	5	40	60	100
		22CBPT014P	Exercise Therapy – II Practical	0	0	2	1	40	60	100
3	Core	22CBPT015T	Electrotherapy Therapy – II Theory	5	0	0	5	40	60	100
		22CBPT015P	Electrotherapy Therapy – II Practical	0	0	2	1	40	60	100
4	Core	22CBPT016T	Biomechanics II - Theory	5	0	0	5	40	60	100
		22CBPT016P	Biomechanics II - Practical	0	0	2	1	40	60	100
5	Elective	22ABPT202	AEC Elective – II - Theory	2	0	0	2	40	60	100
	Total			**22**	**0**	**6**	**25**			

V Semester

S.No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Core	22CBPT017T	General Surgery, Plastic Surgery & Burns - Theory	5	0	0	5	40	60	100
2	Core	22CBPT018T	Clinical Neurology & Psychiatry – Theory	5	0	0	5	40	60	100
		22CBPT018P	Clinical Neurology & Psychiatry – Viva	0	0	2	1	40	60	100
3	Core	22CBPT019T	Physiotherapy in Neurology – Theory	5	0	0	5	40	60	100
		22CBPT019P	Physiotherapy in Neurology – Practical	0	0	2	1	40	60	100
4	Core	22CBPT020T	Physiotherapy in OBG & Women Health – Theory	5	0	0	5	40	60	100
		22CBPT020P	Physiotherapy in OBG & Women Health –Practical	0	0	2	1	40	60	100
5	Elective	22GBPT151	GE Elective I - Theory	2	0	0	2	40	60	100
	Total			**22**	**0**	**6**	**25**			

VI Semester

S.No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Core	22CBPT021T	Clinical Cardio – Pulmonary Diseases – theory	5	0	0	5	40	60	100
		22CBPT021P	Clinical Cardio – Pulmonary Diseases – viva	0	0	2	1	40	60	100
2	Core	22CBPT022T	Physiotherapy in Cardio Pulmonary Diseases – Theory	5	0	0	5	40	60	100
		22CBPT022P	Physiotherapy in Cardio Pulmonary Diseases –Practical	0	0	2	1	40	60	100
3	Core	22CBPT022T	Community Medicine - Theory	5	0	0	5	40	60	100
4	Core	22CBPT024T	Cardiopulmonary resuscitation-Theory	5	0	0	5	40	60	100
5	Elective	22BPT----	DSE Elective-III -Theory	2	0	0	2	40	60	100
	Total			**22**	**0**	**4**	**24**			

VII Semester

S.No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Core	22CBPT025T	Clinical Orthopaedics & Traumatology - Theory	5	0	0	5	40	60	100
		22CBPT025P	Clinical Orthopaedics & Traumatology - Viva	0	0	2	1	40	60	100

2	Core	22CBPT026T	Physiotherapy in Orthopaedics-Theory	5	0	0	5	40	60	100
		22CBPT026P	Physiotherapy in Orthopaedics-Practical	0	0	2	1	40	60	100
3	Core	22CBPT027T	Professional Ethics /Administration/Marketing-Theory	5	0	0	5	40	60	100
4	Core	22CBPT028T	Yoga- Theory	5	0	0	5	40	60	100
5	Elective	22DBPT104	DSE Elective-IV– Theory	2	0	0	2	40	60	100
	Total			**22**	**0**	**4**	**24**			

VIII Semester

S.No.	Category	Code	Course	Hours/Week			Cr.'s	CA	SEE	Total
				L	T	P				
1	Core	22CBPT029T	Community Based Physiotherapy Disability Evaluation - Theory	4	0	0	4	40	60	100
		22CBPT029P	Community Based Physiotherapy Disability Evaluation - Viva	0	0	2	1	40	60	100
2	Core	22CBPT030T	Evidence Based Practice	4	0	0	4	40	60	100
3	Core	22SBPT251	SE Elective - I	4	0	0	2	40	60	100
4	Practical	22PBPT001	Clinical Reasoning in Physiotherapy Management	0	0	8	4	40	60	100
5	Project	22RBPT001	Project	0	0	8	4	40	60	100
	Total			**12**	**0**	**18**	**19**			

L – Lectures, T-Tutorial, P – Practical, Cr.'s – Credits, CA – Continuous Assessment Test , SEE- Semester End Examination

BPT Program Outcome:

During this BPT degree,

1. One can gain a comprehensive knowledge of physiotherapy, including areas such as Orthopaedics, neurology, cardiac & Respiratory conditions, OBG and preventative health care.
2. The Bachelor of Physiotherapy incorporates significant clinical and professional training opportunities, providing hands-on experience with real patients in a supervised environment.
3. 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
4. Students will have the Demonstrated skills that support lifelong learning in personal and professional development
5. 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.
6. Acquires adequate knowledge of the basic medical subjects in the practice of Physiotherapy
7. One can demonstrate the integration of best research evidences with available scientific research and clinical expertise and patient centric values.
8. Development of proper attitude for compassion and concern for the individuals and welfare of the differently abled persons.
9. Demonstrates skills in teaching management research guidance and counseling
10. Practices moral and ethical values to focus more on clinical decision- making process.

22CBPT001T	Psychology - Theory	L	T	P	Credits
		5	0	0	5

Course Objectives:

The objective of this course is that, after 100 hours of lectures & demonstrations, in addition to clinics, the student will be able to understand, recognize the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical – surgical patients/conditions and help the patients to deal with it accordingly. They should also understand the basic principles of behavior while handling the patients during therapy.

UNIT I **PSYCHOLOGY** **20**

1. DEFINITION OF PSYCHOLOGY

Introduction to 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) Old age

UNIT II **20**

1. INTELLIGENCE

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

2. 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.

3. 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.

UNIT III 20

1. 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.

2. 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.

3. 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).

4. 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 IV **20**

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 unsuccessful Defense mechanisms
Importance of Defense Mechanisms.

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

UNIT V **20**

1. 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.

2. STRESS

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

3. THERAPY

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

General outline:

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

HEALTH PSYCHOLOGY (APPLIED PSYCHOLOGY) NOT FOR EXAMS

A. PSYCHOLOGICAL REACTIONS OF A PATIENT

Psychological reactions of a patient during admission and treatment: anxiety, shock, denial, suspicion, questioning, loneliness, regression, Shame, guilt, rejection, fear, withdrawal, depression, 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. COMMUNICATIONS

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

D. 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.

E. GERIATRIC PSYCHOLOGY

Specific psychological reactions and needs of geriatric patients.

F. PAEDIATRIC PSYCHOLOGY

Specific psychological reactions and needs of pediatrics patients.

G. BEHAVIOUR MODIFICATION

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

H. SUBSTANCE ABUSE

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

I. PERSONALITY STYLES

Different personality styles of patients.

Evaluation **Total Hours: 100**

Text books:

1. Morgan & King, Introduction to Psychology, 3rd Ed,1994
2. Psychology for Physiotherapists, Thingamajig Ramalingam.A, 2nd Ed, 2017

References:

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

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

Course Outcome

CO1:	Gaining knowledge of Psychological behavior of patients in various developmental stages.	**K2**
CO2:	Explain the concept of stress and its relationship to health, sickness and one's profession.	**K3**
CO3:	Identify ego defense mechanisms and learn counseling techniques to help the needy.	**K4**
CO4:	Help them to understand the applications of psychology in the field of physiotherapy	**K3**
CO5:	Apply psychological skills and exhibit self-regulation during professional work.	**K5**

Mapping of Program outcomes with course outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	0	1	1	1	1	1	1	0	0	1
CO2	0	1	0	0	0	0	0	0	1	0
CO3	0	0	0	0	0	0	0	0	1	0
CO4	0	0	0	0	0	0	0	1	1	1
CO5	0	1	0	0	0	0	0	0	1	1
Average	0	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.8	0.6

Assessment Methods:

CAT 1	**CAT 2**	**Model Exam**	**1 SemesterExams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**
			✓	✓

22CBPT002T	Sociology - Theory	L	T	P	Credits
		5	0	0	5

Course Objectives:

The objective of this course is that after 100 hours of lectures, demonstrations, practical 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.

UNIT I **20**

1. INTRODUCTION

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

2. SOCIOLOGY AND HEALTH

Concept and definition of 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.

3. SOCIALIZATION

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

UNIT II **20**

1. SOCIAL GROUPS

Definition and meaning of social groups, Characterstics of social groups, Types and functions 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.

2. MARRIAGE

Meaning of marriage, mate choice of marriage

3. FAMILY

Definition, characteristics and functios of family, Modern family, Influence of family on human personality family disorganisation, Influence of the family on the individual's health, family and nutrition, the effects of sickness on family, and psychosomatic disease.

4. 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.

UNIT III **20**

1. CULTURE

Meaning of culture,functions of culture and cultyural lag ,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.

2. CASTE SYSTEM

Features of the modern caste system and its modern trends.

3. SOCIAL CHANGE

Meaning of social change, Factors influencing of social change, human adaption and social change, social change and stress and Social change and deviance. The role of social planning in the improvement of health and in rehabilitation.

UNIT IV **20**

1. SOCIAL CONTROL

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

2 . SOCIAL PROBLEMS OF THE DISABLED

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

UNIT V **20**

1. SOCIAL SECURITY

Meaning of social security, social security in India, Workmans Compensation Act1922 and ESI Act 1948.

2. SOCIAL PLANNING AND RECONSTRUCTION

Definition of planning, five year plans and their achievements.

3. SOCIAL WORKER

Meaning of Social work, Methods and functions of Medical Social Worker. Medical social worker.

4. COMMUNITY HEALTH

Health care services and health institutions, social change and health programmes in India.

Evaluation **Total Hours: 100**

Text books:

1. P.Ganesh, Text book of Sociology for physiotherapy, EMMESS first edition, 2018.
2. MalkotraVarun,Hand book of Medical Sociology for nursing, physiotherapy and paramedical students., Jaypee Brothers.
3. P.Ramasamy, General and Medical Sociology, New Millennium Publications, 5th edition.

References:

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

Course Outcome

CO1:	Social assessment of patients in various developmental stages.	**K2**
CO2:	Explain the concept of sociology and its relationship to health, sickness and one's profession.	**K3**
CO3:	Help them to understand the reason of non – compliance among patients and improve compliance behavior	**K4**
CO4:	Help them gain insight into the applications of sociology in the field of Physiotherapy.	**K4**
CO5:	Identify social problems and learn rehabilitation to help those in need	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	1	1	0	1	1	0	1	1	0
CO2	1	0	0	0	0	0	0	0	0	0
CO3	1	0	0	0	1	0	0	0	1	0
CO4	1	0	1	0	0	0	1	0	0	0
CO5	1	0	1	0	0	1	0	0	0	0
Average	1	0.2	0.6	0	0.4	0.4	0.2	0.2	0.4	0

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT003T	ANATOMY - I	L	T	P	Credits
		5	0	0	5

Course Objectives:

The objective of this course is that after 180 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.

UNIT I INTRODUCTION TO OSTEOLOGY & MYOLOGY 20

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 and Tissues

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.
6. Classify tissues.
7. Classify and mention the microscopic structure of types of tissues such as epithelial,
8. Connective, muscular and nervous tissues. Give examples for each type of tissue.

c. Introduction to Bones (Osteology)

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.

d. 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.

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

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

UNIT II UPPER EXTREMITY 20

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. 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 costoclavicular 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.
c. Identify the coronoid process, olecranon process, trochlear notch, tuberosity, head, styloid process of ulna, radial notch of ulna and ulnar notch of radius.
d. 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 grips.
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.

UNIT III THORAX AND ABDOMEN 20

1. Thorax

a. State the main features of the bones and joints of thoracic cage. Mention the boundaries.
b. State the parts and features of sternum. Indicate the importance of sternal angle
c. Define the boundaries and subdivision of the mediastium and list the contents. Identify the contents.
d. State the features of thoracic parts of sympathetic trunk.
e. Define true, false and floating ribs. Mention the parts and features of typical rib.
f. Know the main features of a typical rib.
g. Mention the type and formation of the joints between rib and vertebrae, between costal cartilage and sternum and between coastal cartilages.
h. Analyse pump handle and bucket handle movements of ribs.
i. 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 diaphragm.

Abdomen:

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.
g. Distinguish abdominal cavity and peritoneal cavity.
h. Mention the features of lumbar part of sympathetic trunk and other sympathetic ganglia.
i. Mention the branches and distribution of the abdominal aorta and iliac arteries.
j. State the inferior vena cava and iliac veins and mention their tributaries.

UNIT IV HEAD AND NECK 20

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

Temporomandibular joint:

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

UNIT V SYSTEMS 20

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. 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.

c. 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.

Evaluation **Total Hours: 100**

Text Book

1. Chaurasia, Human Anatomy - VOL I, VOL II, VOL III,7th Edition, CBS, 2016.
2. Text Book of Anatomy, Vishram Singh – VOL I, VOL II, VOL III, 3rd Edition, CBS, 2018.

References:

1. NiglePalastanga, 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.

CO1	Understand the structural and functional importance of cell and different types of tissues.	K2
CO2	Understanding the different type of classification and general features of bone, joints, and muscular tissues.	K4
CO3	The structural and functional importance of muscles, joints, long and short nerves and different spaces in upper limb including applied aspect.	K2
CO4	To explain and understand the functional importance of upper limb	K3
CO5	To understand the muscles surrounding upper limb	K4

CO PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	2	2	2	2	2	2	2	1
CO2	2	1	2	2	2	1	2	2	2	2
CO3	2	1	2	2	2	1	2	2	1	2
CO4	2	2	2	2	2	1	1	1	2	2
CO5	2	2	1	2	2	2	2	1	1	2
Average	2	1.6	1.6	2	2	1.4	1.8	1.6	1.6	1.8

Assessment Methods:

CAT 1	CAT 2	Model Exam	1 SemesterExams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**

22CBPT004T	Physiology – I	L	T	P	Credits
		5	0	0	5

Course Objective

The Objective of this course is that after 180 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.

UNIT I GENERAL PHYSIOLOGY 20

CELL:

- Morphology. Organelles: their structure and functions
- Transport Mechanisms across the cell membrane
- Body fluids: Distribution, composition. Tissue fluid – formation.

BLOOD

- Introduction: Composition and functions of blood.
- Plasma: Composition, formation, functions. Plasma proteins.
- RBC: count and its variations.
- Erythropoiesis- stages, factors regulating.
- Haemoglobin - Anemia (in detail), types of Jaundice.
- Blood indices, PCV, ESR. WBC: Classification. Morphology, functions, count, its variation of each.
- Immunity: Types
- Platelets: Morphology, functions, count, its variations
- Hemostatic mechanisms: Blood coagulation–factors, mechanisms. Their disorders. Anticoagulants.
- Blood Groups: Landsteiner's law. Types, significance, determination, Erythroblastosisfoetalis. Blood Transfusion.
- APPLIED PHYSIOLOGY: Thalassemia Syndrome, Hemophilia, Anemia, Leucocytosis. Bone marrow transplant.

