

**RAMA UNIVERSITY UTTAR PRADESH,
KANPUR**

Faculty of Paramedical Sciences

**4½ YEARS B.Sc. PROGRAMME IN
PHYSIOTHERAPY**



2018-19

Ordinance, Rules, Regulations

&

SYLLABUS

INTRODUCTION

BPT or Bachelor of Physiotherapy is an undergraduate academic Course in a field of Medical Science known as Physiotherapy. The duration of BPT course is 4½ years including internship of 6 months. Physical Therapy Programs provide core skills like manual therapy, therapeutic exercise and the application of electro physical modalities, to the prospective students. The course focuses on the use of physical therapy, massages, physical movements and exercise to improve and cure injuries, deformities and diseases.

PROGRAMME OBJECTIVES

At the end of Physiotherapy training the graduate shall be able to;

1. Perform all the Physiotherapy treatments.
2. Use discretely the modern physiotherapy methods.
3. Develop leadership qualities to function effectively as a physiotherapist to work independently and to assist in physiotherapeutic procedures required in different medical specialties in supervision of medical consultants.

Programme: Bachelor of Physiotherapy (B.P.T.)

Duration: Four and Half Year full time course (Including 6 months internship.)

Eligibility For Admission: Intermediate Science (10+2) or equivalent from a recognized board with Physics, Chemistry & Biology and English subjects with minimum 50% of the marks.

OR

Pre degree course from a recognized University equivalent to 10+2

OR

Lateral Entry to second year for candidates who have passed diploma in Physiotherapy or similar, and registered with UP state Medical faculty.

Note:

1. The candidate must have passed individually in each of principal subjects.
2. The Candidate who have passed diploma or vocational course through correspondence shall not be eligible for the course.

Age limit for admission : Must have attained 17 years of age on 1st July.

Medium of Instructions of Course & Examinations shall be in English.

Examination: There shall be yearly Examinations at the end of each academic year according to the academic calendar of the University. This course shall be divided into four professional examinations namely Bachelor in Physiotherapy (B.P.T) Part-I at the end of first academic year, Bachelor of Physiotherapy Part-II at the end of second academic year and Bachelor of Physiotherapy-III at the end of third academic year and Bachelor of Physiotherapy-IV at the end of fourth academic year.

All the rules will be as per guidelines of Rama University Uttar Pradesh.

The professional examinations shall be in the form of theory papers and practical examinations. The candidate shall be required to appear in every subject as specified in the course structure for each year.

Duration of Examination :

Each theory paper shall be of three hours duration.

Attendance:

Every candidate should have minimum 70% attendance of total classes held in single academic year to be eligible to appear in university examinations.

Internal Assessment :

It will be for theory and practical both. It will be done through the whole year.

Candidate must obtain at least 35% marks in theory and practical separately in internal assessment to be eligible for the annual university examination.

Internal assessment (**Theory**) will be done as follows :

- | | |
|---|-------------------|
| a) Mid-term and term and Pre University examinations | = 10 marks |
| b) Assignments/Projects/Class test/Clinical Presentations | = 05 marks |
| c) Attendance (according to %age of attendance) | = 05 marks |
| Total | = 20 marks |

Internal assessment (**Practical**) shall be done as follows :

- | | |
|---------------------------|-------------------|
| a) Viva voce & Practical | = 10 marks |
| b) Day to day performance | = 05 marks |
| c) Attendance (in Lab) | = 05 marks |
| Total | = 20 marks |

(Those subjects in which University practical examination is not held, internal assessment will be done on the basis of theory examination and projects and assignments.) Candidate must obtain at least 35% marks in the theory and practical examination separately in the internal assessment to be eligible for appearing in the professional examination. If a candidate is absent in theory and practical internal assessment examinations, he/she shall be given chance to re-test in the internal assessment evaluation as programmed by the Faculty of Paramedical Sciences with the prior permission of Registrar, Rama University before the conduction of final professional examinations.

Criteria of passing : The candidate is declared to have passed University examinations in subjects, if he/she secure 50% of the marks in the theory and 50% marks in the practical separately. For computation of 50% marks in theory and practical, the marks scored in the internal assessment (theory and practical) shall be added to the University conducted theory and practical examination respectively.

Grace marks : If a candidate fails in one subject (theory only) in the annual university examination, five grace marks shall be given to the candidate by the university before declaration of the results. Candidate failing in practical examination will be considered as failed.

Supplementary Examinations and Carry over benefits:

A candidate failing in a subject or more than one subject but securing 30% total aggregate marks will be allowed to appear in the university supplementary examination after two months in that subject/ subjects while being permitted to attend classes of the next year (carry over). Those who secure less than 30% total aggregate marks will be required to appear in all subjects. If a candidate securing internal assessment marks less than 35% in theory and practical separately then he/she has to be evaluated again for internal assessment as programmed by the Faculty of Paramedical Sciences with the prior permission of Registrar, Rama University before the conduction of final /Supplementary examinations.

- (a) If the candidate fails in all subjects or fails to appear in the main examination, then his/her session will be shifted back by one year. The candidate will have to take re-admission in the previous year and pay the tuition fees for the academic year. He/she will have to appear in all subjects in the examination and internal assessment.
- (b) Supplementary examinations will be held not earlier than two months and not later than six months from the date of annual university examinations.

Division : Candidate will be awarded division at the end of third (final) academic year as follows:

Percentage of marks will be calculated from aggregate of total marks obtained in all the three professional examinations.

- (i) Honours – 75% marks and above in total aggregate.
- (ii) Distinction – 75% and above marks in any subject.
- (iii) First Division - 60% and above in the aggregate marks of all subjects.
- (iv) Second Division – 50% or more but less than 60% in the aggregate of marks of all subjects.

