DR. C.V. RAMAN UNIVERSITY
Madhya Pradesh, Khandwa AN AISECT GROUP UNIVERSITY

SYLLABUS & SCHEME OF EXAMINATION

BACHELOR OF PHYSIOTHERAPY

(Session 2019-20 & Onwards)

Dr. C.V. RAMAN UNIVERSITY, kHANDWA (M.P.)

RABINDRANATH TAGORE UNIVERSITY, RAISEN (M.P.)

Section-II

B.P.T. FIRST YEAR

STAFF PATTERN FOR FIRST YEAR B.P.T.

Subjects	Staff Required
Anatomy	1 M.S. Anatomy, Lecturer/ Asst. Prof.
Physiology	1 M.D. Physiology, Lecturer/ Asst. Prof.
Fundamentals of Physics, Biomechanics	1 Asst. Professor of Physiotherapy
& Exercise Therapy	1 M. Sc. Physics, lecturer/Bio-Medical engineer
Medical Electronics and	1 Asst. Professor of Physiotherapy
electro-therapeutic modalities	
Sociology	1 M.A. Sociology/Medical Social-Worker
Psychology	1 M.A. Psychologist. (Psychology)

FIRST YEAR B.P.T
EXAMINATION SCHEME

Course Details			External Assessment		Internal Assessment			
Course Code	Course Name	Total Marks	Major		Minor		Sessional ***	
			Max marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks
Theory Group								
PBPT 101	Human anatomy	100	60	30	20	10	20	10
PBPT 102	Human physiology	100	60	30	20	10	20	10
PBPT 103	Fundamental of physics, biomechanics & biomechanical modalities	100	60	30	20	10	20	10
PBPT 104	Fundamental of medical electronics & principles of bioelectrical modalities	100	60	30	20	10	20	10
PBPT 105	Sociology & psychology	100	60	30	20	10	20	10
Practical & Viva			**Term and Practical Exam**		**Lab Performance**		**Sessional**	
PBPT 101	Human anatomy	100	60	30			40	20
PBPT 102	Human physiology	100	60	30			40	20
PBPT 103	Fundamental of physics, biomechanics & biomechanical modalities	100	60	30			40	20
PBPT 104	Fundamental of medical electronics & principles of bioelectrical modalities	100	60	30			40	20
Grand Total		900						

Minimum Passing Marks are equivalent to Grade C+ **L- Lectures T- Tutorials P- Practical**

Major- Term End Theory Exam/ Practical Exam
Minor- Pre University Test
Sessional weightage – Attendance 50%, Three Class Tests/Assignments 50%

N.B.- Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.

Passing Marks:- A candidate must obtain 50% in aggregate with a minimum of 50% in theory including viva and minimum 50% in practical.

BOARD OF STUDIES CHAIRMAN DEAN REGISTRAR

SCHEME OF EXAMINATION FOR FIRST YEAR B.P.T.

There shall be five subjects for the first year B.P.T. Examination.

The subjects Qualification of the examination and the pattern of examination will be as follows.

1.HUMAN ANATOMY

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in anatomy after M.S. (Anatomy) with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to University theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of University theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marks for Each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

2. HUMAN PHYSIOLOGY

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in physiology after M.D. (Physiology) with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively. The pattern of University theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
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2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

3. FUNDAMENTALS OF PHYSICS, BIOMECHANICS & BIOMECHANICAL MODALITIES

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

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5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

4 .FUNDAMENTALS OF MEDICAL ELECTRONICS & PRINCIPLES OF BIOELECTRICAL MODALITIES

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T.(Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of University theory examination will be as under for 100 Max. Marks.

No. & Type of Question	**Marks for each question**	**Total Max. Marks**
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
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		100

5. PSYCHOLOGY & SOCIOLOGY

The University examination shall be of 80 marks with Section – A : Psychology and Section – B : Sociology the university theory examination marks for Psychology shall be 40 and for sociology 40 marks respectively. There shall be two paper setters and two evaluators, one from Psychology and one from Sociology. Section- A, which will be set by Psychology examiner (40 marks) and Section-B, by Sociology (40 marks) examiner. Recognized teachers in psychology and sociology with five years of experience shall be on the panel of examiners 50% shall
be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks.

The pattern of University theory examination will be as under for 80 Max. Marks.

There will be two section i.e. Section-A: Psychology and Section-B: Sociology of 40 Max. Marks each section and distribution of marks for questions will be as under

No. & Type of Question	**Marks for each question**	**Total Max. Marks**
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

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RABINDRANATH TAGORE UNIVERSITY, RAISEN (M.P.)