SKIN

- Structure
- Functions
- Blood flow
- Temperature regulation

UNIT II MUSCLE 20

- Classification of muscles
- Structure of a skeletal muscle
- Properties of a skeletal muscle
- Neuromuscular junction & excitation contraction coupling
- Changes during muscle contraction
- Tetany, myasthenia gravis
- All or none law
- Types of muscle contraction
- Muscle fatigue
- Muscle action potential

- EMG – overview
- Aerobic & anaerobic view
- Age related changes in muscle
- Age related changes in physical work capacity
- APPLIED PHYSIOLOGY: Rigor mortis

UNIT III **CARDIOVASCULAR SYSTEM** **20**

- Cardiac muscle – structure, properties & nerve supply of the heart
- Cardiac cycle
- Heart sounds
- ECG; arrhythmia
- Cardiac output
- Factors regulating the action of heart
- Heart rate
- Arterial blood pressure & its regulation
- Coronary circulation
- Cerebral circulation
- Haemorrhage
- Circulatory shock
- Cardiovascular adjustments during exercise
- APPLIED PHYSIOLOGY: MI

UNIT IV **RESPIRATORY SYSTEM** **20**

- Overview of respiratory tract
- Defence mechanism in respiratory tree
- Mucociliary transport
- Mechanics of respiration
- Pulmonary circulation
- Lung volumes & pulmonary function tests
- Transport of blood gases
- Acid – base balance
- Artificial ventilation
- Neural & chemical regulation of respiration
- Hypoxia & its types
- Cyanosis – types and features.
- Effects of exercise on respiratory system
- Acclimatization
- High altitude and respiration
- Decompression sickness
- APPLIED PHYSIOLOGY: Disorders of Respiration: Dyspnoea. Orthopnoea. Hyperpnoea, hyperventilation, apnoea, tachypnoea.

UNIT V **20**

PHYSIOLOGY OF EXERCISE

A. Effects of acute and chronic exercise on

1) O2 transport
2) Muscle strength/power/endurance

3) B.M.R./R.Q
4) Hormonal and metabolic effect
5) Cardiovascular system
6) Respiratory system
7) Body fluids and electrolyte

B. Effect of gravity / altitude /acceleration / pressure on physical parameters.

C. Physiology of age.

Evaluation **TOTAL HOURS: 100**

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. PrakasamReddy,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

CO1	Outline of structural and functional importance of cell, muscle and skin.	K1
CO2	Detail knowledge of different type and function of blood cells.	K2
CO3	Understand the applied aspect of cardiovascular, nervous and respiratory system.	K3
CO4	Basic knowledge on different type of digestion can be acquired	K2
CO5	To understand the basic physiology of exercise	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	1	2	1	2	2	2	2	1
CO2	2	1	2	2	2	1	2	2	2	2
CO3	2	2	2	2	1	2	2	2	1	2
CO4	2	2	2	2	2	1	2	1	2	1
CO5	2	2	1	2	2	2	2	1	1	2
Average	2	1.8	1.6	2	1.6	1.6	2	1.6	1.6	1.6

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments	Case Studies
√	√	√	√	√	
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**	**Open book test**
√	√			√	√

22DBPT101	ENGLISH FOR COMMUNICATION	L	T	P	Credits
		2	0	0	2

Course Objective:

At the end of 70 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.

UNIT I SPOKEN COMMUNICATION 20

Learning to read the phonetic symbols

1. Stress
2. Intonation
3. Rhythm
4. Commonly mispronounced words
5. Correct pronunciation of important commonly used words in clinical practice
6. Note taking in lecture classes

UNIT II VOCABULARY AND READING 20

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 20

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 20

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

UNIT V **20**

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: 100**

Text books:

1. Bhaskar, W.W.S. and Prabhu, N.S, English through reading, Macmillan & Co of IndiaLtd, 4 Ed, 1993
2. Gimson A.E., An introduction to the pronunciation of English, Wing King Tong Co Ltd.5Ed,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 Universitypress, 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

Course outcome:

CO1	Become fluent in speaking and enhance the ability to communicate effectively with colleagues, doctors, patients etc.	K1
CO2	Well versed with comprehension skills and vocabulary enhancement.	K2
CO3	Become familiar with writing various official letters, writing patients reports and summarize scientific sessions.	K2
CO4	Understand about the grammatical and idiomatic usages.	K3
CO5	Well versed with various methods of teaching by involving in group activities, role plays etc.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	1	2	1	1	1	2	1	1	1
CO2	1	1	1	2	1	1	1	1	1	1
CO3	1	1	1	2	1	1	2	2	1	1
CO4	1	1	2	1	1	1	2	2	1	2
CO5	1	1	2	1	1	1	2	2	1	2
Average	1	1	1.6	1.4	1	1	1.8	1.6	1	1.4

Assessment Methods:

CAT 1	**CAT 2**	**Model Exam**	**1 SemesterExams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**
				✓

22CBPT005T	Anatomy – II – Theory	L	T	P	Credits
		5	0	0	5

Course Objectives:

The objective of this course is that after 180 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.

UNIT I OSTEOLOGY & MYOLOGY OF LOWER EXTREMITY 20

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 sub sartorial canal.
   e. Indicate the position, course, and distribution of femoral nerve.
   f. Indicate the course and main branches of femoral artery and mention the blood supply of neck of femur.
   g. Indicate the position of femoral vein.

2. 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 ofthe 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 offoot.
i. Mention the type, articular surface, ligaments, movements 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.

UNIT II TRUNK AND PELVIS 20

Vertebral Column:

a. State the basic osteology of vertebral column.
b. 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.
c. State the form, structure and movements of joints of vertebral column. Mention the movements and the muscles producing them.
d. Identify the intervertebral disc and mention its parts.
e. State the formation and ligaments of the intervertebral joints.
f. Name and identify the curvatures of the vertebral column and Indicate the deformities.
g. State the contents of vertebral canal.
h. Mention the main features of lumbar vertebrae, sacrum and coccyx.
i. 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.

PELVIS

a) Mention the formation and subdivisions of the bony pelvis. List the features of the female bony pelvis and their roles
b) Mention the type, articular surfaces, ligaments and movements of the joints of pelvis.
c) State the main features of subdivisions, boundaries, walls and floor of pelvis.
d) Mention the features of the pubic symphysis and sacroiliac joints.
e) Distinguish and mention the major difference between the male and female.
f) Identify the muscles of the pelvic floor and mention their attachments, actions and nerve supply.

UNIT III NEUROANATOMY 20

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 meninges 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. Briefly outline the nature and basics of muscle tone, Mention the anatomical pathways involved in the production and maintenance of muscle tone.

4. 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.

5. 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.

6. 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.

7. 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.

UNIT IV SPECIAL SENSES AND CRANIAL NERVES 20

Mouth:

1. State the main features of the mouth cavity, tongue, palate, salivary glands, teeth andgums.
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 VIIth and XIIth 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.
6. Mention their attachments, actions, and nerve supply.
7. Define the position, extent, and gross structure of the trachea.
8. State the mechanics of phonation and speech, production of sound voice and speech.

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.

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. Indicate the site of attachment to brain and cranial exits.
4. State the sensory and motor distribution.
5. State the position and course of VIIth nerve.
6. Predict the sequel of lesion.
7. Name the cranial nerves containing para sympathetic fibers and mention their distribution.

UNIT V **SYSTEMS** **20**

a. Endocrine system

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

b. Digestive System

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. Name the position and subdivisions of the pancreas.

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

c. Genito-Urinary System

1. a. Comprehend the basic functional implications and the basic structure of the kidney and ureter.
   b. Mention the position, size, and shape of the kidney.
   c. Name the immediate relations of the kidney.
   d. Indicate the cortex, medulla, pyramids, sinus, calyces, and 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.

Evaluation **Total Hours: 100**

Text Book

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

2. Text Book of Anatomy, Vishram Singh – VOL I, VOL II, VOL III, 3rd Edition, CBS, 2018.

References:

1. NiglePalastanga, Anatomy and human movement, Butterworth Heinmann pub.
2. 4th Ed,2007.

3. Cunningham's Manual of Practical anatomy (for practical classes only) Vol. 1, 2 and 3.
4. Romanes, Oxford university press, 3Ed, 2006 .
5. Gray's Anatomy, William Bannister, Churchill Living Stone pub, 3 Ed, 2007

Course outcome:

CO1	The structural and functional importance of muscles, joints, long and short nerves and different spaces in lower limb, including applied aspect.	K1
CO2	To understand and identify the muscles of lower limb and actions	K2
CO3	To understand the functional importance of trunk and pelvic cavity.	K3
CO4	Detail anatomical knowledge of nervous system.	K4
CO5	Outline of visual, auditory and taste pathways, cranial nerves including applied aspect.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	2	2	2	2	2	2	2	1
CO2	2	1	2	2	2	1	2	2	2	2
CO3	2	1	2	2	2	1	2	2	1	2
CO4	2	2	2	2	2	1	1	1	2	2
CO5	2	2	1	2	2	2	2	1	1	2
Average	2	1.6	1.8	2	2	1.4	1.4	1.6	1.6	1.8

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT006T	Physiology – II - Theory	L	T	P	Credits
		5	0	0	5

Course Objective:

The Objective of this course is that after 200 hours of lectures, demonstrations Lab practical's 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.

UNIT I **20**

NERVOUS SYSTEM

- Structure of a neuron
- Classification of nerve fibres
- Properties of nerve fibres
- Receptors
- Synapse & synaptic transmission
- Reflexes & properties of reflexes
- Spinal cord and its pathway
- Spinal tracts and its functions
- Physiology of pain
- Brainstem, thalamus, basal ganglia
- Cerebrum; cerebral cortex
- Proprioceptors
- Posture & equilibrium
- Vestibular apparatus
- EEG
- CSF
- Autonomic nervous system
- APPLIED PHYSIOLOGY: Paralysis, monoplegia, paraplegia, hemiplegia and quadriplegia

UNIT II **20**

REPRODUCTIVE SYSTEM

- Overview of male & female reproductive system
- Functions of testes. Pubertal changes in males. Spermatogenesis. Testosterone: action. Regulation of secretion. Semen
- Menstrual cycle
- Pregnancy & parturition
- Placenta & its functions
- Lactation
- Contraceptive measures
- Physiology of foetus
- Factors affecting foetal growth

UNIT III **20**

RENAL PHYSIOLOGY

- **S**tructure of nephron
- Renal blood flow and its regulation.
- Functions of kidneys.
- Juxta Glomerular apparatus
- Renal circulation
- Formation of urine
- Micturition
- Renal failure
- Acid-Base balance

UNIT IV **20**

SPECIAL SENSES

- Vision
- Audition
- Olfaction
- Gustation
- Vestibular apparatus

UNIT V **20**

A. DIGESTIVE SYSTEM

- Mouth & salivary glands
- Mechanism & regulation of gastric juice secretion
- Bile & pancreatic secretion
- Secretions of small and large intestines
- Movements (motility) of the GI tract

B. ENDOCRINOLOGY

- Hormones
- Pituitary gland-its functions & abnormalities
- Thyroid gland-its functions and abnormalities
- Thyroxin
- Parathyroid glands & physiology of bone

Evaluation **Total Hours: 100**

Text Books:

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

2. Chatterjee,HumanPhysiology,Central book agency, 4th edition, 1958.

References:

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

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

3. Sujith Kumar Chaudhri, Concise medical physiology, New Central Book Agency, 6th Ed, 2011
4. Ganong's review of medical physiology kim .E. Barrett 25th edition.

Course outcome:

CO1	Brief outline of nervous system and digestive system.	K1
CO2	To Understand about the reproductive system.	K3
CO3	Outline of different parts and functions of reproductive system.	K2
CO4	Detail knowledge of central nervous system, peripheral nervous, supporting tissues and autonomic nervous system	K4
CO5	Brief knowledge of pathway of vision, auditor and taste.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	1	2	1	2	2	2	2	1
CO2	2	1	2	2	2	1	2	2	2	2
CO3	2	2	2	2	1	2	2	2	1	2
CO4	2	2	2	2	2	1	2	1	2	1
CO5	2	2	1	2	2	2	2	1	1	2
Average	2	1.8	1.6	2	1.6	1.6	2	1.6	1.6	1.6

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT007T	ORIENTATION IN PT AND FIRST AID	L	T	P	Credits
		5	0	0	5

Course Objective:

The objective of this course is that after 100 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.

UNIT I **20**

1. Introduction

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

2. First Aid Emergencies

1. First aid treatment, General treatment.
2. CPR -Basic Principles and steps to be determining CPR
3. Poisoning: Classification (irritants, acid, alkalis, and narcotics), signs, and symptoms. First aid treatment, General treatment.
4. Trauma due to foreign body intrusion: Eye, ear, nose, throat, stomach, and lungs.
5. Bites: First aid, signs, symptoms, and treatment.
   a. Dog bite: Rabies.

b. Snake bite: Neurotoxin, bleeding diathesis.

6. Burns and scalds: Causes, Degree of burns

UNIT II **20**

1. Skeletal injuries

Introduction to fracture, Types of fractures, mechanism of injury, Signs, and symptoms. Rules of treatment, Transportation of patient with a 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 **20**

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 **20**

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 **20**

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 bedside manners. General ethical code & discipline of the department
d. Acquire the skill of History taking in general.

Evaluation **Total Hours: 100**

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. RaineHardhins and Hunt Vaheirs,Urgencies and emergencies for Nurses, English Universities Press Ltd, 1965.
2. First Aid, American Red Cross, The Balckistoncompany, Philadephia, 1945.
3. GolqallaAsoi, A handbook of emergencies, Bombay sam and company, 1986.

Course outcome:

CO1	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.	K2
CO2	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.	K3
CO3	Students should know how the spinal cord will be handled during the emergency situations & will also understand different ways of wound care and hemorrhage management.	K3
CO4	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.	K4
CO5	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.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	3	3	3	2	3	2	3
CO2	3	3	3	2	2	3	3	2	3	3
CO3	3	3	2	2	3	3	2	2	1	2
CO4	3	3	2	2	3	3	2	2	1	2
CO5	2	2	2	2	1	2	3	2	3	2
Average	2.8	2.6	2.4	2.2	2.4	2.8	2.4	2.2	2	2.4

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT008T	MEDICAL ELECTRONICS/BIOPHYSICS	L	T	P	C
		5	0	0	5

Course Objective:

The objective of this course is that after 70 hours of Lecture, the student will be able to understand about the knowledge of mechanics, muscle action, Electricity, magnetism and ionization.

UNIT I **20**

Mechanics

- Kinematics (Description of motion): Types of motion, Location of motion, direction, Magnitude of motion. Kinetics (Analysis of forces):
- Forces types, Components, forces in human body.
- Force of Gravity, LOG, COG, Segmental COG, COG of the human body, Stability and COG, relocation of the COG.
- Reaction Forces Newton's Law of Reaction,
- Equilibrium Newton's Law of Inertia.
- Newtons Law of acceleration
- Anatomic pulleys
- Work done, Torque of moment arm
- Force system –
    - Linear force system
    - Concurrent force system
    - Parallel force system e.g. Levers in relation with human body.