INTERNSHIP

A candidate has to undergo internship for a period of 6 months in Medical College, a Govt. hospital/ private hospital/ Tertiary center, which fulfill the norms decided by the University. Internship is a phase of training wherein a graduate is expected to conduct actual practice of Physiotherapy and acquires skills under supervision so that he /she may become capable of functioning independently.

- There shall be six months of Internship after the final year examination for candidates declared to have passed the examination in all the subjects.
- During the internship candidate shall have to work full time average 7 hours per day (each working day) for 6 Calendar months.
- Each candidate is allowed maximum of 6 holidays during entire Internship Program and in case of any exigencies during which the candidate remains absent for a period more than 6 days, he/she will have to work for the extra days during which the candidate has remained absent.

INTERNSHIP SCHEDULE:

- ❖ Candidate shall be posted to Rotational Clinical assignments of total 26 weeks/6 months, including administrative skills pertaining to Physiotherapy practice. The schedule of Internship shall be as follows:

Assignment	Discipline	Duration
Musculoskeletal Physiotherapy	OPD/Indoor Orthopedics /Burns/ Surgical indoor /Hand rehab. /Sports injury /wound & skin care	8 weeks
Neurophysiotherapy	OPD/ Neurology/ Neurosurgery/Pediatrics /EMG-NCV	6 weeks
Cardio-pulmonary Physiotherapy	OPD /Medical/surgical Intensive care /CTVS indoor	6 weeks
Community Physiotherapy	Women's health + Obstetrics and gynaecology indoor + Geriatric health at primary health centre or community /Industrial health/fitness clinic	6 weeks

- ❖ Duration in different discipline can be changed/modified by the head of the institute as per requirements in some special situations.
- Based on the attendance and work done during posting the Director/Principal/ head of institution/department shall issue '**Certificate of Satisfactory Completion**' of internship training following which the University shall award the B.Sc. in Physiotherapy Degree or declare the candidate eligible for the same.
- **No candidate shall be awarded degree without successfully completing six months internship.**
- Institution shall have to satisfy themselves that satisfactory infrastructure facilities of Physiotherapy exist in the Institute / Hospital where the internship training has to be undertaken. There shall be facilities to provide physiotherapy care to the indoor and intensive care patients in associated hospital attached to the institute. Following parameters / guidelines have been suggested:
 - a. It is mandatory for the Institution to have its own well equipped and modern physiotherapy hospital and should be registered with state authorities.
 - b. Senior physiotherapist in consultation with various medical consultants should manage the physiotherapy unit in the Institutes/Hospitals.

Institute's Director / Principal can at his discretion grant NOC to the students to do the Internship at the place of his choice provided the concerned Hospital/Institute fully satisfies the above criteria. For the purpose of granting NOC the candidate shall have to submit to the Institution the status of Physiotherapy institute available at the place where he intends to do his Internship.

DEGREE:

On successful completion of Four and Half year programme the candidate will be awarded with "**Bachelor of Physiotherapy**" (B.P.T.) from Rama University. The candidate will now be eligible to be registered in the U.P. State Medical faculty. After the registration he/she shall be eligible to pursue his future career as Physiotherapist.

SCHEME OF EXAMINATION:

BPT- Part-I (First Year) University Examination

S. No.	Subjects	Subject code	THEORY MARKS				PRACTICAL MARKS				Total Marks
			Theory Paper	Internal Assessment	Total	Minimum Marks	Practical	Internal Assessment	Total	Minimum Marks	
1	Anatomy	BPT-101	80	20	100	50	80	20	100	50	200
2	Physiology	BPT-102	80	20	100	50	80	20	100	50	200
3	Clinical Biochemistry	BPT-103	80	20	100	50					100
4	General Psychology	BPT-104	80	20	100	50					100
5.	Basic Nursing & First Aid	BPT-105	80	20	100	50					100
Grand Total											700
6.*	Ethics in Physiotherapy Practice	---	100	NA	100	50	NA	NA	NA	NA	100
7.*	Anatomy & Physiology clinically relevant to Physiotherapy	---	100	NA	100	50	NA	NA	NA	NA	100
8.*	English	---	100	NA	100	50	NA	NA	NA	NA	100
9.*	Fundamentals of Yoga	---	100	NA	100	50	NA	NA	NA	NA	100
10.*	Environmental Science (EVS)	---	100	NA	100	50	NA	NA	NA	NA	100

* These subjects are only to qualify in Internal Assessment. Not included for University Examinations.

BPT- Part-II (Second Year) University Examination

S.No	Subjects	Subject Code	THEORY MARKS				PRACTICAL MARKS				Total Marks
			Theory Paper	Internal Assessment	Total	Minimum Marks	Practical	Internal Assessment	Total	Minimum Marks	
1	Biomechanics & Kinesiology	BPT-201	80	20	100	50	80	20	100	50	200
2	Exercise therapy – I	BPT-202	80	20	100	50	80	20	100	50	200
3	Electrotherapy – I	BPT-203	80	20	100	50	80	20	100	50	200
4	Medical Microbiology	BPT-204	80	20	100	50	80	20	100	50	200
5	Pathology	BPT-205	80	20	100	50	80	20	100	50	200
6	Pharmacology	BPT-206	80	20	100	50					100
Grand Total											1100
7*	Fundamentals of Computer	---	100	NA	100	50	NA	NA	NA	NA	100
8*	Philosophy of Yoga	---	100	NA	100	50	NA	NA	NA	NA	100

* These subjects are only to qualify in Internal Assessment. Not included for University Examinations.