BACHELOR OF PHYSIOTHERAPY (B.P.T.) FIRST YEAR

HUMAN ANATOMY

Total No. of Teaching Hours: - 200

Theory -140 Hrs. Practical / Laboratory- 60 hrs

COURSE OBJECTIVES:-

1. Understanding of gross anatomy of various body parts.
2. Application of knowledge of anatomy to learn evaluation and application of physical therapy.
3. Major emphasis of learning is towards Musculo-skeletal, cardio-respiratory and nervous system.

COURSE OUTCOME:-

1. Understand organization of various systems in human body
2 . Acquire competencies in recognizing the anatomical structures, their gross and surface anatomy
3. Describe in detail the structure and function of musculoskeletal, central nervous system, cardio-vascular, respiratory, and excretory systems
4 . Have general outline of digestive, reproductive and endocrinal system and their functions

SCHEME OF EXAMINATION

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		100

COURSE CONTENTS:-

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A . GENERAL ANATOMY:

1) Introduction to Anatomy, terms and terminology
2) Regions of Body, cavities and Systems outline.
3) Surface anatomy – musculo-skeletal and cardiopulmonary
4) Cell Structure and function of cell organelles (Brief outline only).
5) Connective tissue & its modification, tendons, membranes, Special connective tissue.
6) Bone structure, blood supply, growth, ossification, and classification.
7) Muscle classification, structure and functional aspect.
8) Nerve – structure, classification, microscopy with examples.
9) Neurons, classification with examples. Simple reflex arc.
10) Parts of a typical spinal curve/Dermatome
11) Joints – classification, structures of joints, movements, range, limiting factors, stability, blood supply, nerve supply, dislocations and applied anatomy.
12) Circulatory system – major arteries and veins of the body, structure of blood vessels
13) Lymphoid system – circulation + function, lymphoid organs- and their structure & functions.

B. UPPER EXTREMITY:

1) Bony architecture
2) Joints – structure, range of movement
3) Muscles – origin, insertion, actions, nerve supply
4) Major nerves – course, branches and implications of nerve injuries
5) Development of limb bones, muscles and anomalies
6) Radiographic identification of bone and joints

C. LOWER EXTREMITY:

1) Bony architecture
2) Joints – structure, range of movement
3) Muscles – origin, insertion, actions, nerve supply
4) Major nerves – course, branches and implications of nerve injuries
5) Development of limb bones, muscles and anomalies
6) Radiographic identification of bone and joints

D. SPINE:

1) Back muscles - Superficial layer, Deep muscles of back, their origin, insertion, action and nerve supply.
2) Vertebral column – Structure & Development, Structure & Joints of vertebra
3) Radiographic identification of bone and joints

E. THORAX:

1) Thoracic cage
2) Pleural cavities & pleura
3) Lungs and respiratory tree
4) Heart and great vessels
5) Diaphragm

F. HEAD AND NECK:

1) Cranium
2) Facial Muscles
3) Structure of eyeball in brief and extra ocular muscles, visual pathway
4) Ear and auditory pathway
5) Triangles of Neck, boundaries and contents
6) Tongue – parts ,extrinsic and intrinsic muscles, motor and sensory nerves, gustatory pathway
7) Pharynx
8) Larynx

G. CNS:

1) Central nervous system – disposition, parts and functions
2) Cerebrum
3) Cerebellum
4) Midbrain & brain stem
5) Blood supply of brain & its applied anatomy
6) Spinal cord- anatomy, blood supply, nerve pathways
7) Pyramidal, extra pyramidal system
8) Thalamus, hypothalamus
9) Ventricles of brain, CSF circulation
10) Development of nervous system & defects (Brief Description)
11) Cranial nerves – special emphasis on V, VII, X, XI, XII (course, distribution and palsies)
12) Sympathetic nervous system, its parts and components (Brief Descri

13) Parasympathetic nervous system (Brief Description).

H. ENDOCRINE :

system – Pituitary, Thyroid, parathyroid (Brief Description)

I. Embryology in brief of neuromuscular tissue

J. Abdomen (Brief descriptions only):

a. Boundaries , Muscles of abdominal wall

b. Division of Abdominal cavity

i. Pouch of Douglus

ii. Morrisons pouch

K. PELVIS

1) Pelvic floor, innervations

2) Bony Pelvis

L. Digestive system (Liver & pancreas, Alimentary canal)

M. Urinary system – Kidney, Ureter, bladder, urethra

N. Genital system – Male and Female

KINESIOLOGY

1. Basic Concepts
2. Muscular system
3. Joints
4. Machinery Musculoskeletal system
5. Principles of Motion
6. Principles of force and work
7. Basics of the development of motor skill
8. Principles of stability
9. Postural principles

PRACTICAL

Learning of surface landmarks with special emphasis on bones, joints, muscles, and nerves.