UNITII **20**

Principles of Exercise Therapy

- Elasticity – Hooks Law.
- Springs
- Buoyancy -Archimedes principle
- Hydrostatic Pressure – Pascal's law
- Surface tension
- Types of Movement and posture
- Types of Muscle contraction
- Types of Muscle work
- Range of Muscle work
- Group action of Muscles
- Starting position
  Types, Muscle work, Effects and Uses
- Derived position
  Types, muscle work, Effects and Uses

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

d. Current Electricity

a) Units: farad, volt, ampere, coulombs, Watt.
b) Resistance: in series & in parallel
c) Ohm's law
d) Potentiometer: Construction and working.
e) Fuse: Construction working and application
f) Burns: Electrical & Chemical
g) Condensers
h) Introduction to Direct current and Alternating currents
   - Physiological & Therapeutic effects.

UNIT IV **20**

MAGNETISM

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

d. Electrodes:
- Types
- Making of electrodes.

Evaluation **Total Hours:100**

Text Books:

1. Cynthia C.Norkins, A text book of Joint structure & function
2. M. Dena Gardiner, The Principles of Exercise therapy, Bell &Hymes, 4th Ed,1981
3. Edward Bellis Clayton, Clayton's Electrotherapy, BailllierTindill, 9th Edition, 1985

References:

1. Carolyn Kisner,Therapeutic Exercise, Jaypee Brothers, 6th Ed, 2012.
2. Low & Read, Electrotherapy Explained, Butterworth-Heinminn, 4th Ed, 2006.

Course outcomes:

CO1	Become familiar with mechanics and laws related to hydrotherapy.	K2
CO2	Well versed with muscle work, types of muscle work and forces involved and equilibrium.	K3
CO3	Know about electricity, its therapeutic uses and importance of currents in treatment.	K3
CO4	Explain thoroughly about alternating and static currents along with its physiological and therapeutic effects.	K4
CO5	Explain in detail about magnetism the effectiveness of magnetic field and magnetic forces in therapeutic interventions.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	1	2	1	1	2	2	1	2	2
CO2	2	1	2	2	1	1	2	1	2	2
CO3	2	2	1	2	1	2	2	2	1	1
CO4	2	2	2	1	1	1	2	2	1	2
CO5	2	1	1	1	2	2	2	2	2	1
Average	2	1.4	1.6	1.4	1.2	1.6	2	1.6	1.6	1.6

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

3DBPT102	BIOCHEMISTRY	L	T	P	C
		2	0	0	2

Course Objective

The Objective of this course is that after 180 hours of lectures, demonstrations Lab practical's the student will be able to demonstrate an understanding of clinical biochemistry dealing with food metabolism, basic of macro and micro nutrients.

UNIT I **20**

NUTRITION

- Introduction,
- Importance of nutrition Calorific values,
- Respiratory quotient – Definition, and its significance
- Basal metabolic rate: Definition, Normal values, factor affecting BMR Specialdynamic action of food
- Physical activities - Energy expenditure for various activities.
- Calculation of energy requirement of a person Balanced diet Recommended dietaryallowances

UNIT II **20**

CARBOHYDRATES

- Definition, general classification with examples,
- Glycosidic bond Structures
- Composition, sources, properties and functions of Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides.
- Carbohydrate Metabolism: Introduction, Glycolysis – Aerobic, Anaerobic Citric acid cycle, Substrate level phosphorylation
- Glycogen metabolism – Glycogenesis, Glycogenolysis
- Metabolic disorders glycogen, Gluconeogenesis, Cori cycle
- Hormonal regulation of glucose, Glycosuria, Diabetes mellitus,

LIPID CHEMISTRY

- Definition, general classification Definition, classification, properties and functions of Fatty acids
- Triacylglycerol, Phospholipids, Cholesterol
- Essential fatty acids and their importance
- Lipoproteins: Definition, classification, properties, Sources and function Ketone bodies
- Introduction to lipid metabolism: Lipolysis, Oxidation of fatty acids -oxidation offatty acids, Lipogenesis
- Ketone body metabolism: Ketone body formation (ketogenesis), utilization
- (ketolysis), ketosis

UNIT III **20**

PROTIENS

- Protein chemistry: Definition, Classification, Functions of proteins,
- Amino-acid Chemistry: Amino acid chemistry: Definition, Classification, Peptide
- bonds
- Peptides: Definition, Biologically important peptides
- Amino acid and Protein Metabolism: Catabolism of amino acids - Introduction,
- transamination, deamination, Fate of ammonia, transport of ammonia, Urea cycle.

ENZYMES

- Enzymes: Definition, Active site, Cofactor (Coenzyme, Activator), Proenzyme.
- Classification with examples, Factors effecting enzyme activity, Enzyme inhibitionand significance.
- clinical significance of enzymes

UNIT IV **20**

VITAMINS

- Definition, classification according to solubility.
- Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion,absorption and transport, deficiency and toxicity

MINERALS

- Mineral Metabolism: Definition, Sources, RDA, Digestion, absorption, transport,excretion, functions.
- Disorder of Individual minerals - Calcium, phosphate, iron, Magnesium, fluoride,selenium, molybdenum, copper. Phosphate, calcium and iron

UNIT V **20**

MINERAL METABOLISM

- Definition, Sources, RDA, Digestion, absorption, transport, excretion, functions.
- Disorder of Individual minerals - Calcium, phosphate, iron, Magnesium, fluoride, selenium, molybdenum, copper. Phosphate, calcium and iron

WATER BALANCE

- Water distribution in the body, Body water, water turnover.
- Regulation of water balance: role of ADH and thirst centre

Evaluation **Total Hours: 100**

Text Books:

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

References

1. DAS (Debajyothi) Biochemistry, Editor, Academic Publishers
2. Strayer, Biochemistry, Editor, 4, 1995

Course outcome:

CO1	. Knowledge about acid base balance.	K2
CO2	Define nutrition, balance diet & nutritional disorders.	K1
CO3	Role of enzymes.	K2
CO4	Carbohydrate Chemistry, Amino-acid Chemistry & Vitamins.	K3
CO5	Carbohydrate Metabolism, Lipid Metabolism, Amino acid and Protein Metabolism	K3

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	2	2	1	2	2	1	1	2	1
CO2	1	2	2	1	2	2	2	2	1	1
CO3	1	1	2	1	2	2	1	1	2	1
CO4	1	2	2	1	2	2	1	1	2	1
CO5	1	2	2	1	2	1	1	1	2	1
Average	1	1.8	2	2	2	1.8	1.2	1.2	1.8	1

Assessment Methods:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	MCQ	Projects	Seminars	Demonstration / Presentation

22CBPT009T	CLINICAL MEDICINE	L	T	P	C
		5	0	0	5

Course Objective:

The objectives of this course is that after 90 hours of lectures & demonstrations, inaddition 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.

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. Anaemia.
2. List types of bleeding diathesis.
3. Describe the clinical features of Haemophilia.

UNIT II **20**

Respiratory Tract

1. Chronic obstructive pulmonary disease.
2. Pneumonia
3. Asthma - Define; describe briefly the etiological factors and clinical features of acute exacerbation.
4. Chronic obstructive airway diseases - Define emphysema and chronic bronchitis. Briefly describe the pathology, symptoms of disease and clinical course.
5. Tuberculosis - Describe the aetiology, pathology and clinical features of pulmonary TB.
6. Bronchiectasis - Define and describe briefly the pathology and clinical symptoms of bronchiectasis.
7. Chest wall deformities - Describe funnel chest, Pigeon chest barrel chest, Kyphoscoliosis of thoracic spine.
8. Occupational lung disease.

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
5. Myocardial infarction, Describe the clinical features and broadly outline medical and surgical therapy.
6. Hypertension - Define and outline the clinical features, complications & goals of therapy.
7. Outline pathogenesis and clinical features of pulmonary embolism, Deep vein thrombosis, pulmonary infarct.
8. Congenital heart disease - List ASD, VSD, Fallot Tetralogy and PDA &brieflyoutline the pathologic anatomy.

UNIT III **20**

Bone, Joint and Connective Tissue Disorders

1. Define: Systemic lupus erthymatosis, Polymyositis, Dermatomyositis, Polyarteritis Nodosa, and Scleroderma.
2. Rheumatoid arthritis - Describe aetiology, clinical features and complications, drug therapy and non pharmacological therapy.
3. 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: Hypertension, Ischemic
2. Heart disease, Cerebrovascular accidents, Benign prostatic Hyperplasia, Cataracts &other causes of failing vision.

UNIT IV **20**

ENT, OPTHAMOLOGY, DERMATOLOGY, PAEDIATRICS

E.N.T

1. Briefly classify causes of hearing loss. Outline the conservative and surgical intervention, including types and availability of hearing aids.

Opthalmology

- Eye lesions in leprosy, including causes, treatment and complications of Igophthalmos.
- Effect of Paralysis of ocular muscles and treatment.
- Define blindness, and visual disability evaluation.

Dermatology

Diseases of skin – leprosy, pigmentary anomalies, vasomotor disorders, tropic ulcers.

Peadiatrics

1. Gestational diabetes, pregnancy induced hypertension: chronic maternal diseases such as heart diseases, renal failure, tuberculosis, diabetes, epilepsy: bleeding in the mother at any trimester.
2. Outline the immunisation schedule for children.
3. Cerebral Palsy: Define and briefly outline etiology - Prenatal, perinatal and postnatal causes: briefly mention pathogenesis, types of cerebral palsy (Classification).
4. Muscular dystrophy
5. Spinabifida, meningomyelocele: Outline development: clinical features -
6. Still’s disease

UNIT V **20**

1. Regenerative medicine - stem cell therapy: sources of stem cells and how does it works?
2. Stem cell transplant in cancer treatments: outline the effect of transplantation
3. Uses and Negative effects of stem cell therapy.

Evaluation **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, McGraw 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.

Course outcome:

CO1	This helps in study the of medicines encountered in the management of physiotherapy	K2
CO2	This course gives basic idea of different diseases and infections	K3
CO3	This provides brief knowledge on symptoms and pathology of diseases	K3
CO4	This gives knowledge on analysing and interpretating imaging findings into the physical therapy diagnostic process	K4
CO5	This provides a basic knowledge on physiological and pathological changes during old age	K3

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	3	2	2	2	1	1	3
CO2	2	1	2	2	2	2	1	2	1	2
CO3	2	2	2	1	1	2	2	1	2	1
CO4	2	2	3	2	3	2	2	2	1	2
CO5	2	3	2	1	1	3	1	2	2	2
Average	2.2	2	2.2	1.8	1.8	2.2	1.6	1.6	1.4	2

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT010T	EXERCISE THERAPY – I	L	T	P	C
		5	0	0	5

Course Objective:

The objectives of this course is after 170 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.

UNIT I **20**

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:

Pelvic Tilt

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

UNIT II **20**

Passive Movements: Relaxed passive, Mobilization (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

Practical (Passive movement and stretching)

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.
   Practical (Goniometric measurement of Joint)

UNIT III **20**

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:
   a. Shoulder abductors, Shoulder forward flexors, Triceps Brachii, Hip abductors, Hipflexors, Quadriceps femoris, Abdominal muscles, Back extensors.

   b. 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.

Practical (Resisted exercise)

UNIT IV **20**

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.

UNIT V **20**

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.

Practical (Muscle Grading, relaxation and PNF)

EVALUATION **TOTAL HOURS: 100**

Text Books:

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

Course outcome:

CO1	This provides fundamentals of muscle and joint function	K2
CO2	To gain knowledge on joint range and their measurements	K3
CO3	This demonstrates the active and passive movements of each joint	K5
CO4	This illustrates practical knowledge on passive movement, resisted exercise and muscle grading	K4
CO5	This demonstrates the re-education exercises of each joint	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.6	2.8	2.2	2.6

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT011T	ELECTROTHERAPY - I	L	T	P	Credits
		5	0	0	5

Course Objectives:

The objective of this course is that after 170 hours of lectures, demonstration, practicals and clinical the student will be able to list the indications and contra – indications, demonstrate the different techniques and the effects of various types of electrotherapy modalities.

UNIT I **20**

Introduction

A. Introduction to Electrotherapy - Definition and types, Therapeutic uses. Instrumentation, Importance of currents in treatment, Equipment demonstration.
B. Shock-Electrical and earth: causes, effects, management, precautions, Safety measures in Electrotherapy Department.

UNIT II **20**

A) Basics of Low Frequency stimulating currents

1. Bio-electricity - electrical charge within body.
2. Types of low frequency currents used in therapeutics

B) Low Frequency currents

a) Direct current – Galvanic current
b) Interrupted DC
c) Faradic current
d) Surged Faradic current
e) Pathophysiology of nerve lesion - Principles of selection of modes for assessment of nerve muscle function.

All types of therapeutic currents must be taught under the following sequence

1. Definition: Production (Brief) - wave forms – duration
2. Indication & contra indications
3. Physiological effects
4. Therapeutic effects
5. Technique of application

C) IONTOPHOROSIS

1. Theory
2. Physiological effect and uses of various iontophoresis
3. Effects of various ions.
4. Techniques of lontophorosis for pain relief, reduction of oedema, wound healing and hyperhidrosis.

D) Transcutaneous Electrical Nerve Stimulation (TENS)

1. Physiology of pain, pain modulation Gate control theory.

TENS – Definition, Production, Types, Therapeutic and physiological effects, Indication & Contraindication, Technique of application.

UNIT III **20**

A) Medium frequency currents

a) Interferential current
b) Russian current
c) Didynamic current
d) Sinusoidal current

All types of medium frequency currents must be taught under the following sequence.

1. Definition: Production (Brief) - wave forms – duration
2. Indication & contra indications
3. Physiological effects
4. Therapeutic effects
5. Technique of application

UNIT IV **20**

A) Electromyography, Nerve conduction & Bio – Feedback testing, Electro-diagnostic testing like FG test, SD curve.

1. Principles
2. Instrumentation
3. Application and uses.

UNIT V **20**

A) TRACTION

1. Types
2. Indications and contraindications.
3. Physiological and therapeutic effects
4. Principles and application of traction

B) EXTERNAL COMPRESSIVE DEVICES

1. Types
2. Indications and contraindications.
3. Physiological and therapeutic effects
4. Principles and application of traction

Evaluation **TOTAL HOURS: 100**

Text Books:

1. Clayton's Electrotherapy – Therapy and practice – Angela Forster, All India Traveler Book seller.9th Ed, 2012.
2. John Low and AnnReed ,Electrotherapy Explained – Butterworth Heinmann Pub. 4th Ed, 2003.
3. Edward BellisClayton , Nigel Palastanga, Claytons Electrotherapy:Theory and practice, 9th Ed, 1985.
4. Valma, J.Robertson, Eletrotherapy explained, Butterworth ,Heinmann, Elsevier, 4th Ed, 2014.