BPT- Part-III (Third Year) University Examination

S. No	Subjects	Subject code	THEORY MARKS				PRACTICAL MARKS				Total Marks
			Theory Paper	Internal Assessment	Total	Minimum Marks	Practical	Internal Assessment	Total	Minimum Marks	
1	Exercise therapy-II	BPT-301	80	20	100	50	80	20	100	50	200
2	Electro therapy – II	BPT-302	80	20	100	50	80	20	100	50	200
3	Orthopaedics	BPT-303	80	20	100	50	---	---	---	---	100
4	General Medicine including Pediatrics & Psychiatry	BPT-304	80	20	100	50	---	---	---	---	100
5	General Surgery	BPT-305	80	20	100	50	---	---	---	---	100
6	Community Medicine	BPT-306	80	20	100	50	---	---	---	---	100
7	Research Methodology & Biostatistics	BPT-307	80	20	100	50	---	---	---	---	100
Grand Total											900
8*	Application of Yoga	---	100	NA	100	50	NA	NA	NA	NA	100

* These subjects are only to qualify in Internal Assessment. Not included for University Examinations.

BPT- Part-IV (Final Year) University Examination

S. No	Subjects	Subject code	THEORY MARKS				PRACTICAL MARKS				Total Marks
			Theory Paper	Internal Assessment	Total	Minimum Marks	Practical	Internal Assessment	Total	Minimum Marks	
1	Physiotherapy in Orthopaedic Conditions	BPT-401	80	20	100	50	80	20	100	50	200
2	Physiotherapy in Neurological Conditions	BPT-402	80	20	100	50	80	20	100	50	200
3	Physiotherapy in Cardio Respiratory and General Conditions	BPT-403	80	20	100	50	80	20	100	50	200
4	Physiotherapy in Sports	BPT-404	80	20	100	50	80	20	100	50	200
5	Rehabilitation on Medicine	BPT-405	80	20	100	50	80	20	100	50	200
Grand Total											1000
6*	Therapeutic Yoga	---	100	NA	100	50	NA	NA	NA	NA	100

* These subjects are only to qualify in Internal Assessment. Not included for University Examinations.

SYLLABUS

Course of study

BPT- I Year

S: no	Subjects	Teaching hours		
		Theory	Practicals	Total
1	Anatomy	180	120	300
2	Physiology	140	60	200
3	Clinical Biochemistry	70		70
4	General Psychology	100		100
5	Basic Nursing & First Aid	100		100
6*	Ethics in Physiotherapy Practice	25		25
7*	Anatomy & Physiology clinically relevant to Physiotherapy	60		60
8*	English	40		40
9*	Fundamentals of Yoga	120	120	240
10*	Environmental Science (EVS)	40		40

* Not included for university examination

BPT- II Year

S: No	Subjects	Teaching hours		
		Theory	Practical	Total
1	Biomechanics & Kinesiology	80	80	160
2	Exercise therapy – I	80	80	160
3	Electrotherapy – I	80	80	160
4	Medical Microbiology	60	40	100
5	Pathology	60	40	100
6	Pharmacology	70		70
7*	Fundamentals of Computer	30	30	60
8*	Philosophy of Yoga	120	120	240

* Not included for university examination

BPT –III Year

S: no	Subjects	Teaching hours		
		Theory	Practical	Total
1	Exercise therapy- II	100	100	200
2	Electro therapy – II	100	100	200
3	Orthopaedics	120		120
4	General Medicine including Paediatrics and Psychiatry	120		120
5	General Surgery	100		100
6	Community Medicine	80		80
7	Research Methodology & Biostatistics	100		100
8*	Application of Yoga	120	120	240

* Not included for university examination

BPT-IV Year

S: no	Subjects	Teaching hours		
		Theory	Practical	Total
1	Physiotherapy in Orthopaedic Conditions	80	100	180
2	Physiotherapy in Neurological Conditions	80	100	180
3	Physiotherapy in Cardio Respiratory and General Conditions	80	100	180
4	Physiotherapy in Sports	60	40	100
5	Rehabilitation on Medicine	80	40	120
6*	Therapeutic Yoga	120	120	240

* Not included for university examination

Note: Subsidiary subjects (i) Computer Fundamentals & Programming
(ii) Professional Communication in English
(iii) EVS (Environmental Science & Ecology)
(iv) Yoga
(v) Ethics in Physiotherapy Practice
(vi) Anatomy & Physiology clinically relevant to Physiotherapy

All the subsidiary subjects examination will be conducted by the faculty of Paramedical Sciences. Their marks will not be counted in the grand total of university examinations. But EVS and Yoga subjects will be included in the mark sheet of the University Exams. Passing Subsidiary subjects is mandatory as per guidelines of UGC to complete the course.