The learning of anatomy is by demonstration only through dissected parts, slides, models, charts, etc.

Demonstration of dissected parts (upper extremity, lower extremity, thoracic& abdominal viscera, face and brain)

Demonstration of skeleton articulated and disarticulated.

During the training more emphasis will be given on the study of bones, muscles, joints, nerve supply of the limbs.

PRACTICAL EXAMINATION

Students will be assessed by viva based examination upon learning in theory, demonstration of bones, and joints, muscles, nerves and major viscera.

BOOKS RECOMMENDED FOR READINGS:

1. Chaurasia, B D Human Anatomy: Regional and CBS, New Delhi Latest 3V
2. Chaurasia, B D Human Oesteology CBS, New Delhi Latest
3. Singh, Inderbir Text Book of Anatomy:With Color Atlas Jaypee, New Delhi Latest 3V
4. Singh, Inderbir Text Book of NeuroanatomyJaypee, New Delhi Latest
5. Singh, Inderbir Text Book of Human Histology Jaypee, New Delhi Latest
6. Singh, Inderbir Text Book of Human OesteologyJaypee, New Delhi Latest
7. Garg, Krishna Text Book Histology CBS, New Delhi Latest
8. Singh, Inderbir Multiple Choice Questions in Anatomy Jaypee, New Delhi Latest
9. Datta, A.K. Essentials of Human Anatomy: Neuroanatomy Current Book, Calcutta, Latest
10. Datta, A.K. Essentials of Human Anatomy: Thorax and Abdomen Current Book, Calcutta, Latest
11. Williams, Peter L Gray's Anatomy: Anatomical Basis of Churchill Livingston, New York, Latest
12. McMinn, M. H. Colour Atlas of Human Anatomy Mosby-Wolfe, London-Latest
13. Snell, Richard S Clinical Anatomy for Medical Students Little- Brown, Boston-Latest
14. Field, Derek Anatomy: Palpation and Surface Markings Butterworth, London-Latest

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BACHELOR OF PHYSIOTHERAPY (B.P.T.) FIRST YEAR

HUMAN PHYSIOLOGY

Total No. of Teaching Hrs:- 200

Theory -140 Hrs., Practical / Laboratory- 60 Hrs.

COURSE OBJECTIVES:-

1. To understand the Physiological functions of human body
2. To understand the application of physiological functions & physiology of exercise in relation to physical therapy
3. Major area of learning is cardio-respiratory, Musculo-skeletal and nervous system.

COURSE OUTCOMES:-

1-Be able describe physiological functions of various systems, with special reference to Musculo-skeletal, Neuro-motor, Cardio-vascular, Respiratory, Female urogenital function and alteration in functions with ageing
2- Acquire the knowledge of the relative contribution of each organ system in maintenance of the homeostasis
3- Analyze physiological response & adaptation to environmental stresses with special emphasis on physical activity and temperature.
4- Acquire the skill of basic clinical examination, with special emphasis to Peripheral & Central Nervous system, cardiovascular& Respiratory system, & Exercise tolerance/ Ergography

Note: Group discussions, seminars and tutorial will be on the topics covered in didactic lectures.

SCHEME OF EXAMINATION

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		100

BOARD OF STUDIES CHAIRMAN DEAN REGISTRAR

COURSE CONTENTS:-

1. GENERAL PHYSIOLOGY

1) Structure of cell membrane
2) Transport across cell membrane
3) Functional morphology of the cell
4) Intercellular communication
5) Homeostasis

2. CARDIOVASCULAR SYSTEM

1) General introduction of cardiovascular systems.
2) Structure and properties of Cardiac muscle.
3) Dynamics of blood & lymph flow
4) Anatomical, biophysical consideration of arterial, arteriolar & capillary venous level, Lymphatic circulation
5) Cardiac cycle and Heart sounds, Mechanical events of Cardiac cycle, Cardiac output, its regulation.
6) Origin and spread of cardiac excitation
7) Basic idea of Electrocardiogram and Interpretation of normal Electrocardiogram.
8) Cardiac output and cardiac failure.
9) Venous return,
10) Heart rate and its regulation.
11) Structure and organization of vascular tree.
12) Arterial blood pressure and pathophysiology of Hypertension.
13) Characteristic of Coronary circulation and pathophysiology of Coronary artery disease
14) Capillary circulation and physiological basis of Edema.
15) Local & systemic regulatory mechanisms of CVS, humeral & neural
16) Patho-physiology of Shock.
17) Cerebral, coronary, splanchnic, skin, Placental & Fetal circulation