References:

1. Jagmohan Singh, Electrotherapy ,Jaypee Brothers, 2nd Ed, 2012.
2. Basanta Kumar Nanda, Electrotherapy explained, Jaypee Brothers, 1st Ed, 2006.
3. Tim Watson Electrotheray evidence based practice, Churchill Livingston, 12th Ed, 2008.

Course outcome:

CO1	Knowledge about various types of therapeutic currents and its physiological, therapeutic effects gained.	K2
CO2	Knowledge about pain and pain modulation mechanism gained.	K2
CO3	Diagnosis of neuromuscular dysfunction by electro-diagnostic test is known.	K5
CO4	Knowledge about different types of low and medium frequency currents. Its indication, contraindication, method of application gained.	K2
CO5	Knowledge about Traction, Its indication, contraindication, method of application gained.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT012T	BIOMECHANICS - I	L	T	P	Credits
		5	0	0	5

Course objectives

The objectives of this course is that after 90 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.

UNIT I **20**

A. Foundational concepts in Biomechanics

- Introduction to kinetics and kinematics
- Description of motions
- Axes and planes
- Forces and its types
- Anatomical pulleys
- Moment arm / angle of pull

LAB ACTIVITY – demonstration of anatomical pulleys and the muscle function withrespect to moment arm and angle of pull

B. Joint structure and function

- Joint design and materials found in human joints.
- Describe the tissues present in human joints including dense fibrous tissue, bone, cartilage and connective tissue.
- General properties of connective tissues – stress/strain curve viscoelasticity
- Complexity of human joint design - Classification of joints – Synarthrosis,Amphiarthrosis and Diarthrosis
- Describe joint function, kinematic chains, range of motion.
- describe the general effects of injury and disease

UNIT II **20**

Muscle structure and function

- Muscle structure and its composition
- Motor units, muscle fibre types, types of muscle contraction
- Organization of connective tissue in muscle
- Spurt muscles – shunt muscles / phasic and tonic muscles
- Muscle function – muscle tension, active and passive muscle tension, length-tension relationship of muscle, force-velocity relationship, factors affecting muscle function.
- Effects of immobilization, injury and aging

LAB ACTIVITY – demonstration of the active and passive insufficiency with upper limb and lower limb muscles.

UNIT III **20**

A. Thorax and chest wall

- General structure and function of rib cage
- Joints of rib cage and thorax

- Kinematics of ribs and manubriosternum
- Rib distortion in scoliosis
- Primary and accessory muscles of respiration
- Pathological changes in structure and function of ribcage

LAB ACTIVITY – demonstration of palpatory findings of ribs, manubriosternum,scapula bony prominences with respect to the thoracic vertebral level.

B. Temporomandibular joint

- Temporomandibular joint capsule and ligaments
- TMJ kinematics
- TMJ muscles
- Common impairments and pathological changes in TMJ

LAB ACTIVITY – palpation of mastoid process and sternocleidomastoid muscle.

UNIT IV **20**

A. Shoulder complex

- Joints of shoulder complex
- Glenohumeral joint – capsule, glenoid labrum, ligaments, muscles
- Coracoacromial arch
- Static and dynamic stabilization of the glenohumeral joint
- Supraspinatus tendon tears – pathomechanics
- Scapulohumeral rhythm
- Motions of scapula – upward rotators of scapula
- Muscles of elevation and depression

LAB ACTIVITY – demonstration of bony prominences around shoulder, scapulohumeral rhythm, shoulder range of motion, acromioclavicular joint, soft tissues around shoulder.

B. Elbow complex

- Humeroulnar and humeroradial articulations
- Carrying angle
- Ligaments – medial and lateral collateral ligaments
- Muscle function at elbow joint
- Structure of superior and inferior radio ulnar joint
- Mobility and stability function at elbow joint
- Effects of age, gender and injury of elbow complex

LAB ACTIVITY – demonstration of bony prominences around elbow, carrying angle observation, soft tissue palpation.

UNIT V **20**

The wrist and hand complex

- Wrist articulations

- Triangular fibrocartilage complex
- Ligaments of wrist complex
- Functions of wrist complex
- Functional range of motion of wrist
- Wrist instability
- Muscles of wrist complex
- Carpometacarpal joints
- Palmar arches
- Metatarsophalangeal joint – volar plates / annular and cruciate pulleys
- Interphalangeal joints
- Flexor and extensor mechanism of finger joints
- Intrinsic muscles of hand
- Prehension – wrist functions in Activity of daily living

LAB ACTIVITY – demonstration of palpatory findings of the Carpometacarpal joint,Metacarpophalangeal joint, proximal and the distal carpal row, functions of hand.

Evaluation **TOTAL HOURS: 100**

Text Books:

1. Cynthia C Norkins, Joint structure and function – a comprehensive analysis, JaypeeBrothers, 5th edition.

References

1. The physiology of joints – Kapandji volume -1
2. The physiology of joints – Kapandji volume -2

Course outcome:

CO1	Knowledge of the basic elements in normal joint structure and function and understanding the changes that function can induce in that structure.	K2
CO2	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.	K3
C03	The structure and functions of accessory muscles of ventilation.	K3
CO4	The TM joint is structurally and functionally unique. The influence of the cervical spine upon the TM joint must always be recognized.	K4
CO5	The more distal joints of the upper extremity depend on the dual mobility and stability roles of the shoulder complex.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	3	2	3	2	2	2	2
CO2	1	2	2	1	1	2	2	2	2	2
CO3	3	2	2	3	3	3	2	2	1	2
CO4	2	2	2	3	2	2	1	1	1	3
CO5	2	2	3	2	3	2	1	1	1	3
Average	2.2	2	2.4	2.4	2.2	2.4	1.6	1.6	1.4	2.4

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22ABPT201	PHARMACOLOGY	L	T	P	Credits
		2	0	0	2

Course Objective:

The objectives of this course is that after 90 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

UNIT **20**

INTRODUCTION

- Terminology
- Classification of drugs

UNIT II **20**

DRUG ADMINISTRATION

- Factors influencing the dosage of drugs and its actions.
- Drug Allergy
- Principles of drug administration
- Route of drug administration

UNIT III **20**

DRUG ACTION

Definition, action, indications, contra – indications, adverse reactions of the following :

- Anti inflammatory
- Anti epileptic
- Sedatives, Hypnotics, Tranquilizers
- Muscle relaxants
- Alcohol
- Pulmonary effects of general anesthetic agents

UNIT IV **20**

DRUG ACTION

Definition, action, indications, contra – indications, adverse reactions of the following:

a. Anti inflammatory
b. Anti epileptic
c. Sedatives, Hypnotics, Tranquilizers
d. Muscle relaxants
e. Alcohol
f. Pulmonary effects of general anesthetic agents

UNIT V

MUCOLYTIC AGENT **20**

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 **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, McGraw hill, 17 th Ed, 2008.
3. OP Ghai, Essential Pediatrics, CBS Publishers, 7 th 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, 7 th Ed, 2013.

Course outcome:

CO1	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.	K3
CO2	General knowledge about the drug route and administration	K2
CO3	Understanding for classification of drugs pharmacokinetics and pharmacodynamics	K3
CO4	Knowledge about the indication contraindications adverse effects of drugs	K3
CO5	Outline about the bioavailability Bio equavilence and toxicity of the drugs	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	2	2	2	2	1	1	1	1
CO2	2	2	2	3	3	3	3	2	3	1
CO3	2	2	2	3	3	3	3	3	3	1
CO4	2	2	2	2	2	2	3	3	3	1
CO5	2	2	2	2	2	2	1	1	1	1
Average	2	2	2	2.4	2.4	2.4	2.2	2	2.2	1

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT013T	MICROBIOLOGY/PATHOLOGY	L	T	P	Credits
		5	0	0	5

Course objective:

The objective of this course is that after 90 hours of Lecture, the students will be able to understand about the knowledge of pathology, microbiology including immunity, virology, antiseptics and allergy.

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.
D. Inflammation, healing, repair and degeneration.
E. Haemorrhage, shock, thrombosis, embolism.
F. Tuberculosis, Typhoid fever.
G. Nutritional deficiency diseases.
H. Tumours: Aetiology, spread and common tumours.
I. 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: Rheumatoid Arthritis, Septic arthritis, Osteomyelitis.
C. Skin: Leprosy.
D. Urinary system disorders.
E. Central nervous system: CNS infections, vascular disorders.
F. Autoimmune diseases : Scleroderma and Psoriasis.
G. Diseases of muscle : Poliomyelitis, Muscular dystrophy.
H. 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.
C. Culture media & staining methods.

UNITIV **20**

1. Disinfection and antiseptics.
2. Sterilisation and asepsis.
3. Antibacterial agents - fundamental aspect, Antibacterial susceptibility test
4. Infection - Source of infection.
   - Portals of entry.
   - Spread of infection.

UNITV **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.

    a. Respiratory tract infections.
    b. Meningitis.
    c. Enteric infections.
    d. Anaerobic infections
    e. Urinary tract infections.
    f. Wound infections.
    g. Sexually transmitted diseases.
    h. 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. SatishGupta, The Short text book of Medical Microbiology by, JayPee Brothers,2nd Ed, 2004.
2. AnanthanarayananandJayaramPaniker,Text book of Micro biology, Orien 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.

Course outcome:

CO1	Knowledge about disease and changes in structure and function of cells during disease condition gained.	K3
CO2	Knowledge about importance of nutrition, function of nutrition and its deficiency diseases gained	K2
CO3	Pathogenesis and pathological changes of disease in various body system is understood properly.	K4
CO4	Knowledge about the various microorganism, its classification and structure gained.	K3
CO5	To Know about the various disease caused by microorganism and its prevention.	K3

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	3	2	2	2	1	1	3
CO2	2	1	2	2	2	2	1	2	1	2
CO3	2	2	2	1	1	2	2	1	2	1
CO4	2	2	3	2	3	2	2	2	1	2
CO5	2	3	2	1	1	3	1	2	2	2
Average	2.2	2	2.2	1.8	1.8	2.2	1.6	1.6	1.4	2

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT014T	EXERCISE THERAPY – II	L	T	P	Credits
		5	0	0	5

Course Objective:

The objectives of this course is that after 170 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.

UNIT – I **20**

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.
4. Practical (Mobility Aids and gait retraining)

UNIT – II **20**

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

Posture

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

Practical (Suspension for upper and lower limb)

UNIT – III **20**

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.

Joint Mobility

Practical (range of motion measurement)

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 mobilization techniques, gliding techniques.
3. Accessory movements: Posterior glide, Anterior glide, Superior and Inferior glide, Traction and approximation.
4. Indications and contra - indications for mobilization of individual joints and demonstrate practically the various mobilization techniques for individual joints and teaching home programme.

Practical (Accessory movements)

UNIT – IV **20**

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 (tabesdorsalis, syringomyelia, leprosy), Imbalance due to muscular disease.

Define balance (static & dynamic)

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

Practical (Inco-ordination exercise)

UNIT – V **20**

MASSAGE

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.
   a. Stroking manipulation: Effleurage, Stroking.

b. Pressure manipulations: Kneading: Squeezing, Stationary, Circular, Ironing (reinforced kneading), Finger kneading, Petrissage (picking up, wringing, rolling) , frictions.
c. Percussion manipulation: tapotement, Hacking, Clapping, Beating & Pounding.
d. 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:

Practical (Face, Neck, back, upper, and lower limb)

Evaluation **TOTAL HOURS: 100**

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. Sebastian, Principles of Manual Therapy, Jaypee Brothers, 2 nd Ed, 2013
4. Sinha, Principles and Practice of therapeutic Massage, Jaypee Brothers, 2 nd Ed, 2010

Course outcome:

CO1	To gain knowledge on joint range and their measurements muscle grading	K3
C O2	This demonstrates posture, movement retraining, balance and co - ordination.	K4
CO3	This illustrates pathological gait and use of different mobility aids	K4
CO4	This provides basic information on therapeutic massage and its effect on different systems of the body	K3
CO5	This demonstrates face, neck, back, upper limb and lower limb massage	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT01	ELECTROTHERAPY - II	L	T	P	C
		5	0	0	5

Course Objective:

The objective of this course is that after 170 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.

UNIT I **20**

A. Define electricity and types, electromagnetic induction, Principles construction & types of transformers, Condensers, Valves, Rectifiers, Oscillation, Review the physics and principles of Magnetism.
B. Fuse and grid-explain with diagram the working and use of these two.

UNIT II **20**

A. SHORT WAVE DIATHERMY

Describe the following:

1. Properties of H.F. currents - Sustained and unsustained, Damped and undamped, Impedence, Define Nodes and Antinodes. Explain, with examples, the fields, set up, Define wavelength.
2. Types of high frequency currents.
3. Production of H.F. currents – Principles, Construction of apparatus with diagram, Tuning of machine, Regulation of current, Physiological and therapeutic effects.
4. Methods - Condenser field, Cable method, Effects of 2 fields.
5. Technique of Applications - Testing machine, Preparation of patient, Types of electrodes, Position and size of electrodes, Application of current, Dosage.
6. Dangers and precautions.
7. Pulsed diathermy: Indications and contra-indications, application.

B. MICROWAVE DIATHERMY

1. Describe the following - Construction, Working, Indications, Contra indications, Therapeutic uses, Techniques of application and dosage.

C. LONG WAVE DIATHERMY

1. Describe the following - Construction, Working, Indications, Contra indications, Therapeutic uses, Techniques of application and dosage.

D. SHOCKWAVE THERAPY

1. Describe the following - Construction, Working, Indications, Contra indications, Therapeutic uses, Techniques of application and dosage.

E. INFRARED RADIATION

1. Describe the following - Infrared Radiation, wavelength and frequency, Types of generators and its working, Physiological effects, Therapeutic effects and uses.

2. Technique of irradiation - Choice of apparatus, Preparation of patient, Arrangement of lamp, Application of treatment, Duration and frequency.
3. Dangers
4. Indications & contra-indications

F. ULTRA VIOLET RADIATION

1. Electric arc - Process of ionization & Transmission of current through gases, Types of lamps, Construction of lamps, Fluorescent tube for U.V. production.
2. PUVA apparatus and Care of lamp.
3. Physiological and therapeutic effects - in detail photosensitization.
4. Indications, contra-indications and dangers.
5. Technique of application: Test dose, Local treatment and General irradiation.
6. Conditions (common) in which above treatment is given.
7. Sensitisers
8. Filters

UNIT III **20**

A. ULTRASOUND THERAPY

1. Definition, Properties of Ultrasound – Reflection, Transmission, Absorption. Piezo-electric effects
2. Properties of ultrasonic fields: depth of penetration in relation to (a) intensity and (b) frequency.
3. Physiological and therapeutic Effects on tissues – Thermal, Mechanical, Chemical and biological.
4. Indication and Contra Indications
5. Coupling media
6. Pulsed Ultrasound Therapy - Principles of pulsed Ultrasound, Effects and uses of pulsed Ultrasound.
7. Techniques of application: a. Methods - direct contact, water bath, water bag. b. Dosage in acute and chronic conditions
8. Dangers
9. Phonophoresis – Method and effects, Choice of drug used for phonophoresis.