Bachelor of Physiotherapy (BPT) First Year

ANATOMY Subject code: BPT-101

THEORY

1. General Anatomy:
 - Introduction to Anatomy, terms and terminology.
 - Regions of Body, Cavities and systems.
 - Surface anatomy – musculo-skeletal, vascular, cardiopulmonary system
 - General Embryology.
 - Applied anatomy.
2. Musculoskeletal system.
 - Connective tissue & its modification, tendons, membranes, special connective tissue.
 - Bone structure, blood supply, growth, ossification, and classification.
 - Muscle classification, structure and functional aspect.
 - Joints – classification, structures of joints, movements, range, limiting factors, stability, blood supply, nerve supply, dislocations and applied anatomy.
- 2 (a). Upper extremity:
 - Bony architecture
 - Joints – structure, range of movement
 - Muscles – origin, insertion, actions, nerve supply
 - Major nerves – course, branches and implications of nerve injuries
 - Development of limb bones, muscles and anomalies
 - Radiographic identification of bone and joints
- 2 (b). Lower Extremity:
 - Bony architecture
 - Joints – structure, range of movement
 - Muscles – origin, insertion, actions, nerve supply
 - Major nerves – course, branches and implications of nerve injuries
 - Development of limb bones, muscles and anomalies
 - Radiographic identification of bone and joints
- 2 (c). Spine and thorax
 - Back muscles - Superficial layer, Deep muscles of back, their origin, insertion, action and nerve supply.
 - Vertebral column – Structure & Development, Structure & Joints of vertebra
 - Thoracic cage
 - Radiographic identification of bone and joints
- 2 (d). Head and neck:
 - Cranium
 - Facial Muscles – origin, insertion, actions, nerve supply
 - Temporo mandibular Joints – structure, types of movement
3. Nervous system
 - Classification of nervous system
 - Nerve – structure, classification, microscopy with examples.
 - Neurons, classification with examples. Simple reflex arc.

- Parts of a typical spinal nerve/Dermatome
- Central nervous system – disposition, parts and functions
- Cerebrum
- Cerebellum
- Midbrain & brain stem
- Blood supply & anatomy of brain
- Spinal cord- anatomy, blood supply, nerve pathways
- Pyramidal, extra pyramidal system
- Thalamus, hypothalamus
- Structure and features of meninges
- Ventricles of brain, CSF circulation
- Development of nervous system & defects
- Cranial nerves – (course, distribution, functions and palsy)
- Sympathetic nervous system, its parts and components
- Parasympathetic nervous system
- Applied anatomy
- 4. Sensory system
 - Structure and function of
 - Visual system
 - Auditory system
 - Gustatory system
 - Olfactory system
 - Somato sensory system
- 5. Cardiovascular system
 - Circulatory system – major arteries and veins of the body, structure of blood vessels
 - Heart structure, positions, chambers, valves, internal & external features
 - Blood supply to heart
 - Conductive system of heart
- 6. Lymphatic system
 - Circulation, structure & functions
 - Lymph nodes
- 7. Respiratory system
 - Structure of upper and lower respiratory tract Thorax:
 - Pleural cavities & pleura
 - Lungs and respiratory tree
 - Heart and great vessels
 - Diaphragm
- 8. Digestive system
 - Parts of digestive system
 - Abdominal cavity – divisions
 - Muscles of abdominal wall
 - Liver
 - Pancreas
 - Spleen
 - Alimentary canal
 - Gall bladder
 - Intestine (small & large)
- 9. Urinary and Reproductive system
 - Urinary system
 - Pelvic floor, innervations
 - Kidney, Ureter, bladder, urethra

- Genital system – male and female
- Reproductive system of male
- Reproductive system of female
- 10. Endocrine system
 - Pituitary gland
 - Thyroid
 - Parathyroid

PRACTICAL

1. Identification and description of all anatomical structures.
2. The learning of Anatomy is by demonstration only through dissected parts, slides, models, charts, etc.
3. Demonstration of dissected parts (upper extremity, lower extremity, thoracic & abdominal viscera, face and brain).
4. Demonstration of skeleton- articulated and disarticulated.
5. During the training more emphasis will be given on the study of bones, muscles, joints, nerve supply of the limbs and arteries of limbs.
6. Surface anatomy:
 - surface land mark-bony, muscular and ligamentous.
 - surface anatomy of major nerves, arteries of the limbs.
7. Points of palpation of nerves and arteries.

PHYSIOLOGY
Subject Code: BPT-102
THEORY

1. General Physiology
 - Cell: morphology, Structure and function of cell organelles
 - Structure of cell membrane
 - Transport across cell membrane
 - Intercellular communication
 - Homeostasis
2. Blood
 - Introduction-composition & function of blood
 - W.B.C., R.B.C., Platelets formation & functions, Immunity
 - Plasma: composition, formation & functions, Plasma Proteins:-types & functions
 - Blood Groups- types , significance, determination
 - Hemoglobin
 - Haemostasis
 - Lymph-composition, formation, circulation & functions
3. Cardiovascular system
 - Conducting system-components, impulse conduction
 - Heart valves
 - Cardiac cycle- definition, phases of cardiac cycle
 - Cardiac output- definition, normal value, determinants. Stroke volume and its regulation
 - Heart rate and its regulation
 - Arterial pulse, Blood pressure-definition, normal values, factors affecting blood pressure
 - Shock-definition, classification, causes and features
 - Basic idea of ECG
 - Cardiovascular changes during exercise
4. Respiratory System
 - Mechanics of respiration
 - Lung volumes and capacities
 - Pulmonary circulation, transport of respiratory gases
 - Factors affecting respiration
 - Regulation of respiration-neural regulation, voluntary control and chemical regulation
 - Hypoxia, Hypercapnoea, Hypocapnoea
 - Artificial respiration
 - Disorders of respiration- dyspnoea, orthopnoea, hyperpnoea, hyperventilation, apnoea, tachypnoea
 - Respiratory changes during exercise.
5. Nerve Muscle Physiology
 - Muscles- classification, structure, properties, Excitation contraction coupling
 - Motor unit, EMG, factors affecting muscle tension,
 - Muscle tone, fatigue, exercise
 - Nerve –structure and function of neurons, classification, properties
 - Resting membrane potential & Action potential their ionic basis
 - All or None phenomenon
 - Neuromuscular transmission
 - Ionic basis of nerve conduction
 - Concept of nerve injury & Wallerian degeneration
 - Synapses
 - Electrical events in postsynaptic neurons
 - Inhibition & facilitation at synapses
 - Chemical transmission of synaptic activity