1. RESPIRATORY SYSTEM

1) Functional anatomy of Respiratory System , Physiological anatomy of lungs, mechanics of respiration
2) Mechanics of breathing: Mechanism of inspiration and Expiration, intra-pleural and intra-alveolar pressures, Compliance, Surfactant, Air-way resistance and work of breathing
3) Pulmonary circulation, Respiratory membrane and Gas exchange in lungs
4) Composition of gases and Partial pressures.
5) Oxygen and Carbon-dioxide transport.
6) Other function of respiratory system
7) Lung Volumes, Capacities and Lung function tests.
8) Neural and Chemical control of breathing.
9) Regulation of respiratory activity, non-chemical influences on respiratory activity

10) Physio-clinical aspects of Dyspnoea, Apnoea, Asphyxia, Hypoxia, Cyanosis, Breath holding, high and Low atmospheric pressures.

4. CARDIO RESPIRATORY ADJUSTMENTS IN HEALTH & DISEASE

1) Exercise, high altitude, deep sea diving
2) Hypoxia, hypercapnia, hypocapnia, oxygen treatment
3) Asthma, emphysema, artificial respiration

5. BLOOD

1) W.B.C., R.B.C., Platelets formation & functions
2) Plasma, Blood Groups
3) Haemostasis, Immunity

6. RENAL SYSTEM

1) Functions of Kidney , Formation of Urine , Glomerular filtration rate, clearance, Tubular function
2) Water excretion, concentration of urine-regulation of Na, Cl, K excretion
3) Physiology of urinary bladder, Micturition- Neurogenic bladder.

7. DIGESTIVE SYSTEM.

1) Digestion & absorption of nutrients
2) Gastrointestinal secretions & their regulation
3) Functions of (a) Saliva, (b) Gastric juice, (c) Pancreatic juice (d) Succusentericus, (e) Bile.
4) Movements of G.I.T.
5) Functions of Liver & Exocrine Pancreas

8. NERVE - MUSCLE AND SYNAPTIC & JUNCTION TRANSMISSION

1) Nerve – General Concept
2) Nerve cell – structure
3) Genesis of resting membrane potential & Action potential
4) Their ionic basis, All or None phenomenon
5) Ionic basis of nerve conduction
6) Classification & types of nerve fibre
7) Mixed nerves & compound action potential
8) Concept of nerve injury &Wallerian degeneration
9) Muscle properties and functions
10) Electric & Mechanical responses & their basis
11) Concept of isometric & isotonic muscle contraction
12) Electrical events in postsynaptic neurons
13) Inhibition & facilitation at synapses
14) Chemical transmission of synaptic activity
15) Principal neurotransmitter system
16) Neuromuscular junction, structure & events occurring during excitation

9. NERVOUS SYSTEM (descriptive)

1) Organization of Nervous system.
2) Neuron and Neuralgia
3) Synapse: Properties and Synaptic transmission.
4) Reflex arc, its components, properties, type and neurological impairments.
5) General sensations and their properties.
6) Ascending tracts of the Spinal cord and effects of their lesions.
7) Pain and physiological Analgesia.
8) Motor neurons, Descending tracts and their applied aspects.
9) Regulation of Muscle Tone by Spinal and Supra-spinal mechanism.
10) Function of Brain -stem, Cerebellum, Basal Ganglia andMotor cortex.
11) Control of Voluntary movement
12) Regulation of posture and equilibrium, vestibular apparatus.
13) Broad functions of Thalamus, Hypothalamus, Major lobes of Cerebral cortex and Ascending Reticular
14) Activation System
15) Limbic System
16) Learning, memory, speech and conditional reflexes.
    a. Reflexes, monosynaptic, polysynaptic, withdrawal reflex
    b. Properties of reflexes
    c. Sense organ, receptors, electrical & chemical events in receptors
    d. Ionic basis of excitation
    e. Sensory pathways for touch, temperature, pain, proprioception, others
    f. Control of tone & posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions & clinical aspects
    g. Autonomic nervous system & Hypothalamus
        i. Functioning of Autonomic Nervous System with special reference to micturition, defecation and labour
        ii. Higher neural regulation of ANS.

10. HIGHER FUNCTIONS OF NERVOUS SYSTEM

a. Learning & memory, neocortex,

b. Limbic functions, sexual behaviour, fear & range, motivation

11. SPECIAL SENSES

1.Functional anatomy of the Eye

2.Optics of Vision

3.Retinal Function

4.Visual Pathways

5.Mechanism of Hearing.

6.Sensation of Taste and Smell.

12. ENDOCRINE

1. Role of Hypothalamus as an endocrine gland.
2. Functions and hypo & hyper secretion of hormones of
    a. Pituitary
    b. Thyroid

c. Parathyroid

d. Adrenal

e. Endocrine part of pancreas.