UNIT IV **20**

A. PARAFFIN WAX

1. Describe the following - Methods of heating tissues, Effects and indications, Circulatory effects

   Effects on sensory nerves, Effects on skin, Indications & contra indications, Its uses in various Conditions.

B. **HOT PACKS:**

1. Hydro collator packs, temperature maintenance, physiological effects, methods of application, uses, advantages and disadvantages.

C. CONTRAST BATH:

1. Equipment used method of application, indications, contraindications, physiological effects and therapeutic uses.

D. FLUIDOTHERAPY

1. Describe the following - Methods of heating tissues, Effects and indications, Circulatory effects

E. CRYOTHERAPY

1. Describe the following - Physical principles, Physiological effects and uses, Techniques of application – Preparation, Application, Modification.

2. Methods: Ice pack, Ice towel, Immersion, Ice cube.
3. Indications & contra-indications.
4. Cryokinetics and its effect.

UNIT V **20**

A. LASER

1. Define LASER and briefly outline its therapeutic indications, contra-indications, efficacy and precautions advisable.

EVALUATION **TOTAL HOURS: 100**

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 Electrotherapy:Theory and practice, 9th Ed, 1985
4. Valma, J.Robertson, Eletrotherapy explained, Butterworth ,Heinmann, Elsevier, 4th Ed, 2014.

References:

1. Jagmohan Singh, Electrotherapy ,Jaypee Brothers, 2nd Ed, 2012.
2. Basanta Kumar Nanda, Electrotherapy explained, Jaypee Brothers, 1st Ed, 2006.
3. Tim Watson Electrotherapy evidence based practice, Churchill Livingston, 12th Ed, 2008.

Course Outcome

CO1	Knowledge about various types of therapeutic high frequency currents and its physiological, therapeutic effects gained.	K4
CO2	Knowledge about various types of therapeutic sound waves and its physiological, therapeutic effects gained.	K2
CO3	Knowledge about LASER therapy and its uses gained.	K4
CO4	Effects of various types of heat therapy and method of application is understood.	K2
CO5	Knowledge about cryotherapy and its method of application, effect and uses gained.	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.6	2.8	2.2	2.6

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT016T	**BIOMECHANICS - II**	**L**	**T**	**P**	**C**
		5	**0**	**0**	**5**

Course objectives

The objectives of this course is that after 90 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.

UNIT I **20**

Hip complex

- Articulating surfaces of the hip complex
- Angulations of hip joint
- Internal architecture of the hip joint
- Joint capsule, ligaments and muscles around hip complex
- Functions of hip joint – pelvic tilting
- Description of pelvic motions
- Hip stability in bilateral stance and unilateral stance
- Hip joint forces with respect to the cane use ipsilateral and contra lateral side.
- Effects of aging, injury and disease around hip joint

LAB ACTIVITY – demonstration of bony landmarks around hip joint – anterior superior iliac spine, posterior superior iliac spine, greater trochanter and soft tissues around hip.

UNIT – II **20**

Knee complex

- Structure of Tibio femoral joint and its articulations
- Joint capsule and ligaments around knee joint
- Iliotibial band
- Bursae around knee complex
- Menisci and its role
- Tibio femoral joint function
- Locking and unlocking mechanism of knee joint
- Muscles of knee complex
- Quadriceps lag
- Stabilizers of knee
- Structure and functions of Patellofemoral joint
- Motions of patella
- Q angle
- Effects of injury and disease

LAB ACTIVITY – demonstration of quadriceps muscle action – knee extension lag, palpation of femoral condyles.

UNIT III **20**

Ankle complex

- Structure and function of ankle joint – capsule and ligaments
- Ankle joint function
- Subtalar joint – ligaments and function
- Transverse tarsal joint – related joint description
- Tarsometatarsal joint
- Tarsometatarsal joint – supination twist and pronation twist
- Metatarsophalangeal joint – metatarsal length and metatarsal break
- Interphalangeal joint – functions
- Plantar arches – function of plantar arches – plantar aponeurosis
- Windlass mechanism
- Muscles of ankle complex
- Foot deviations

LAB ACTIVITY – demonstration of palpatory findings of bony prominences and soft tissues around ankle joint.

UNIT IV **20**

Vertebral column

- General structure and function of the vertebral column
- Intervertebral disc – features
- Zygapophyseal joints – mechanics
- Ligaments of vertebral column
- Kinetics and kinematics of vertebral column
- Description of regional structure and function of the vertebral column – cervical, thoracic, lumbar and sacral regions
- Muscles of vertebral column – anterior, posterior and lateral group
- Muscles of pelvic floor
- Squat lift versus stoop lift
- Effects of aging

LAB ACTIVITY – Palpation of Spinous process and levels of vertebra identification.

UNIT V **20**

A. Posture

- Static posture and dynamic posture
- Posture control
- Muscle synergies in posture
- Kinematics of posture
- Optimal posture – posture analysis
- Posture analysis – sagittal plane and frontal plane
- Deviations of posture from normal alignment – sagittal plane and frontal plane
- Analysis of sitting posture
- Disc pressure and compressive loads on spine – during optimal posture
- Analysis of lying postures
- Effects of age, gender, occupation, pregnancy and recreation on posture.

LAB ACTIVITY – demonstration of posture analysis in sagittal plane and frontal plane.

C. Gait

Phases of Gait
Time and rate dependent properties
Muscle activity during normal gait
Role of Gait, trunk and upper extremity
Treadmill, stair and running Gait.
Pathological Gait.
Effects of age, gender, assistive devices and orthosis.

LAB ACTIVITY – demonstration of the parameters of gait and its measurement.

EVALUATION **TOTAL HOURS: 100**

Text Books:

1. Cynthia C Norkins, Joint structure and function – a comprehensive analysis, JaypeeBrothers, 5 th edition.

References

1. The physiology of joints – Kapandji volume -1
2. The physiology of joints – Kapandji volume -2

Course Outcome:

CO1	Will develop ability to categorize the structure and function of cervical, thoracic, lumbar and sacral vertebra.	K3
CO2	Understands the general and specific features of the hip, knee and ankle complex.	K3
CO3	Evaluate the pathological basis of injury and aging of the hip, knee and ankle complex.	K5
CO4	Analyze the different postural malalignment like scoliosis, kyphosis, lordosis, and fixed flexion deformity.	K4
CO5	Will be able to analyze the normal and abnormal gait patterns	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	3	2	3	2	2	2	2
CO2	1	2	2	1	1	2	2	2	2	2
CO3	3	2	2	3	3	3	2	2	1	2
CO4	2	2	2	3	2	2	1	1	1	3
CO5	2	2	3	2	3	2	1	1	1	3
Average	2.2	2	2.4	2.4	2.2	2.4	1.6	1.6	1.4	2.4

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22ABPT202	HOSPITAL MANAGEMENT	L	T	P	C
		2	0	0	2

Course objective:

Students can explore public policy, community relations, human resource management, hospital finance, fundraising, physician relations and collective bargaining after completing 80 hours of teaching.

UNIT I **20**

PRINCIPLES OF MANAGEMENT & COMMUNICATION

1. Principles of Management
2. Organizational Behaviour
3. Oral, written and group communication
4. Presentation skills

UNIT II **20**

TYPES OF MANAGEMENT

1. Accounting and Finance for Managers
2. Marketing Management
3. Human Resource Management
4. Quantitative Techniques for Management

UNIT III **20**

IMPORTANCE OF MANAGEMENT

1. Research Methods for Management
2. Corporate Communication
3. Operations Management
4. Supply chain management
5. Project management

UNIT IV **20**

HOSPITAL MANAGEMENT

1. Hospital Architecture, Planning and Design
2. Materials Management
3. Hospital Operation – I (Patient Care)
4. Hospital Operation – II (Supportive Services)

UNITV **20**

ETHICS & LAWS IN HOSPITAL MANAGEMENT

1. Bio-Sciences & Epidemiology
2. Hospital Information System
3. Health Laws & Policies
4. Hospital Environment and Ethics
5. Fundamentals of contract laws.

Evaluation **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, PHI Publisher, 2013.

Course outcome:

CO1	To understand the concept of principles of management	K2
CO2	To be well-versed in the types of management	K3
CO3	To clearly explain the research methods for management	K4
CO4	To be well-versed in Hospital Architecture, planning and Design	K4
CO5	To be well-versed in Ethics and laws in Hospital management	K3

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	3	2	3	3	2	3	3	2	2
CO3	2	2	2	2	3	2	3	2	3	2
CO4	1	1	1	1	1	1	1	1	1	1
CO5	2	2	2	2	2	2	3	2	2	3
Average	2.2	2.2	2	2.2	2.4	2	2.6	2.2	2	2

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT017T	GENERAL SURGERY, PLASTIC SURGERY AND BURNS	L	T	P	C
		5	0	0	5

Course Objectives:

The objectives of this course is that after 100 hours of lectures and demonstrations, in addition toclinics 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.

UNIT I **20**

Describe the regions of abdomen and its surgical incisions.

UNIT II **20**

INCISIONS

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**

BURNS

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**

PLASTIC SURGERY

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 GOALS

Physiotherapy goal setting in General Surgery, Plastic Surgery & Burns
Burr hole surgery
Bariatric surgery
Arthroscopy (keyhole surgery): outline the surgical procedure and its management

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.

Course outcome:

CO1	Knowledge of principles of surgery and the application of basic sciences to surgical treatment.	K2
CO2	Describes abdominal surgical incisions.	K3
CO3	Analysis the causes, indication, types of incisions, pre operative assessment and procedure.	K4
CO4	Role of physiotherapy in general surgery.	K3
CO5	The students assess, evaluate and frames physiotherapy management in Pre and post operative conditions.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	0	0	1	0	0	0	0	0	2
CO2	0	0	0	1	0	2	0	1	0	2
CO3	0	0	0	2	0	0	1	0	2	1
CO4	2	2	1	2	1	2	2	0	2	1
CO5	2	3	2	2	3	2	3	1	3	3
Average	1	1	0.6	1.6	0.8	1.2	1.2	0.4	1.4	1.8

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT018T	CLINICAL NEUROLOGY AND PSYCHIATRY	L	T	P	C
		5	0	0	5

Course Objectives:

The objectives of this course is that after 90 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate and have clear understanding of neurological conditions causing disability and their management and a comprehensive knowledge of psychiatry and various disorders related to it.

UNIT I **20**

Neuroanatomy

Review the basic anatomy of the Brain and Spinal cord including: Blood supply of the Brain and Spinal cord, Anatomy of the Visual pathway, Connections of the Cerebellum and Extrapyramidal system, relationship of the spinal nerves 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 **20**

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 Disease.
    b. Dementia.

UNIT III **20**

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 **20**

Assessment
Clinical assessment of Neurological function to be taught through bed side or demonstration
Clinic 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 **20**

Introduction to Psychiatry

1. Introduction – Mental Disorders (DSM – IV)

2. Classifying Mental Disorders (DSM – IV) –
3. Psychiatric interviewing , Therapeutic and Non-therapeutic communication
4. Legal and ethical issues Rights of the mentally ill
5. Guidelines for physiotherapist and patient relationship.
6. Disorders of children, adolescents and elderly
    a. Schizophrenic disorders
    b. Anxiety Disorder
    c. Somatoform Disorders
    d. Dissociative Disorders
    e. Personality disorders
    f. Eating disorder
    g. Sleep Disorder
7. Therapies

Evaluation **Total Hours:100**

Text books:

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

References:

1. Sir Ruger Bannister, Brain and Bannister's Clinical Neurology, Oxford,7 th Edition, 1992
2. Davidson's Principles and practice of Medicine 22 rd Edition, 2018
3. Hokmes Bullock, Introduction to nervous System, WH Freeman and company,3 rdEdition, 2002
4. Carpenter, Mental Health & Learning disability, Eurett Pub, 2 nd Edition, 1998
5. Ropper, principles of Neurology, JP, 10 th Edition, 2014
6. Raymond D. Adams, Principles of Neurology, 5th Edition,

Course Outcome:

CO1	To identify, analyze and apply the neuro anatomical basis of brain for various clinical neurological conditions.	K4
CO2	Becomes familiar with Neurophysiological basis of neurological conditions which drives the students to evaluate the patients with certain disorders	K3
CO3	Learns about the medical and surgical management of the congenital and childhood disorders and able to differentiate the clinical features between those conditions	K3
CO4	Knowledge to assess the neurological functions of the brain and spinal cord	K2
CO5	Offer opportunities to know about the standards of cases for psychiatric conditions, and patient and physiotherapist relationship	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4		PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	3	1	2		2	3	3	1	2	3
CO2	2	2	3	2		3	1	2	1	2	2
CO3	2	2	2	3		2	2	3	2	2	3
CO4	3	3	2	3		3	2	3	2	2	3
CO5	2	2	3	3		3	2	2	3	2	3
Average	2.2	2.4	2.2	2.6		2.6	2	2.6	1.8	2	2.8

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT019T	PHYSIOTHERAPY IN NEUROLOGY	L	T	P	C
		5	0	0	5

Course Objectives:

The objectives of this course is that after 170 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.

UNIT I **20**

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. Electro diagnostic procedures - Strength duration curve, EMG, NCV

UNIT II **20**

Principles of Treatment:

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 mobilization 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 exercises and exercises in recreation, therapeutic gym (vestibular ball, tilt board, bolsters)

UNIT III **20**

1. Paediatric Examination, Developmental Milestones, Neurodevelopmental screening, evaluation and management.
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

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
H. High Risk Infants
I. Autism Spectrum Disorders
J. Down's Syndrome
K. Attention deficit hyperactivity disorders
L. Paediatric Extra Pyramidal Disorders
M. Spinal muscular atrophy, Hereditary motor sensory neuropathy
N. Infectious Disorder
O. NICU and PICU Management
P. Early Intervention

UNIT IV **20**

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. Brain tumour
   C. Parkinsonism
   D. Cerebellar lesions
   E. Motor Neuron Diseases
   F. Disorders of Spinal Cord
   G. Head injury
   H. Guillain Barrie syndrome
   I. Peripheral nerve lesions/injuries
   J. VII cranial nerve palsy
   K. Myasthenia Gravis
   L. Brachial Neuralgia
   M. TabesDorsalis
   N. Multiple Sclerosis
   O. Post-surgical Physical therapy in neurosurgical procedures: Craniotomy, Laminectomy, Shunts, Surgical treatment of spasticity, cervical cord decompression and NICU Management

UNIT V **20**

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, Chronic cardio – respiratory dysfunction.
Integrated Approach
Integrated neuromuscular control and physiotherapeutic prevention, curative and rehabilitative measures for sensory motor dysfunction, pain control, postural training.

a. Neurodevelopmental therapy (NDT)
b. Vojta

c. Motor Re-learning Programme (MRP)
d. Brunnstrom Movement therapy
e. Roods Approach
f. Sensory Integration therapy
g. Sensorimotor approach
h. Task oriented approach

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 clinical under supervision.