- Principal neurotransmitters.
- 6. Nervous system
 - Introduction, central and peripheral nervous system, functions of nervous system
 - Reflexes- monosynaptic, polysynaptic, superficial, deep & withdrawal reflex
 - Sense organ, receptors, electrical & chemical events in receptors
 - Sensory pathways for touch, temperature, pain, proprioception & others
 - Control of tone & posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions
 - Motor mechanism: motor cortex, motor pathway: the descending tracts- pyramidal & extra pyramidal tracts-origin, course, termination & functions. Upper motor neuron and lower motor neuron paralysis.
 - Spinal cord lesions- complete transection & hemisection of the spinal cord
 - Autonomic nervous system :features and actions of parasympathetic & sympathetic nervous system
 - Hypothalamus
 - Higher functions of nervous system
 - Special senses- eye, ear, nose, mouth
- 7. Renal System
 - Physiology of kidney and urine formation
 - Glomerular filtration rate, clearance, Tubular function
 - Water excretion, concentration of urine-regulation of Na⁺, Cl⁻, K⁺ excretion
 - Physiology of urinary bladder
- 8. Digestive System
 - Digestion & absorption of nutrients
 - Gastrointestinal secretions & their regulation
 - Functions of Liver & Stomach.
- 10. Endocrinology
 - Physiology of the endocrine glands – Pituitary, Pineal Body, Thyroid, Parathyroid, Adrenal, Gonads, Thymus, Pancreas. Hormones secreted by these glands, their classifications and functions.
- 11. Male & female reproductive system
 - Male - Functions of testes, pubertal changes in males, testosterone - action & regulations of secretion.
 - Female - Functions of ovaries and uterus, pubertal changes, menstrual cycle, estrogens and progesterone - action and regulation.

PRACTICAL

1. Examination of pulse, B.P., Respiratory rate.
2. Reflexes
3. Spirometry to measure various lung capacities & volumes, Respiratory rate, Tidal volume, IRV, IC, ERV, EC, residual volume on Spirometry.
4. Estimate of Haemoglobin, R.B.C., W.B.C., TLC, DLC, ESR count.
5. Blood indices, Blood grouping, Bleeding & Clotting time.

CLINICAL BIOCHEMISTRY

Subject Code: BPT-103

1. Nutrition: RDA, BMR, SDA, caloric requirement and balanced diet.
2. Carbohydrates: Definition, classification and general functions. Carbohydrate Metabolism - Glycolysis, T.C.A cycle.
3. Lipids: Definition, classifications and general functions. Essential fatty acids and their importance, Cholesterol, Lipoproteins. Metabolism- β -Oxidation of fatty acids, fatty liver and ketosis.
4. Amino Acids : Definition, classification, essential and non essential aminoacids.
5. Proteins: Definition, classification, and Bio-medical Importance. Metabolism: Formation and fate of ammonia, Urea cycle and its significance.
6. Study of hemoglobin and myoglobin with their functions.
7. Enzymes: Definition, classification with examples, Factors affecting enzyme action, isoenzyme and co-enzyme, Clinical importance of enzymes.
8. Biochemistry of connective tissue - Introduction, various connective tissue proteins : collagen, elastin- structure and associated disorders.
9. Vitamins: Definition, classification and functions, dietary source, daily requirement and deficiency disorders.
10. Diabetes mellitus - definition, types & causes.

GENERAL PSYCHOLOGY

Subject code: BPT-104

1. Introduction to Psychology, Fields of application of Psychology, influence of heredity and environment on the individual.
2. Learning – theories and principles of learning, Learning disabilities.
3. Memory – types, theories of memory and forgetting, methods to improve memory.
4. Thinking – process of thinking, problem solving, decision making and creative thinking.
5. Motivation - theories and types of Motivation.
6. Emotions - theories of emotions and stress, Emotional and behavioral disorders of childhood and adolescence, Disorders of under and over controlled behavior, Eating disorders.
7. Attitudes – theories, attitudes and behavior, factors in attitude change.
8. Intelligence - theories of intelligence, I.Q., general intelligence and special intelligence, intelligence tests and their uses.
9. Personality, theories of personality, factors influencing personality, Personality Disorders.
10. Conflict and frustration - Common defensive mechanism : Identification, regression, repression, projection, sublimation and rationalization.
11. Attention and Perception : Nature of attention, factors determining attention, nature of perception, principle of perceptual grouping; illusions and Hallucination.
12. Counseling - Aims and principles.
13. Development and growth of behavior in infancy and childhood, adolescence, adulthood and old age, normal and abnormal.
14. Psychotherapy – introduction to paradigms in psychopathology and therapy.
15. Mental deficiency -
 - a) Mental retardation,
 - b) Autistic behavior
 - c) Learning disabilities.

BASIC NURSING & FIRST AID
Subject Code : BPT – 105

Basic Nursing

1. What is Nursing ? Nursing principles. Inter-Personnel relationships, Bandaging : Basic turns, Bandaging extremities, Triangular Bandages and their application.
2. Nursing Position: Environment safety, Bed making, prone, lateral, dorsal, dorsal recumbent, Flower's positions, comfort measures, Aids & rest and sleep.
3. Methods of Giving Nourishment: Feeding, Tube feeding, drips, transfusion.
4. Surgical Dressing: Observation of dressing procedures.
5. Lifting and transporting patients : Lifting patient up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.

First Aid

Syllabus as for Certificate of Red Cross Society of St. John's Ambulance Brigade.