13. REPRODUCTIVE SYSTEM

a) Male & female reproductive system
b) Spermatogenesis, Functions of Testosterone.
c) Ovarian and Menstrual Cycle and their hormonal control.
d) Hormones of Ovary and their functions.
e) Physiological basis of Fertilization, Implantation, Pregnancy, Parturition and Lactation.
f) Contraception.

14. EXERCISE PHYSIOLOGY

1.Effects of acute & chronic exercises

2.Oxygen/CO2 transport – O2 debt.

3.Effects of Exercises on muscle strength, power, endurance, B.M.R., R.Q.- hormonal & metabolic effectsrespiratory
& cardiac conditioning.

4.Aging.

5.Training, fatigue & recovery.

6.Fitness- related to age, gender, & body type.

15. SKIN AND BODY TEMPERATURE REGULATION

1. Functional anatomy of the Skin and its function

2. Different mechanisms involved in body temperature regulation.

3. Physiological basis of Pyrexia and Hypothermia

PRACTICAL

1. Examination of pulse, B.P., respiratory rate, & measure study the effect of posture & exercise. Recording of arterial blood pressure – effects of change in posture & exercise on A.B.P

2. Stethography

- Effect of deglutition.
- Effect of voluntary hyperventilation
- Effect of exercise.

Spirometery to measure various lung capacities & volumes, Respiratory rate, tidal volume, VC, timed VC, IRV, IC, ERV, EC on Spirometery (demonstration only)

- Spirometry : Lung volumes and capacities.
- Mosso's finger ergography and bicycle ergography
- Perimetry
- Clinical examination of
  1. Respiratory system.
  2. Cardiovascular system.
  3. Central Nervous system.
  4. Special senses.
  3. Estimate of Haemoglobin, T.R.B.C., T.W.B.C. count (demonstration only) ,Study of Graphs
  4. Blood indices, Blood grouping, Bleeding & Clotting time (demonstration only]
  5. Skeletal muscles
- Simple muscle twitch
- Effect of increasing strength on SMT.
- Effect of increasing load on SMT.
- Effect of pre load & after load (Starling's law).
- Effect of temperature.
- Effect of two successive stimuli.
- Effect of fatigue.
- Effect of multiple stimuli & tetanus.

6. Cardiac muscles

- Simple myo-cardiogram.

- Effect of temperature on the myo-cardiogram.
- Effect of drugs.
- All or none law.
- Staircase phenomenon.

7. Physiology Fitness
   - Breath holding
   - mercury column test,
   - cardiac efficiency test – Harvard step test – Master step test

PRACTICAL EXAMINATION

Students will be assessed by viva based upon learning in theory.

Demonstration of measurements of pulse, BP

SUGGESTED READINGS:

1.Chatterji, C. C., Human Physiology Medical Allied ,

2 .Keele, Cyril A, Samson Wright's Applied Physiology, Oxford University Press

3. Bijlani, R L, UnderstandingMedical Physiology, Oxford University Press

4. Guyton, A.C. and Hall, J. E., Textbook of Medical Physiology, W.B.Saunders, Singapore

Dr. C.V. RAMAN UNIVERSITY, kHANDWA (M.P.)

BACHELOR OF PHYSIOTHERAPY (BPT) FIRST YEAR

FUNDAMENTALS OF PHYSICS, BIOMECHANICS & EXERCISE THERAPY

Total No. of teaching Hrs.- 160

Theory- 100 Hrs. **Practical-60 Hrs.**

COURSE OBJECTIVES:-

This course will enable the student to understand the basic principles of Physics , Biomechanics & exercise therapy, basic principles and application of soft tissue manipulation

COURSE OUTCOMES :-

CO1-Know the principles, technique and effects of electrotherapy as a therapeutic modality in the restoration of physical function in condition like nerve injuries .

CO2- List the indications and contraindications of various types of electrotherapy, demonstrate different techniques and describe their effects.

CO3- Utilize Contemporary and recent methods and to select the most appropriate method to moderate and alleviate pain for patients.

CO4- Aware of the construction, Biophysical principles and effects , dangers, safety measures, judicial use, appropriate methods of application ,contraindications of the various low frequency equipments.