Evaluation **Total Hours: 100**

Text books:
1. Susan B'O' Sullivan, physical rehabilitation, Jaypee, 6 th edition. – 2014
2. Neurological Rehabilitation VI Edition, DarayUmphered - 2006
3. Patricia. A. Downie, cash's text book of neurology for physiotherapist – Jaypee, 4 thedition– 1993.
4. Sophie Levitt, treatment of cerebral palsy & motor delay, Wiley – Blackwell, 5 th 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, 3 rd Edition, 1999

Course Outcome:

CO1	To evaluate, differentiate, and comprehend the neuroanatomical and neurophysiological basis of the structure and functions of the brain and spinal cord. Becomes 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 and knowledge about Electro diagnostic procedures	K4
CO2	Learn about the principles of various treatment techniques and thereby students will be able to construct their own treatment protocol for neurological conditions, Symptomatology of neurological disorders and role of investigations in different diagnosis	K3
CO3	Understand the clinical features and management of the Paediatric, development of disorders of CNS early detection of brain damaged child, high risk babies, Neuro-paediatric Examination. Identifies the motor, sensory perceptual dysfunction of adult neurological conditions	K4
CO4	Students should be able to perform the differential diagnosis and advanced treatment technique in field of obstetrics and gynecology	K4
	Unit patients and physiotherapy management of the Cerebrovascular accidents, Head injury and spinal cord injury in the intensive care unit.	K3

CO5	To demonstrate the methods of evaluation for physical dysfunction & management of disabilities for conditions like SCI, polio, Brain injury, PNL, and chronic cardio-respiratory dysfunction. Practical application of integrated approach like MRP, Bobath, Brunnstrom and Roods approach. Practical demonstration of the assessment and physiotherapy management of various neurological conditions.	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT020T	PHYSIOTHERAPY IN OBG AND WOMEN HEALTH	L	T	P	C
		5	0	0	5

Course Objective:

After 170 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.

UNIT I **20**

1. Anatomy of Female Reproductive System.
2. Developmental anatomy.
3. Physical and physiological changes during pregnancy.

UNIT II **20**

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, cesarean section, its management and care of the scars.
5. Postnatal period, postnatal complications & management.
6. Episiotomy and wound care.

UNIT III **20**

1. Common gynecological Infective conditions.
2. Post operative care in gynecological surgery.

UNIT IV **20**

1. Modalities used in OBG.
2. Pelvic inflammatory diseases.
3. Uterine prolapse.
4. Urogenital dysfunction – Incontinence and its types.

UNIT V **20**

1. Use of hydrotherapy in women's health.
2. Yoga in pregnancy.
3. Breast care and use of special garments.

4. Diet and nutrition in pregnancy.
5. Diastasis recti and its management.

Evaluation **Total Hours:100**

Text books:

1. Margaret polden, Jill Mantle, Physiotherapy in Obstetrics and Gynecology –JaypeeBrothers, 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, Wom

Course Outcome

CO1	The students can know about developmental anatomy of embryonic and fetal periods.	K2
CO2	Learn about difference between normal, forceps and caesarean section. Understands the musculoskeletal changes during pregnancy & delivery. Its complications and its management.	K3
CO3	Recognizes & comprehends the physiotherapy management for various gynecological Problems in adolescence and adult conditions like infections, urogenital dysfunction and prolapse of uterus.	K4
CO4	Demonstrate the exercise protocol to relive pain during the antenatal, prenatal and postnatal period	K4
CO5	Become familiar with the hydrotherapy and yoga for treating the gynecological conditions.	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22GBPT151	PRINCIPLES OF BIOENGINEERING	L	T	P	C
		2	0	0	2

Course objective:

The objective of this course is after 200 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.

UNIT I **20**

Bio mechanical principles

Bio mechanical principles, decision making, prescription, and modifications involved in designing of static and dynamic alignments of the following:

A. Aids & Appliances
B. Splints & orthotic devices.
C. Prosthetic devices

UNIT II **20**

Orthotics – Upper limb, lower limb and spine

A. Principles & Mechanics of orthotics,
B. Classification of Aids & appliances.
C. Indications, contraindications, advantages and disadvantages for orthotics (all types)
D. Assessment, Application and training of orthotics and their function.
E. Needs and benefits of orthosis

UNIT III **20**

Prosthetics – upper limb and lower limb

A. Principles and mechanism of prosthesis
B. Classification, Indication, contraindications, advantages and disadvantages for prosthesis (all types)
C. Assessment, application and training for prosthesis and their functions.
D. Needs and benefits of prosthesis

UNIT IV **20**

Assistive technology in geriatrics and paediatric conditions

A. Review the use of splints, braces, ambulatory aids in neurological conditions: spastic upper motor neuron lesions, lower motor neuron lesions, in dorsal column dysfunction and cerebellar dysfunction, cerebral palsy, peripheral nerve injury.
B. Demonstrate the fabrication of simple hand and foot splints out of POP.
C. Assessment for ambulatory aids for paediatric conditions
D. Assessment for ambulatory aids for geriatric conditions

UNIT V **20**

Advanced Technology in Gait training in relation to the use of orthosis and Prosthesis

A. Robotics
B. Body weight treadmill training
C. Digital aids
D. Serial splinting
E. Foot sensor
F. Postural analysis software
G. Simulated video games
H. virtual reality.

Evaluation **Total Hours:100**

Text books:

1. Susan. O. Sullivan, physical rehabilitation, jaypee, 6thed, 2014.
2. Multani, principles of geriatric physiotherapy, jaypee, 1st ed, 2008.

References:

1. Valevie, J Berg rice ergonomics in health care & rehabilitation, butter worth, 1998.
2. Sunder, textbook of rehabilitation, jaypee, 3 rded, 2010.
3. Karen Jacobs, ergonomics for therapists, mosby Elsevier, 3 rded, 2008.

Course outcome:

CO1	Students should have understood the principles and mechanics behind the construction of orthotics and prosthetics should be able answer what are the other mobility aid which is available in the market.	K3
CO2	Students should be able to answer biomechanical principles behind the construction of every orthotics	K3
CO3	Students should be able to answer biomechanical principles behind the construction of every prosthetics.	K4
CO4	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 the devices.	K4
CO5	Student should attain the broad knowledge about the recent advancement in the gait training after orthotic and prosthetic fitting.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	2	2	2	2	1	2	2	1
CO2	2	2	2	2	2	2	1	2	2	1
CO3	2	2	2	2	2	2	1	2	2	1
CO4	3	3	3	3	3	3	1	3	2	1
CO5	3	3	3	3	3	3	1	3	2	1
Average	2.4	2.4	2.4	2.4	2.4	2.4	1	2.4	2	1

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT021	CLINICAL CARDIO/PULMONARY DISEASES	L	T	P	C
		5	0	0	5

Course objectives:

The objectives of this course is that after 90 hours of lectures & demonstrations, in addition to clinics, the student will be able to gain an understanding of cardio respiratory conditions causing disability and their management.

UNIT I **20**

- Respiratory tract (Upper & lower).
- Mechanism of respiration.
- Chest & spinal deformities.
- Lung volumes and capacities.
- Lung function tests.
- Pulmonary circulation.
- Cough reflex.

UNIT II **20**

- Heart & its blood supply.
- Cardiac output.
- Blood pressure.
- Investigations: ECG, Echocardiography, Chest X-ray, Angiogram & ABG, Stress testing.

UNIT III **20**

Cardiovascular system:

1. Acquired heart diseases:
    a. Ischemic heart disease.
    b. Myocardial infarction.
    c. Heart failure.
    d. Hypertension.
    e. Infective endocarditis.

2. Congenital heart diseases:

    A. Acyanotic heart diseases:
        a. Atrial Septal Defect.
        b. Ventricular Septal Defect.
        c. Coarctationof Aorta.
        d. Patent DuctusAteriosis.

    B. Cyanotic heart diseases:
        a. TetrologyofFallot.
        b. Transposition of greater vessels.
        c. PentalogyofFallot.

3. Valvular heart diseases:
    a. Mitral stenosis.

b. Mitral regurgitation.
c. Aortic stenosis.
d. Aortic regurgitation.

UNIT IV **20**

Respiratory system:

a. COPD – chronic bronchitis, emphysema.
b. Bronchial asthma.
c. Bronchiectasis.
d. Lung abscess.
e. Pulmonary tuberculosis.
f. Pneumonia.
g. Interstitial lung disease.
h. Occupational lung diseases.
i. Lung cancer.
j. Aspergillosis.
k. cystic fibrosis.
l. Pulmonary hypertension.
m. pleural effusion.
n. Empyema.
o. pneumothorax.
p. Haemothorax.
q. Chest wall injuries.

UNIT V **20**

1. Cardiac surgeries:
    A. Open heart surgery:
        a. C.A.B.G.
        b. Valve replacement.
        c. Valvotomy.
        d. Cardiac transplant.
    B. Closed heart surgery:
        a. P.T.C.A.
        b. Angioplasty.
2. Thoracic surgeries:
    a. Thoracotomy
    b. Lobectomy
    c. Segmentectomy
    d. Pneumonectomy
    e. Decortications
    f. Lung Transplantation
    g. Tracheostomy
    h. ICD.
3. Heart lung machine (ECMO)
4. Ventilators - types, modes, uses.
5. Defibrillators & CPR.
6. Pulmonary embolism
7. DVT.
8. Peripheral vascular disease.

9. Common drugs used in cardio pulmonary conditions and their uses.

Evaluation **Total Hours:100**

Text Books:

1. Crofton &doogles Respiratory Diseases Vol – I & II, SEATON,1 Ed, 2003.
2. Downie, Cash text book of chest, Heart & Vascular disorders –ELBS, 1 Ed, 2005.
3. 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,1sted, 2012.
4. Beachey, Respiratory care- Anatomy and physiology: foundation, CBS ,3rded, 2013.
5. George Mathew & Praveen Aggarwal – Manual for UG, Medicine ed, 2015.

Course outcome

CO1	Cardiac conditions & their pathology.	K2
CO2	Lung infections and diseases & their pathology.	K3
CO3	Cardio pulmonary resuscitation & uses of defibrillators.	K3
CO4	Chest & spinal deformities.	K4
CO5	Investigations & management of various cardio-pulmonary diseases	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	3	2	1	3	2	2	2
CO2	3	2	3	2	1	2	3	3	2	3
CO3	3	2	3	3	2	3	1	3	2	2
CO4	2	1	2	3	3	1	1	1	1	1
CO5	3	3	3	2	3	2	3	2	1	2
Average	2.8	2	2.6	2.6	2.2	1.8	2.2	2.2	1.6	2

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT022T	PT IN CARDIO/PULMONARY DISEASES	L	T	P	C
		5	0	0	5

Course Objectives:

The objective of this course is that after 170 hours of lectures, demonstrations, practical and clinics the student will be able to identify cardio respiratory dysfunctions, set treatment goals and apply their skills in various clinical situations to restore cardio respiratory function.

UNIT I **20**

1. Respiratory system:
    a. Bronchopulmonary segments.
    b. Muscles of respiration.
    c. Compliance.
    d. V/Q Ratio.
    e. Dead space.
    f. Pulmonary defence mechanisms.
    g. Mechanics of breathing.
    h. Surface anatomy of lungs.
    i. Lung volumes and Lung capacities.
    j. Respiratory investigations – PFT, X-Ray, ABG, Exercise tolerance.
    k. Auscultation.
    l. Measurement of Chest expansion.

2. Cardiovascular system:
    a. Structure & function of heart.
    b. Surface anatomy of heart.
    c. Coronary and pulmonary circulations.
    d. Conductive system of heart.
    e. Cardiac cycle, cardiac output.
    f. CVS investigations – ECG, Echo, Angio, Stress testing.

UNIT II **20**

1. ASSESSMENT:
    - Subjective assessment – chief complaints, history, Functional assessment – ADL assessment, Objective assessment – physiotherapy assessment of cardiothoracic conditions.
    - Assessment for Respiratory Conditions - Obstructive lung disease – Chronic bronchitis and Emphysema , Bronchiectasis, Bronchial asthma , Lung abscess, Chest Infections – Pneumonia, Restrictive lung disease – OLD, Chest wall deformities, Pulmonary Surgery – Pneumonectomy, Lobectomy, Segmenectomy Pre-operative and post-operative PT management.
    - Assessment for Cardiac conditions - Coronary artery diseases – IHD, MI, Heart failure, Hypertension, Cardiac surgery – CABG, PTCA Pre-operative and Post-operative PT management.

2. PT TREATMENT
    - Define, indications, contraindication, physiological effect, types, steps, precaution, complication of the following chest physical therapy technique Breathing exercise –DBE, Costal, Segmental, Apical Breathing control Breathing re-education during functional activities.
    - Relaxation position for breathlessness patient, Forced expiratory technique, Thoracic expansion exercise, Chest mobility exercise, Active cycle of breathing, Positive expiratory pressure, Manual hyperinflation, Incentive Spirometry.

• Postural drainage – Modified PD, Home PD, Cough – Stages of cough, types of cough, steps in teaching voluntary cough , Factors affecting cough mechanism, Huff – Low, Mid, High lung volume huff. Vibrations, Percussion, Shaking.

UNIT III **20**

1. Physiotherapy in intensive care unit:
    - Ventilator – Definition of ventilator, Types of ventilator, Principles of Ventilator, Indication Of ventilator, PT assessment of ventilator dependent patient, weaning. Humidification – Physiology, Bubble jet, Pass over, Nebulization – Physiology, MDI, Ultrasonic, Suctioning – Oropharyngeal, Nasopharyngeal, intubated, steps, complications.

UNIT IV **20**

1. Cardiopulmonary rehabilitation and pediatric physiotherapy:
    a. Pulmonary Rehabilitation - Define, indication, outcomes, steps in pulmonary rehabilitation, contraindication, education.
    b. Cardiac Rehabilitation - Define, Indication, Phases of cardiac rehabilitation, contraindication, benefits.

2. Define, Indications, Types of ICU, Equipment used in adult and pediatric ICU, Assessment, Principles of physiotherapy for a patient in ICU including chest Physiotherapy and adjacent for adult and pediatric patient. Physiotherapy for ventilator dependent patient.

UNIT V **20**

1. Physiotherapy in general surgery and other conditions:

Physiotherapy in general surgery, Pre-operative and Post-operative management for patient with abdominal surgery Conditions – appendicectomy, gastrectomy, hysterectomy, herniography, cholecystectomy, colostomy.

2. PT management Physiotherapy for peripheral vascular diseases Definition, Physiology, Conditions of PVD, evaluation-arterial, venous, lymphatic, Doppler, Treatment-Buergers exercise, cold laser, electrical stimulation, Intermittent compression.