ETHICS IN PHYSIOTHERAPY
(Not for university Examination)

1. History of physiotherapy, Ethical principles in health care, Ethical principles related to physiotherapy, Scope of practice, Enforcing standards in health profession-promoting quality care, Professional ethics in research, education and patient care delivery, Informed consent issues, Medical ethics and Economics in clinical decision-making.
2. Rules of professional conduct: Physiotherapy as a profession Relationship with patients
Relationship with health care institutions
Relationship with colleagues and peers Relationship with medical and other professional.
3. Confidentiality and Responsibility, Malpractice and negligence, Provision of services and, advertising, Legal aspects: Consumer protection act, Legal responsibility of physiotherapist for their action in professional context and understanding liability and obligations in case of medico-legal action

ENGLISH
(Not for university Examination)

1. Introduction:
Study techniques, Organisation of effective note taking and logical processes of analysis and synthesis, the use of the dictionary, enlargement of vocabulary & effective diction.
2. Applied Grammar:
Correct usage, the structure of sentences, the structure of paragraphs.
3. Written Composition:
Precise writing and summarising, writing of bibliography, enlargement of vocabulary.
4. Reading and comprehension
Review of selected materials and express oneself in one's words, enlargement of vocabulary.
5. The study of various forms of composition :
Paragraph, essay, letter, summary, practice in writing.
6. Verbal communication:
Discussions and summarization, debates, oral reports, use in teaching.

EVS (ENVIRONMENTAL SCIENCE & ECOLOGY)

(Not included in University Examination)

General

Introduction, components of the environment, environment degradation.

Ecology

Elements of Ecology; Ecological balance and consequences of change, principles of environmental impact assessment.

Air Pollution and Control

Atmospheric composition, energy balance, climate, weather, dispersion, sources and effects of pollutants, primary and secondary pollutants, green house effect, depletion of ozone layer, standards and control measures.

Water Pollution and Control

Hydrosphere, natural water, pollutants: their origin and effects, river/lake/ground water pollution, standards and control.

Land Pollution

Lithosphere, pollution (municipal, industrial, commercial, agricultural, hazardous solid wastes); their origin and effects, collection and disposal of solid waste, recovery and conversion methods.

Noise Pollution

Sources, effects, standards and control.

Fundamentals of Yoga

(Not included in University Examination)

Theory:

Unit-I : General Introduction of Yoga

Unit-II : General Introduction to Indian philosophy

Unit-III : Brief Introduction about principle Upanishads, epics, Yoga Vasistha and Narada Bhakti Sutras

Unit-IV : Definition and concept of Yoga

Unit-V : Introduction about Vedas, Upanishads and Puranas

Unit-VI : Four paths of Yoga [Jnana and Karma Yoga]

Unit-VII : Four paths of Yoga-II [Bhakti and Rajyoga]

Unit-VIII : Pancha Kosa Vivekia and breief introduction about Nadi, Chakras, Vyas and Granthis

Practical:

Unit-I : Hasta Mudra

Unit-II : Shatkarmas

Unit- III : Suryanamaskar

Unit- IV : Breathing Practices

Unit-V : Yogic Suksma Vyayama-I

Unit-VI : Yogic Suksma Vyayama-II

Unit-VII : Yogic Suksma Vyayama-II

Unit-VIII : Yogic Sthula Vyayam

Bachelor of Physiotherapy (BPT) - Second Year

BIOMECHANICS AND KINESIOLOGY

Subject Code: BPT-201

THEORY

1. Mechanics - Definition of mechanics and Biomechanics
2. Motion: definition, types of motion, plane and axis of motion, factor determining the kind and modification of motion.
3. Force - Definition, diagrammatic representation of force, point of application, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pulls of muscle
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. Muscular system
12. Definition, properties of muscle, muscular contraction, structural classification, action of muscle in moving bone, direction of pull, angle of pull, functional classification, coordination of muscular system.
13. Joint structures and functions:
 - i. Joint design, Structure of Connective Tissue, Properties of Connective Tissue, joint function, changes with disease, injury, immobilization, exercise, over use
 - ii. Structure and functions of upper extremity joints – shoulder complex, elbow complex, wrist and hand complex
 - iii. Structure and functions of lower extremity joints – hip joint, knee joint, ankle and foot complex
 - iv. Structure and functions of axial skeletal joints – vertebral column – craniocervical, thorax, lumbar, lumbo pelvic region
 - v. Structure and functions of tempromandibular joint
14. Posture – dynamic and static posture, kinetic and kinematics of posture, analysis of posture, effect of age, pregnancy, occupation on posture.
15. Gait – kinematics and kinetics of gait, gait in running and stair climbing.

PRACTICAL

1. Goniometry – measurement of joint ROM
2. Identify Muscle work of various movements in body at different angle.
3. Identify normal and abnormal posture.
4. Normal gait with it parameters and identify abnormal gait with the problems in it.