SCHEME OF EXAMINATION

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		100

COURSE CONTENTS:-

All topics are for a brief description only

1. Mechanics - Definition of mechanics and Biomechanics
2. Force - Definition, diagrammatic representation, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pulls of muscle

3. Momentum - principles, and practical application
4. Friction
5. Gravity - Definition, line of gravity, Centre of gravity
6. Equilibrium - Supporting base, types, and equilibrium in static and dynamic state
7. Levers - Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever in human body
8. Pulleys - system of pulleys, types and application
9. Elasticity - Definition, stress, strain, HOOKE'S Law
10. Springs - properties of springs, springs in series and parallel, elastic materials in use
11. Aims and scope of various biomechanical modalities – shoulder wheel, shoulder ladder, shoulder pulleys, pronator-supinator instrument, static cycle, rowing machine, ankle exerciser, balancing board, springs, weights
12. Normal Posture - definition & description, static and dynamic, alignments of various joints, centre of gravity, planes & muscular moments, and Analysis of posture
13. Movements - Anatomical definition and description, Movements and exercise as therapeutic modality and their effects, Physiological reaction of exercise
14. Traction - Rationale, Technique, indications & contra-indications
15. Normal Gait - definition & description, alignments, centre of gravity during gait cycle, planes & muscle acting mechanisms, pattern, characteristics Normal gait cycle, time & distance parameters, & determinants of Gait
16. Starting positions - Description and muscle work, Importance of fundamental and derived types, Effects and uses of individual positions
17. Soft tissue manipulation - History, definition, types and their rationale, general effects, local effects of individual manipulation (physiological effects) and uses, contra-indications and techniques of application

PRACTICAL

Demonstration of Biomechanical principles

Study of structure, function and application of various Biomechanical modalities – shoulder wheel, shoulder ladder, shoulder pulleys, pronator-supinator instrument, static cycle, rowing machine, ankle exerciser, balancing board, springs, weights, etc.

Study of structure, function and application of suspensions, Demonstration and practice of

- Soft tissue manipulative techniques
- Normal gait and posture
- Starting and derived positions
- Spinal mechanical traction

PRACTICAL EXAMINATION

Students will be assessed by viva based upon learning in theory, demonstrations of various biomechanical modalities, suspensions, and manipulative techniques learned.

SUGGESTED READINGS:

1. Hollis, M. and Cook; P.F., Practical Exercise Therapy CBS, New Delhi , Latest Edition
2. Gardiner, Dena; Principles of Exercise Therapy CBS, New Delhi , Latest Edition
3. Lippert, Lynn; Clinical Kinesiology for Physical Therapy, Jaypee New Delhi , Latest Edition
4. Pagliarulo, M.A.; Introduction to Physical Therapy Mosby, London , Latest Edition
5. Jones, Human Movement Explained; Butterworth Heine , Latest Edition

Dr. C.V. RAMAN UNIVERSITY, kHANDWA (M.P.)

BACHELOR OF PHYSIOTHERAPY (BPT) FIRST YEAR

FUNDAMENTALS OF MEDICAL ELECTRONICS & PRINCIPLES OF BIOELECTRICAL MODALITIES

Total No. of teaching Hrs.- 160 **Theory- 100 Hrs.**

Practical-60 Hrs.

COURSE OBJECTIVE: –

The object of this course is that after 180 hrs of lectures, demonstrations, practical and clinics, the student will be able to describe the principle of generation, circuit diagram and testing of electrotherapy apparatus.

In addition, the student will be able to fulfill with 75% accuracy the following objectives of the course.

COURSE OUTCOMES: -

1-Know the principles, technique and effects of electrotherapy as a therapeutic modality in the restoration of physical function in condition like nerve injuries .

2- List the indications and contraindications of various types of electrotherapy, demonstrate different techniques and describe their effects.

3- Utilize Contemporary and recent methods and to select the most appropriate method to moderate and alleviate pain for patients.

4- Aware of the construction, Biophysical principles and effects , dangers, safety measures, judicial use, appropriate methods of application ,contraindications of the various low frequency equipments.

SCHEME OF EXAMINATION

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.
The pattern of University theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

Course Contents:-

N.B.- All sections carry equal weightage. All topics are for a brief description only

Dr. C.V. RAMAN UNIVERSITY, kHANDWA (M.P.)

SECTION – A: FUNDAMENTALS OF MEDICAL ELECTRONICS & MAGNETISM

1. DC Currents -Modern concept of electricity: fundamental electric charges (proton and electron), bound and free electrons, free electrons and current, static electric charge, charging of an object, potential and capacitance, potential difference and EMF

2. A. C. currents: Sinusoidal wave from, frequency, wavelength, Amplitude and phase of a sine wave, Average & RMS value of a sine wave

3. Quantity of electricity, magnitude of current, conductors and insulators, resistance of conductor and Ohm's law, resistances in series and parallel

4. Capacitors: Electric field around a capacitor, charging and discharging of capacitor, types of capacitor with application of each in Physiotherapy department

5. Rheostat: series and shunt Rheostat with application of each in the Physiotherapy department

6. Effects of electric Current: Thermal effect, chemical effect (ionization) and magnetic effect. Electric shock, Earth shock, causes and its prevention

7. Magnetism: Magnetic - non-magnetic substances and their properties, properties of magnet, molecular theory, poles of magnet and its properties, magnetic lines of force and their properties, Electromagnetism, magnetic effects of electric current, Electromagnetic induction, Lenz's law, Inductor and Inductance, types of inductor, reactance and impedance.