Evaluation **Total Hours: 100**

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

Course outcome:

C01	Basic anatomy , physiology of heart and lungs.	K2
CO2	Importance of physiotherapy intervention in ICU for cardiac and pulmonary disease.	K3
CO3	Pre and post operative care for all surgery.	K4
CO4	Assessment of both cardiac and pulmonary patients.	K4
CO5	Adjuncts used along with physiotherapy and ventilators.	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

ASSESSMENT METHODS:

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration / Presentation**
			✓	✓

22CBPT022T	COMMUNITY MEDICINE	L	T	P	C
		5	0	0	5

Course Objective:

The objective of the course is that after 90 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.

UNIT I **20**

1. Outline the Concept of Disease, Concept of Causation and Natural history of diseases.
2. Spectrum of Disease – Iceberg of Disease
3. Outline the various Levels of prevention and modes of Intervention – especially for diseases with disability.
4. 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 programmes
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 Non-Communicable disease and conditions a. Rheumatic heart disease, B. chronic degenerative disease C. cancer, D. Diabetes E. Stroke
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, 24 TH 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, 9thed, 2007.

Course Outcome

CO1	Epidemiological implications of impairment and handicap and disability, health statistics	K2
CO2	National health schemes and its benefits.	K3
CO3	Immunization programmes – malnutrition and early detection of disabling conditions and Intervention.	K3
CO4	Categorizes various rehabilitations and describes its advantages and disadvantages.	K4
CO5	Explains about communicable and non communicable diseases and its implications	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	3	2	2	2	1	1	3
CO2	2	1	2	2	2	2	1	2	1	2
CO3	2	2	2	1	1	2	2	1	2	1
CO4	2	2	3	2	3	2	2	2	1	2
CO5	2	3	2	1	1	3	1	2	2	2
Average	2.2	2	2.2	1.8	1.8	2.2	1.6	1.6	1.4	2

Assessment Methods:

CAT1	**CAT2**	**Model Exam**	**End Semester Exams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**

22CBPT024T	CARDIO PULMONARY RESUSCITATION	L	T	P	C
		5	0	0	5

Course objective:

Upon successful completion of 110 hours, the student will be able to apply first aid and Perform cardio-pulmonary resuscitation (CPR).

UNIT I ANATOMY OF CARDIAC SYSTEM 20

1. Anatomy of Heart and Cardiac muscles.
2. Cardiac cycle and heart sounds.
3. Coronary circulation
4. Circulatory shock.

UNIT II INTRODUCTION & PRINCIPLES OF CPR 20

1. Definition of CPR
2. Health concerns as it relates to performing Community CPR or First Aid.
3. Check, Call, and Care techniques.
4. 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, C
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.

Evaluation **Total Hours:100**

Textbook:

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

Reference:

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

Course outcome:

CO1	To be well versed in defining CPR	K2
CO2	To understand the Principles of CPR	K3
CO3	To be well versed in checking and positioning the victims, procedures in CPR	K3
CO4	To understand the concept of signals of a heart attack.	K4
CO5	To clearly explain the concept of Adult, Child and infant CPR.	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	3	2	1	3	2	2	2
CO2	3	2	3	2	1	2	3	3	2	3
CO3	3	2	3	3	2	3	1	3	2	2
CO4	2	1	2	3	3	1	1	1	1	1
CO5	3	3	3	2	3	2	3	2	1	2
Average	2.8	2	2.6	2.6	2.2	1.8	2.2	2.2	1.6	2

ASSESSMENT METHODS:

CAT 1	**CAT 2**	**Model Exam**	**End Semester Exams**	**Assignments**	**Case Studies**
✓	✓	✓	✓	✓	
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**	**Open book test**
✓			✓		

22DBPT103	BIOSTATISTICS/RESEARCH METHODOLOGY	L	T	P	C
		2	0	0	2

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 BioStatistics.

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.

Course outcome:

CO1	Important concepts relating to research design and measurements and scaling techniques.	K3
CO2	To analyze experimental and observational study	K4
CO3	Knowledge of Processing and analyzing data can be gained	K3
CO4	Interpretation and Report Writing can be well understood	K4
CO5	Desire to face the challenge in solving the unsolved problems and to be of service to society.	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	2	2	2	2	3	1	3	3
CO2	2	2	2	2	2	2	3	1	3	3
CO3	2	2	2	2	1	2	3	1	3	3
CO4	2	2	2	2	2	2	3	1	3	3
CO5	2	2	2	2	1	2	3	1	3	3
Average	2	2	2	2	1.6	2	3	1	3	3

Assessment Methods:

CAT1	**CAT2**	**Model Exam**	**nd Semester Exams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/Presentation**

22CBPT025T	Clinical Orthopaedics & Traumatology - Theory	L	T	P	C
		5	0	0	5

Course Objective

The objective of this course is that after 90 hours of lectures the student will be able to understand the various orthopaedic conditions causing disability and the postoperative management.

UNIT I **20**

Fractures and dislocations

- Types of fractures – signs, clinical features and complications following fractures
- General principles of management of fractures – open and closed reduction methods
- Fracture healing
- Prevention and treatment of complications of fracture – early, delay and late complications
- Describing the upper limb, lower limb and spine fractures - clinical presentations, management and complications
- Describing the dislocations of shoulder and patella – signs, clinical features, management and its complications
- Spine fracture – dislocation – principles of management and complications
- Spinal fractures associated with cord injury - paraplegia

UNIT II **20**

Regional conditions in upper limb, lower limb and spine

Describing the Causes, mechanisms, clinical features and management for tendonitis, bursitis, sprains, strains, Synovitis.

- Disorders of rotator cuff, impingement syndrome, SLAP lesions, frozen shoulder, Cubitus Valgus and Varus, pulled elbow injury, tennis and golfer's elbow, olecranon bursitis, kienbock's disease, Dequervain's tendonitis, ganglion cysts, carpal tunnel syndrome, dupuytren's contracture, trigger finger, flexor and extensor tendon injuries.
- Cervical torticollis, ankylosing spondylitis, intervertebral disc prolapse, facet joint dysfunction, spondylolisthesis, spinal stenosis, low back pain
- Perthes disease, coxavalga and coxavara, slipped capital femoral epiphysis, genu valgum, genu varum, meniscal injuries, ACL and PCL injuries, Charcot's disease, flat foot, hallux valgus, gout, Achilles tendon rupture, calcaneal spur and plantar fasciitis.

UNIT III **20**

A. Congenital deformities

- Congenital talipes equino varus, developmental dysplasia of hip, limb deficiencies, osteogenesis imperfecta and radial club hand.

B. Degenerative and inflammatory conditions

- Osteoarthritis
- Rheumatoid arthritis
- Osteoporosis

C. Bone infections and tumours

- Tuberculosis of spine – pott's paraplegia
- Osteomyelitis, septic arthritis
- Osteoma
- Osteosarcoma
- Ewing's sarcoma
- Osteoclastoma
- Multiple myeloma

UNIT IV **20**

Operative management in orthopaedics

- Arthrodesis
- Arthroplasty
- Osteotomy
- Bone grafting
- Tendon transfer
- Limb salvage procedures

UNIT V **20**

A. Amputations

Describing the definition, classifications and levels of amputations.

- Upper limb and lower amputations
- Complications following amputations
- Surgical procedures and medical approach in amputations.
- Post-operative management for amputations

B. Peripheral nerve injuries

- Radial, medial and ulnar nerve injuries
- Common peroneal nerve injury, sciatica
- Brachial plexus injuries

Evaluation **Total Hours:100**

Text Books

1. Textbook of orthopaedics and traumatology – M.N.Natrajan, 7th edition
2. Jayant Joshi, Essentials of Orthopaedics and applied physiotherapy, Elsevier, 2nded, 2011.

References

1. Adam's outline of orthopaedics – 14th edition
2. Essentials of orthopaedics for physiotherapists – John Ebenezer 3rd edition
3. Essentials of orthopaedics – J.Maheshwari, 4th edition

Course outcome:

CO1	Knowledge about fractures of various bones – description on type, mechanism of injury, clinical features, complications and management of fractures.	K3
CO2	Will be able to understand the dislocation of major joints and surgical management following dislocation.	K4
CO3	Knowledge about major surgical procedures for different orthopaedic conditions and also surgical management for amputation.	K3
CO4	Gain knowledge about the degenerative disease of bones and joints and its management	K3
CO5	Knowledge about the congenital conditions, peripheral nerve injuries and postural deformities.	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	3	2	1	3	2	2	2
CO2	3	2	3	2	1	2	3	3	2	3
CO3	3	2	3	3	2	3	1	3	2	2
CO4	2	1	2	3	3	1	1	1	1	1
CO5	3	3	3	2	3	2	3	2	1	2
Average	2.8	2	2.6	2.6	2.2	2.5	2.2	2.2	1.6	2

Assessment Methods:

CAT1	**CAT2**	**Model Exam**	**Semester Exams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**emonstration/Presentation**

22CBPT026T	Physiotherapy in Orthopaedics- Theory	L	T	P	C
		5	0	0	5

Course Objective

The objective of this course is that after 170 hours of lectures, demonstrations, practicals and clinics the student will be able to identify disability due to musculoskeletal dysfunction, plan the treatment goals and apply their skills in providing exercises and electrotherapy modalities along with rehabilitation protocols for the musculoskeletal disorders.

UNIT I **20**

Orthopaedic assessment

- Examination of the patient – age, ethnicity, gender, morphology and family history
- Systems review
- Pain assessment
- Tests and measures
- Active and Passive joint range of motion – Joint integrity
- Joint play movements
- Capsular pattern
- Muscle performance – Strength, power and endurance
- Anthropometric characteristics
- Posture and gait evaluation
- Special tests – clinical significance
- Differential diagnosis
- Investigations in Orthopaedics – basics
- Reflex and sensory examination
- Clinical decision making
- Goal setting – short term & long term goals
- Prognosis and plan of care
- POMR and SOAP documentation

UNIT II **20**

Regional fractures and Dislocations

Describing the PT assessment, goals and management for the following

- Clavicle fracture, Upper 1/3 rdhumerus fracture, shaft humerus fracture, Supra-condylar fracture and intercondylar fracture of the humerus, Monteggia and galleazzi fracture, both bone fracture forearm, colles fracture, smith fracture, scaphoid fracture, Bennett's fracture, metacarpal neck fracture.
- Fracture neck of femur, trochanteric fracture femur, shaft, condylar fracture, patella fracture, shaft of tibia, both bone fracture leg, fracture malleoli, calcaneal fracture, March fracture.
- Pelvis fracture, wedge compression fracture, burst fracture, atlas and axis fracture, coccyx fracture.
- DISLOCATIONS – Shoulder – anterior, inferior, recurrent, Patella dislocation, Hip – congenital, traumatic, posterior and central.

UNIT III **20**

PT assessment and management for REGIONAL CONDITIONS

Spine

Cervical torticollis, ankylosing spondylitis, scoliosis, kyphosis, lordosis, TB spine with pott's paraplegia, lumbar spondylosis, intervertebral disc prolapse, spondylolisthesis, low back pain, spinal stenosis, osteoporosis.

Upper limb

Frozen shoulder, rotator cuff injury, painful arc syndrome, subacromial bursitis, impingement syndrome, tennis elbow, olecranon bursitis, carpal tunnel syndrome, dupuytren's contracture, trigger finger, Dequervain's tenosynovitis and tendon injuries.

Lower limb

Coxavara and valga, Chondromalacia patella, meniscal injuries, Anterior cruciateligament injury, genu valgum and varum, avulsion injury from patella, baker's cysts, Ankle sprains, Achilles tendonitis, club foot, calcaneal spurs, plantar fasciitis, Gout, metatarsalgia.

Degenerative, infections and inflammatory conditions

Osteomyelitis, Rheumatoid arthritis, Osteoarthritis – hip, knee.

UNIT IV **20**

Common Orthopaedic surgeries

Describing the PT assessment and management for a post-operative patients on following conditions.

- Total hip replacement
- Hemi-arthroplasty of hip
- Dynamic hip screw fixation
- Total knee replacement
- ACL reconstruction
- Patellectomy
- Laminectomy
- Tendon transfer

UNIT V **20**

A. Amputation

- Describing the indications, principles of amputations of upper limb and lower limb.
- Describing the stump assessment, stump care, stump exercises.
- PT management and Training for prosthesis fitting and prosthetic training.

B. Peripheral nerve injuries

Describing the PT assessment and management following

- Radial, ulnar and medial nerve injuries
- Brachial plexus injury

- Common peroneal nerve injury
- Demonstration of Neural mobilization techniques for upper and lower limb.

C. Burns

- Assessment of Range of motion, muscle strength, contractures and deformities of the patient following burns.
- PT management following burns including skin grafting

Evaluation **Total Hours:100**

Text Book:

1. David J Magee Orthopaedic physical assessment, 6 th edition

References

1. Turek's Orthopaedics, Mosby, 4 th edition
2. Textbook of Orthopaedics, John Ebenezer, 5 th edition
3. Therapeutic exercise, Carolyn kisner, 6 th edition

Course outcome:

CO1	Knowledge about assessment, diagnosis and plan of appropriate treatment for various musculoskeletal problems.	K3
CO2	Can understand the various types of fractures and principles of management of fractures post operatively.	K3
CO3	Gaining knowledge about physiotherapy management for various orthopedic surgeries.	K4
CO4	Knowledge about management for various soft tissue injuries and degenerative disorders of bones and joints.	K4
CO5	Will understand about physiotherapy management following amputation, burns and sports injuries.	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	2.4	2.2	1	2.2	2.6	2.4	2	1.8	2.8	3

Assessment Methods:

CAT1	**CAT2**	**Model Exam**	**End Semester Exams**	**Assignments**
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**

22CBPT027T	Professional Ethics /Administration/Marketing- Theory	L	T	P	C
		5	0	0	5

Course Objective

After 110 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.

UNIT I **20**

PROFESSIONAL ETHICS AND LEGAL ISSUES

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 **20**

PROFESSIONAL BODIES

1. National and international professional bodies; Professional associations (IAP) 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 **20**

MANAGEMENT STUDIES FOR PHYSIOTHERAPY

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 **20**

ORGANIZATION

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 **20**

RESOURCE AND QUALITY MANAGEMENT

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: 100**

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 UniversityPress, 3rd Ed,1988.

Course outcome:

CO1	This course provides basic knowledge on legal responsibility and professional culture .	K3
CO2	This course explains the role of different national professional bodies	K4
CO3	This provides information on organization principles and budget planning, Management and Administration	K4
CO4	This gives knowledge on job recruitment, preparation for 1st job and career development	K3
CO5	Rules and Regulations of governing bodies of Physiotherapy can be well understood	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	1	2	3	3	2	2	3	3
CO2	2	2	1	2	3	3	2	2	3	3
CO3	3	2	1	3	3	2	2	2	3	3
CO4	2	2	1	2	3	1	2	2	3	3
CO5	3	3	1	2	1	3	2	1	2	3
Average	2.4	2.2	1	2.2	2.6	2.4	2	1.8	2.8	3

Assessment Methods:

CAT1	CAT2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**

22CBPT028T	Yoga- Theory	L	T	P	C
		5	0	0	5

Course Objective:

The objective of this course is that after 80 hours of lectures & demonstrations, the student will be able to understand the basic concepts about Asanas and its effects, therapeutics effects of Yoga.