EXERCISE THERAPY - I
Subject Code : BPT-202

THEORY

1. Introduction to exercise therapy
2. Mechanical principle applied in human body – gravity, centre of gravity, line of gravity, base of support, equilibrium, axis and planes
3. Disability models – ICDH model of disability, Nagi model of disability, ICF model
4. Exercise physiology – effect of exercise in various systems – musculoskeletal, neuromuscular, cardiovascular, respiratory system
5. Movements
6. Passive movements – definition, classification, indications, contra indications, advantages, limitations, techniques - emphasize PROM to upper, lower, neck and trunk muscles
7. Active movements - definition, classification, indications, contra indications, advantages, limitations, techniques - emphasize active movements to upper, lower, and neck and trunk muscles
8. Starting positions – muscle work, effect and uses and derived positions
9. Relaxation – definition, types of relaxation, relaxation techniques
10. Suspension – definition, types, uses and therapeutic applications
11. Balance – static and dynamic balance, mechanism of balance control, balancing exercises
12. Neuromuscular coordination – causes of in coordination, exercises to improve coordination – Frenkle exercise
13. Joint range measurement – Goniometer, types and techniques of measuring joint ROM
14. Measurement of limb length, girth
15. Manual muscle testing – grading system, techniques- emphasize on skill to grade upper, lower, neck and trunk muscles.
16. Mobility aids – crutches, canes, walker
17. Soft tissue manipulation (massage) – history, types, techniques, physiological effects, therapeutic uses, contraindications

PRACTICAL

1. Starting positions and derived positions
2. Range of motion (PROM, AROM, AAROM) exercises to all joints
3. Measurement of joint range using goniometer
4. General and local Relaxation techniques
5. Suspension exercise to all major joints
6. Massage – upper limb, lower limb, back, face
7. Manual muscle testing of individual muscles
8. Coordination exercises, balancing exercises

ELECTRO THERAPY – I
Subject Code: BPT-203

THEORY

1. Basic components of electric current – electrons, protons, neutrons, ions, matter, molecules
2. Current electricity – static electricity, electric charge, conductors, conduction of electricity, resistance, factors effecting resistance with example in human body, insulation, unit of electric current – ampere, coulomb, volt, ohms law
3. Magnetism, theories of magnetism, properties of magnet.
4. Electromagnetic induction, electromagnetic radiation, laws governing radiations – Grouth’s law, cosine law, inverse square law, law of reflection, rarefaction.
5. Electrical components – transformer, capacitor, diode, valves
6. Types of electric current, wave forms, current modulation – continuous, burst, beat, surge. Electric circuit in parallel and series.
7. Safety issues while using electrical equipments – for patients and therapist
8. Muscle and nerve response to electrical stimulation – polarization, depolarization and propagation of impulse.
9. Pain – types of pain, pain pathway, theories of pain, Gate control theory of pain, pain modulation at various levels.
10. Low frequency currents:
 - a. Neuromuscular electrical stimulation – physiological effects, therapeutic uses of electrical stimulation techniques – electrodes type, electrode size, electrode placement, stimulating points, methods of reducing skin electrode resistance, contraindications and precautions.
 - b. High voltage pulsed stimulation.
 - c. Russian stimulation.
 - d. Trans cutaneous Electrical Nerve stimulation (TENS) – therapeutic uses of TENS, types, electrode placement in TENS, contraindications and precautions
 - e. Iontophoresis – mechanism, biophysical effect, medication dosage, medicated ions used, techniques of application.
11. Electro diagnostic test – FG test, strength duration curve, chronaxie, reobase
12. Interferential therapy (IFT) – physiological effects, therapeutic indications, methods of application, sweep, base, contraindication and precautions.

PRACTICAL

1. Identify basic electrical components in electrotherapeutic equipments.
2. Reading of medical records, indentifying indications and contraindications for electrotherapy.
3. Stimulation of motor points, stimulation of individual muscle and group muscle
4. Faradic foot bath, Faradism under pressure.
5. Plotting SD graph, diagnosis using electro diagnostic test – FG test and SD curve.
6. Placement of electrodes in TENS & IFT with dosimeter for various indications.

MEDICAL MICROBIOLOGY
Subject Code: BPT-204
THEORY

1. Introduction & History of Microbiology
2. Classification of microorganism : Bacterial Morphology, cells structure, difference between prokaryotes & eukaryotes, capsule, flagella, fimbriae, pilli, cell wall, plasma membrane, cytoplasm, ribosomes etc.
3. Bacteriology - Classification of Bacteria, Morphological characteristics of different bacteria.
4. Bacterial growth/Reproduction : Growth curve
5. Sterilization & disinfection :
 - a) Physical Methods
 - b) Chemical Methods
 - c) Mechanism of Sterilizations
 - d) Difference between sterilization and disinfection.
6. Modes of transmission of diseases
 - a) Various routes of spread of infection.
 - b) Hospital acquired infection.
 - c) Bacterias responsible for nosocomial infectious
7. Bacterial diseases (in brief):
 - Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis.
 - Bacterial disease: Pyogenic, Diphtheria, Gram negative infection, Bacillary dysentery.
8. Viral diseases (in brief) : Poliomyelitis, Herpes, Rabies, Measles, Ricktsia, Chlamydial infection, HIV infection.
9. Fungal diseases and opportunistic infections (in brief).
10. Food sanitation
 - a) Hygiene in restaurants & kitchens.
 - b) Health of food handlers & hygiene.
 - c) Disease caused by infected food & water.
11. Immunity
 - a) Active, passive
 - b) Natural, acquired
 - c) Antigen
 - d) Antibody, type of antibodies
 - e) Antigen antibody reactions.
 - f) Mechanism of immunity
 - g) Immunization.
12. AIDS - Aetiology, modes of transmission, diagnostic procedure.
13. Handling of infected material.

PRACTICAL

1. Preparation of smear.
2. Basic staining methods
3. Identification of bacteria on the basis of staining.
4. Basic knowledge of media and culture of bacteria.
5. Colony characteristics of common bacteria.

PATHOLOGY
Subject Code: BPT-205

THEORY

1. Introduction to Pathology

2. Cell injuries:

- Aetiology and Pathogenesis with a brief recall of important aspects of normal cell structure.
- Reversible cell injury: Types, Sequential changes, Cellular swellings, vacuolation, Hyaline changes, Mucoïd changes.
- Irreversible cell injury: Types of Necrosis & Gangrene, Autolysis.
- Pathologic calcification: Dystrophic and Metastatic. Intracellular Accumulations.