SECTION – B: ELECTRONIC DEVICES

1. Thermionic Valves: Thermionic emission, Diode and Triode valves and their characteristics, Construction and application of Cathode Ray Oscilloscope

2. Semiconductor Devices: Intrinsic and extrinsic semiconductors, advantages of diode and transistors devices.

Basing of Diode and their characteristics, Light Emitting Diodes, integrated circuits, Advantage of semiconductor devices over thermionic valve

3. Electronic Circuits: Rectifiers, Wheat stone bridge & smoothing circuits,Oscillators and its types.

4. A.C. AND D.C. meters: Functions and applications of Ammeter and volt meters, Ohmmeters,

5. Introduction to Therapeutic Energies – Thermal, Mechanical, Electrical, Electromagnetic and magnetic -

Definition, description, Electromagnetic spectrum, physiological effects, pathological effects and dangers

SECTION – C: BIOELECTRICAL MODALITIES

6. Medical Instrumentation For Physical Therapy: Brief description of generation, circuit diagrams and testing

7. Low frequency currents, Direct currents

8.Medium frequency currents

9. Short wave Diathermy-continuous and pulsed

10. Microwave Diathermy
11. Ultrasound
12. Actino-therapy – Infrared- Types of generators , UVR-generators , types, dosimetery and LASER- Productions & instrumentation, classification and physiological effects.

Note: Emphasis is given only to generation circuit diagram and testing of the various electrotherapy apparatus.

PRACTICAL

Demonstration of Bioelectrical principles

Demonstration of electrotherapy instruments, principles of their functioning, usage, and safety implications for human beings

PRACTICAL EXAMINATION

Students will be assessed by viva based upon learning in theory and demonstration of various components of the equipments.

SUGGESTED READINGS:

1.Froster, A. and Palastanga, N.; Clayton's Electrotherapy: Theory and Practice AITBS, Delhi
2. Jhon, Low and Ann, Reed; Electrotherapy Explained: Principles Butterworth Heine, Oxford
3. Nelson, R.M. and Currier, D.P.; Clinical Electrotherapy Appleton and Lange
4 .Chemeron, M.H.; Physical Agents in Rehabilitation, W B Saunders, London
5. Michlovitz, S L; Thermal Agents in Rehabilitation, F A Davis, Philadelphia

Dr. C.V. RAMAN UNIVERSITY, kHANDWA (M.P.)

BACHELOR OF PHYSIOTHERAPY (BPT) FIRST YEAR

PSYCHOLOGY & SOCIOLOGY

Total No. of Hrs:- 160

Theory -160 Hrs. **Practical / Laboratory- 60 hrs**

COURSE OBJECTIVE:-

The objective of the course is that after 180 hours lecture. the student will be able to understand and develop their skills and knowledge about society community, family etc. so that they would play their role efficiently and effectively in the society.

COURSE OUTCOME:-

1- By the end of this course the students will be able
2- Understand the dynamics of society and its interaction with health in in rural and urban communities in India
3- Understand basic sociological principles related with social processes, social institutions (in relation to the individual, family and community)
4- Apply principles of psychological theories to relate to development and deficiency in perception and cognito- behavioral aspects of human functioning
5- Apply principles of psychological theories in enhancing learning, performance, skill acquisition
6- Relate psychological methods to initiate, increase and or maintain desired behavior and decrease / stop undesired behaviors to prevent disabling condition.

SCHEME OF EXAMINATION

The University examination shall be of 80 marks with Section – A : Psychology and Section – B : Sociology the university theory examination marks for Psychology shall be 40 and for sociology 40 marks respectively. There shall be two paper setters and two evaluators, one from Psychology and one from Sociology. Section- A, which will be set by Psychology examiner (40 marks) and Section-B, by Sociology (40 marks) examiner. Recognized teachers in psychology and sociology with five years of experience shall be on the panel of examiners , 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks.

The pattern of University theory examination will be as under for 80 Max. Marks.