UNIT I **20**

Introduction to Yoga

1. Introduction to Yoga
2. Principles of Yoga

UNIT II **20**

Patanjali

1. History of Yoga
2. Yoga in Ancient and Modern India

UNIT III **20**

Folds of Yoga

1. Types & Forms of Yoga
2. Asanas& its physiological effects

UNIT IV **20**

Yogic Science

1. Scientific background of Yoga
2. Yoga and the effects on depression, stress, obesity, respiratory system, cardiovasucularsystem, nervous system, endocrine system and metabolic conditions.
3. Effect of yoga on women's health.

UNIT V **20**

Advantages of Yoga

1. Physiological Effects of Yoga
2. Therapeutic Uses of Yoga
3.

Evaluation **Total Hours: 100**

Textbook:

1. BKS Iyengar, Light of Yoga, JP, 1 st Ed, 2012.

Reference:

1. PayalGidwani Tiwari, Body Gaurders, CBS, 2 nd Ed, 2009.

Course outcome:

CO1	Demonstrate the introduction and principles of yoga.	K2
CO2	Knowledge of history of yoga and yoga in modern India.	K3
CO3	Outline of yoga background and importance of yoga in modern world.	K3
CO4	Learning the types and forms of asanas and description of physiological effect of yoga.	K4
CO5	Understanding the role of yoga in physiotherapy.	K3

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	1	3	2	1	1	2	2	2	1
CO2	2	3	1	2	1	2	3	2	3	2
CO3	2	3	1	2	2	2	3	1	1	3
CO4	1	2	2	2	2	1	3	3	1	1
CO5	1	1	3	2	2	2	1	3	2	1
Average	1.6	2	2	2	1.6	1.6	2.4	2.2	1.8	1.6

Assessment Methods:

CAT1	CAT2	Model Exam	End Semester Exams	Assignments
✓	✓	✓	✓	✓
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**
✓				

22DBPT104	Clinical testing	L	T	P	C
		2	0	0	2

Course objective:

The objective of this course is that after 80 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

UNIT I **20**

Clinical test and its Significance

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

Implications of Special Tests

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

UNIT II **20**

Upper Limb Joints
Special tests of upper limb joints

- Shoulder Joint
- Elbow Joint
- Wrist Joint

UNITIII **20**

Lower Limb Joints
Special tests of lower limb joints

- Hip Joint
- Knee Joint
- Ankle Joint

UNIT IV **20**

Spinal Joints
Special tests of spinal Joints

- Cervical Joint
- Thoracic Joint
- Lumbar Joint

UNIT V **20**

MEDICAL IMAGING AND THERMOGRAPHY

1. Introduction to Radiography:
   - Radio Imaging and Radio Diagnostic
   - X Ray – spinal, skull, peripheral.
   - Ultrasonogram
   - Computed tomography (CT).
   - Magnetic resonance Imaging with Spectroscopy.
   - PET.

2. Thermography and its principles

Evaluation **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

Course outcome:

CO1	To understand the concept of clinical testing and its significance	K2
CO2	To be well versed in special tests of upper limb joints	K3
C03	To understand the special tests of spinal joints	K3
C04	To clearly explain the special tests of lower limb joints	K4
CO5	To understand the importance of medical imaging	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	2	3	1	2	3	1
CO2	3	3	3	3	3	3	1	2	3	1
CO3	2	2	2	2	2	3	1	2	2	1
CO4	3	3	3	3	3	3	1	2	2	1
CO5	2	2	2	2	2	3	1	2	3	1
Average	2.6	2.6	2.4	2.4	2.4	3	1	2	2.6	1

22CBPT029T	Community Based Physiotherapy Disability Evaluation – Theory	L	T	P	C
		4	0	0	4

Course Objective:

The objective of this course is after 120 hours of lecture demonstration the student will be able to have a community based perspective with Physiotherapeutic approach.

UNIT I **20**

1. Definition of Rehabilitation. Explanation about its aim & principles
2. Rehabilitation team and the role of team members
3. Approaches of Rehabilitation
4. Concepts, Principles and component based rehabilitation
5. Planning and Implementation of community based rehabilitation
6. Socio economic status of the community
7. Physiotherapist in health education
8. National health policy and health programmes

UNIT II **20**

1. Physiology and theories of aging
2. Degenerative systemic changes:

- Musculo-Skeletal changes (Atrophy, Osteoporosis, Stiffness, Hypotonia)
- Cardio-respiratory Problems
- Post Menopausal changes
- Neurological changes

3. Role of Physical therapists in treatment of degenerative systemic changes
4. Psycho-Social aspects of aging
5. Assessment, Prescription of exercise & training of geriatric patient
6. Institutionisation of the aged, role of physiotherapist in planning and management?

UNIT III **20**

Exercise in various conditions

- Exercise principles & Training
- Exercise in Diabetes
- Exercise in Hypertension
- Exercise in Obesity
- Exercise in Renal conditions

UNIT IV **20**

1. Architectural barriers
2. Communication disorders
3. Behavioural disorders
4. Relaxation techniques
5. Evaluation and prescription of exercise and training in the community

UNIT V **20**

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

Evaluation **Total Hours: 100**

Text Books

1. Waqar Naqvi, Physiotherapy in community health and Rehabilitation, JP Brothers,1st Ed, 2011.
2. S.Pruthvish, Community-Based Rehabilitation of persons with disabilities, JP Brothers, 1 st Ed, 2006.
3. Mutani, Principles of Geriatric Physiotherapy, Jaypee, 1 st Ed, 2008.
4. William Mc Ardle, Essentials of exercise physiology, Lippincott, 3 rd Ed, 2006.

References

1. Judith Pitt-Brooke, Rehabilitation of movement – Theoretical basis of clinical practice, W.B .Saunders, 2 nd Ed, 2002.
2. OSA Kackson, Physical therapy of geriatric patient, Churchill living stone, 3 rd Ed, 2009.

Course outcome:

CO1	One can very well understand about the members of rehabilitation team and their role in Rehabilitating the patient.	K4
CO2	Geriatric assessment, evaluation and rehabilitation can be known	K3
CO3	Student can understand about the importance of therapeutic exercise in	K3

	treating various condition like diabetes, hypertension, obesity etc.,	
C04	Communication and behavioral disorders can be well understood	K4
CO5	The student can understand about the principles of disability evaluation	K5

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

ASSESSMENT METHODS

CAT 1	**CAT 2**	**Model Exam**	**End Semester Exams**	**Assignments**	**Case Studies**
			✓	✓	
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**	**Open book test**

22CBPT030T	Evidence Based Practice	L	T	P	C
		4	0	0	4

Course objective:

The objective of this course is after 100 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.

UNIT I **20**

- Introduction to evidence-based practice
- Concepts of evidence-based physiotherapy
- Awareness
- Consultation
- Judgement
- Creativity
- Identifying different sources of evidence -electronic bibliographic database and world wide web
- Step by step search for evidence

UNIT II **20**

- Clinical decision making
- Evaluation
- Documentation
- Problem oriented medical record
- Assessment
- Goals
- Treatment

UNIT III **20**

- Clinical data methods and types
- Research approaches
- Prescriptive
- Descriptive
- Categorisation
- Organisation and content
- Artificially aided approach
- Index medicus

UNIT IV **20**

- Research methodology
- Research design
- Screening
- Selection and interpretation of tests
- Sensitivity and specificity

- Parametric and nonparametric tests

UNIT V **20**

- Professional growth and research
- Journal reviews and presentation of latest research literature
- Influence of ethical values on patient care

Evaluation **Total Hours: 100**

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

Course outcome:

CO1	Student will be able to Make complex decision from heuristic decision	K2
CO2	Student will be able to Make decisions based on prescriptive, descriptive and artificially added approach & Categorize the subjects and objects of knowledge	K3
CO3	Student will be able to Differentiate between screening and diagnosis & Understand the importance of history taking and physical examination	K3
CO4	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	K4
CO5	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	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	3	3	3	3	1	2	3	3
CO2	3	2	3	3	3	3	1	2	3	3
CO3	3	3	3	3	2	3	3	2	2	3
CO4	2	2	1	2	1	2	3	2	3	3
CO5	3	2	3	3	3	3	1	2	3	3
Average	3	2.8	2.8	2.8	3	2.6	2.8	2.8	2.2	2.6

Mapping of Program outcomes with course outcomes

CAT 1	CAT 2	Model Exam	End Semester Exams	Assignments	Case Studies
			✓	✓	
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**	**Open book test**

22SBPT251	Fitness	L	T	P	C
		4	0	0	2

Course objective

The objective of this course is that after 80 hours of lectures & demonstrations, the student will be able to understand about the importance of fitness, exercise and its importance to human body.

UNIT I: Introduction **20**

1. Meaning & Definition: Fitness, Mental fitness and Physical fitness
2. General & Specific fitness
3. Need & importance of Physical fitness - Types: Performance related Physical fitness and Health related Physical fitness
4. Performance related Physical fitness Components (Speed, Strength, Endurance, Agility, Power and Flexibility)
5. Health related Physical fitness Components (Cardio-respiratory Endurance, Muscular Strength, Muscular Endurance, Flexibility and Body Composition).

UNIT II: Physical Fitness Activities **20**

1. Warm-up - General & Specific warming-up - advantages of warming-up.
2. Cool down exercise & its benefits.
3. Exercise, Training and Conditioning. Walking ,Jogging , Running , Spot running, Bounding strides , High knee ,Fast arms ,Hopping ,Skipping ,Stepping on the bench, Side Stepping, Sand running, Uphill running, Swimming ,Cycling, Free hand exercises.

UNIT III: Training Methods **20**

1. Aerobics exercises, anaerobic exercises, weight training, stretching exercises and circuit training.
2. Basic method of conditioning: Continuous method (Slow & Fast) - Interval methods(Intensive & Extensive). Repetition method - Resistance training (own body weight,with partners, with equipment's) - Playing sports & games.

UNIT IV: Health and Wellness **20**

1. 30002good Health.
2. Disease Management -Obesity - Diabetes - Heart ailments - Arthritis.

UNIT V: Assessment of Physical Fitness **20**

1. AAPHERD Physical Fitness Test Battery. Body Mass Index and its Evaluation.
2. Muscular Strength - Muscular endurance - Cardio-respiratory Endurance.

Evaluation **Total Hours: 100**

TEXT BOOKS

1. Dick, Frank W. (2006). Sports training Principals Fourth Edition. New Delhi: Friends Publication.
2. Harre, Dietrich, (1982). Principles of Sports training, (ed). Berlin. Sport Verlag.
3. Singh, Hardayal. (1995). Science of Sports training. New Delhi: D.V.S. Publications.
4. Uppal, A.K. (2009). Science of Sports Training. New Delhi: Friends Publication.

REFERENCE BOOKS

1. Brooks, Douglas. S., (2004). The Complete Book of Personal Training, Champaign:,Human Kinetics.
2. James and Leona Hart, (2000). Fitness and Wellness, New Delhi: Goodwill PublishingHouse.
3. Baechle, Thomas. R, & Earle, Roger. W., (2000). Essentials of Strength Training andConditioning, Champaign: Human Kinetics.

Course outcome:

CO1	Definition of fitness, principles of exercises and testing of endurance and strength.	K2
CO2	Understand the types of exercises and detail knowledge of aerobics and anaerobic exercises.	K3
CO3	Knowledge of appropriate selection of exercises and advantages of exercises.	K2
CO4	Understand the different type of muscle strengthening.	K3
CO5	Understand the therapeutic effects of aerobic and Zumba dance.	K3

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	1	3	2	1	1	2	2	2	1
CO2	2	3	1	2	1	2	3	2	3	2
CO3	2	3	1	2	2	2	3	1	1	3
CO4	1	2	2	2	2	1	3	3	1	1
CO5	1	1	3	2	2	2	1	3	2	1
Average	1.6	2	2	2	1.6	1.6	2.4	2.2	2	1.6

22PBPT001	Clinical Reasoning in Physiotherapy Management	L	T	P	C
		0	0	8	4

Course Objective:

After 120 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.

UNIT I **20**

Musculoskeletal system

1. Problem oriented Medical Record, History, Concept and Advantages.
2. Communication with the patient – Principles and methods.
3. Maitland's Concept
4. Cyriax Concept
5. Mckenzie's concept
6. Kaltenbone concept
7. Neural tension tests – Normal and abnormal findings.

UNITII **20**

Neuro Muscular system : (for CNS Problems)

1. Bobath's approach (Normal movement concept)
2. Motor Relearning process (MRP)
3. Voijta approach
4. Clinical resoning and clinical decision and clinical making in neurologicalconditions.
5. Rationale of plan of treatment for neurological conditions.

UNITIII **20**

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 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

UNIT IV **20**

Sports& Fitness:

a) Isokinetic testing
b) Strength training
c) Outline on exercise physiology
d) Gait evaluation (force plates, gait parameters, analysis of jumping and running mechanics)

UNIT V **20**

OBG Conditions:

a. Reverse pressure softening technique
b. Integrated massage technique
c. Ergonomic advices for breast feeding posture
d. Mini stability ball exercises

Evaluation **Total Hours: 100**

Text books:

1. Janet H carr, a motor re leaning programme for stroke, aspen publishers, 2 nd , 1987
2. Berta bobath, adult hemiplegia, butterworth Heinemann, 3 rded, 1990.
3. Essentials of strengthening and conditioning – g.gregoryhaff

Reference:

1. David J. magee, orthopeadic physical assessment, saunders , 5 thed, 2008.
2. Maitland textbook of pheripheral and vertebral manipulation 4 th 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

Course outcome:

CO1	Students should be able to perform the differential diagnosis and advanced treatment technique in field of musculoskeletal system.	K4
CO2	Students should be able to perform the differential diagnosis and advanced treatment technique in field of neurological system.	K5
CO3	Students should be able to perform the differential diagnosis and advanced treatment technique in field of cardio respiratory system.	K5
CO4	Students should be able to perform the differential diagnosis and advanced treatment technique in field of sports.	K5
CO5	Students should be able to perform the differential diagnosis and advanced treatment technique in field of obstetrics and gynecology	K4

CO PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	2	2
CO2	3	2	3	2	3	2	3	2	2	3
CO3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	3	3	2	2	3	3	2
Average	3	2.8	2.8	2.8	3	2.5	2.8	2.8	2.2	2.6

ASSESSMENT METHODS:

CAT 1	**CAT 2**	**Model Exam**	**End Semester Exams**	**Assignments**	**Case Studies**
✓	✓	✓	✓	✓	
Quiz	**MCQ**	**Projects**	**Seminars**	**Demonstration/ Presentation**	**Open book test**
✓			✓		