There will be two section i.e. Section-A: Psychology and Section-B: Sociology of 40 Max. Marks each section and distribution of marks for questions will be as under

No. & Type of Question	**Marks for each question**	**Total Max. Marks**
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

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PSYCHOLOGY (PART – A)

COURSE CONTENTS :-

1. What is psychology? Fields of application of psychology, influence of heredity and environment on the individual
2. Learning – theories & principles learning
3. Memory, Forgetting, theories of memory and forgetting, thinking & methods to improve memory
4. Thinking – process, problem solving, decision making and creative thinking
5. Motivation - theories and types of Motivation
6. Emotions - theories of Emotions and stress
7. Attitudes – theories, attitudes and behaviour, factors in attitude change
8. Intelligence - theories of intelligence
9. Personality, theories of personality, factors influencing personality
10. Development and growth of behavior in infancy and childhood, adolescence, adulthood and old age
11. Behavior - normal and abnormal
12. Counseling - Definition, Aims and principles
13. Psychotherapy – brief introduction to paradigms in psychopathology and therapy
14. Psychological need of children and geriatric patients
15. Communication – effective and faulty
16. Emotional and behavioral disorders of childhood and adolescence- (in brief)
    a) Disorders of under and over controlled behavior
    b) Eating disorders
17. Mental deficiency
    a) Mental retardation,
    b) Learning disabilities
    c) Autistic behavior
18. Anxiety Disorders -
    a) Phobias, panic disorder,
    b) Generalized Anxiety disorder,
    c) Obsessive Compulsive Disorder,
    d) Post –traumatic Stress Disorder
19. Somatoform and Dissociate Disorders -
    a) Conversion Disorder,
    b) Somatization Disorder,
    c) Dissociate Amnesia & Dissociate Fugue
20. Personality Disorder
21. Patho-physiological Disorders – stress and health
22. Severe psychological disorders – Mood disorders, psychosis

SUGGESTED READINGS:

1. Morgon, Clifford T; Introduction to Psychology Tata Mcg. Hill, Delhi
2. Farnald, L.D. Introduction to Psychology AITBS, Delhi
3. Korchin, Sheldon J.; Modern Clinical Psychology: Principals, CBS, New Delhi
4. McDavid, J.W. and Harari, H.; Social psychology: Individuals, Groups, Societies CBS, New Delhi
5. Davison, G.C. and Neale, J.M.; Abnormal Psychology Jhon Wiley, New York
6 . Mehta, Manju; Behavioral Sciences in Medical Practice, Jaypee, New Delhi

Dr. C.V. RAMAN UNIVERSITY, kHANDWA (M.P.)

SOCIOLOGY (PART – B)

COURSE CONTENTS:-

A-INTRODUCTION

1. Meaning-Definition and scope of Sociology
2. Its relation with Anthropology, Psychology, Social Psychology and ethics.
3. Methods of Sociology-case study, Social Survey, Questionnaire, interview and opinion poll methods.
4. Importance of its study with special reference to health care professionals.

1. The meaning of Social Factors.
2. The role of Social factors and **illness.**

C-SOCIALIZATION:

1. Meaning and nature of Socialization.
2. Primary, Secondary, and Anticipatory Socialization.
3. Agencies of Socialization.

D. SOCIAL GROUPS:

1. Concepts of social groups.
2. Influence of formal and informal groups on health and sickness.
3. The roll of primary groups and secondary groups in the hospital and rehabilitation settings.

1. The family - Meaning and definition, Functions
2. Changing family Patterns
3. Influence of family on the individual health, family, and nutrition.
4. The effects of sickness on family and psychosomatic disease and their importance to Physiotherapy

1. Rural community – Meaning and features – Health hazards of rural population
2. Urban community – Meaning and features – Health hazards of urban population G-

Culture and Health:

1. Concept of culture
2. Cultures and Behaviour
3. Cultural meaning of sickness

4. Culture and health disorders

H-SOCIAL CHANGE:

1. Meaning of social changes & Factors of social change.
2. Human adaptation and social change.
3. Social change and stress.
4. Social and deviance.
5. Social change and health Program.
6. The role of social planning in the improvement of health and in rehabilitation.

I-SOCIAL PROBLEMS OF DISABLED:

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

1. Population explosion.
2. Poverty and unemployment.
3. Beggary.
4. Juvenile delinquency.
5. Prostitution.
6. Alcoholism.
7. Problems of women in employment.

J-SOCIAL SECURITY:

Social security and social legislation in relation to the Disabled.

K-SOCIAL WORKER:

Meaning of social work; the role of a medical social worker.

SUGGESTED READINGS:

1.Bhusan, Vidya and Sachdeva, D.R.; Introduction to Sociology KitabMahal, New Delhi

2.Turner, J. H.; Structure of Sociological Theory, Jaipur Publication

3. Anand Kumar Indian Society and Culture Vivek, New Delhi