3. Inflammation and Repair

- Acute inflammation: features, causes, vascular and cellular events, Inflammatory cells and Mediators.
- Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples.
- Repair, Wound healing by primary and secondary union, factors promoting and delaying the process. Healing in specific site including bone healing.

4. Circulatory Disturbances

- Hyperemia/Ischemia and Haemorrhage
- Edema: Pathogenesis and types.
- Chronic venous congestion: Lung, Liver, Spleen, Systemic Pathology
- Thrombosis and Embolism: Formation, Fate and Effects.
- Infarction: Types, Common sites.
- Shock: Pathogenesis, types, morphologic changes.

5. Growth Disturbances and Neoplasia

- Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, dysplasia. Precancerous lesions.
- Neoplasia: Definition, classification, Biological behaviour: Benign and Malignant (brief idea), Carcinoma and Sarcoma.

6. Hematology

- Constituents of blood and bone marrow, Regulation of hematopoiesis.
- Anemia: Classification, clinical features & lab diagnosis (brief idea).
- Hemostatic disorders, Vascular and Platelet disorders & lab diagnosis.
- Coagulopathies - (i) Inherited (ii) Acquired with lab diagnosis.
- Leukocytic disorders: Leukocytosis, Leukopenias, Leukemoid reaction.
- Leukemia: Classification, clinical manifestation, pathology and Diagnosis (brief idea).

7. Respiratory System

- Pneumonia, Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases

8. Cardiovascular Pathology

- Congenital Heart diseases: Atrial septal defect, Ventricular septal defect, Fallot's tetralogy, Patent ductus arteriosus, Endocarditis, Rheumatic Heart disease.
- Vascular diseases: Atherosclerosis, Monckeberg's medial calcification.
- Ischemic heart Disease: Myocardial infarction.

9. Hepato Biliary Pathology

- Jaundice: Types, aetio-pathogenesis and diagnosis.

10. Musculoskeletal System

- Osteomyelitis: acute, chronic, tuberculous, mycetoma
- Metabolic diseases: Rickets/ Osteomalacia, osteoporosis, Hyperparathyroidism, Paget's disease.
- Tumours Classification: Benign, Malignant, Metastatic and synovial sarcoma.
- Arthritis: Suppurative, Rheumatoid. Osteoarthritis, Gout, Tuberculous.

11. Endocrine pathology

- Non-neoplastic lesions of Thyroid: Thyrotoxicosis, myxedema,

12. Neuropathology

- Inflammations and Infections: TB Meningitis, Pyogenic Meningitis, viral meningitis and Brain Abscess, Tuberculosis, Cysticercosis.

13. Dermatopathology:

- Skin tumors: Squamous cell carcinoma, Basal cell carcinoma, Melanoma (brief idea)

14. Congenital Myopathy & myasthenia gravis

PRACTICAL

1. Collection of blood and anticoagulants used..
2. Discussion about parts of microscope and different types of microscopes used in pathology.
3. Staining of slide by Leishman method.
4. Study of peripheral blood smear.
5. Estimation of hemoglobin by Sahl's method and discussion of other methods used.
6. ESR
7. Identification of various instruments in pathology lab & their uses (eg. Neubauer chamber, RBC, WBC, pipette etc.).
8. Bleeding Time, Clotting Time.

1. General Pharmacology:

PHARMACOLOGY
Subject Code: BPT-206

1. General Pharmacology
2. Introduction, Definitions, Classification of drugs, Sources of drugs, Routes of drug administration,
3. Distribution of drugs, Metabolism and Excretion of drugs, Pharmacokinetics, Pharmacodynamics,
4. Factors modifying drug response.
5. Elementary knowledge of drug toxicity, drug allergy, drug resistance, drug potency, efficacy & drug antagonism.
2. Autonomic Nervous system
 1. General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System
 2. Cholinergic and Anti-Cholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants.
3. Cardiovascular Pharmacology (in brief) :
 1. Drugs Used in the Treatment of Heart Failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors
 2. Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators
 3. Antiarrhythmic Drugs
 4. Drugs Used in the Treatment of Vascular Disease and Tissue Ischemia: Vascular Disease, Hemostasis Lipid-Lowering agents, Antithrombotics, Anticoagulants and Thrombolytics
 5. Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers
 6. Cerebral Ischemia
 7. Peripheral Vascular Disease
4. Neuropharmacology (in brief) :
 1. Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines
 2. Antianxiety Drugs: Benzodiazepines, Other Anxiolytics
 3. Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium
 4. Antipsychotic drugs
 5. Disorders of Movement (in brief) :
 1. Drugs used in Treatment of Parkinson's Disease
 2. Antiepileptic Drugs
 3. Spasticity and Skeletal Muscle Relaxants
 6. Inflammatory/Immune Diseases-
 1. Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Nonaspirin NSAIDs, drug Interactions with NSAIDs
 2. Glucocorticoids: Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids
 3. Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout
 4. Drugs Used in the Treatment of Neuromuscular Immune/Inflammatory Diseases: Myasthenia gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythmatosus, Scleroderma, Demyelinating Disease
 7. Respiratory Pharmacology (in brief) : Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis
 8. Digestion and Metabolism (in brief):
 1. Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea
 2. Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemics
 9. Geriatrics:
 1. Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension, urinary incontinence.

COMPUTER
(Not for university Examination)

1. Basics of computer
2. Hardware and software
2. Input and output devices
3. Operating system – DOS, etc
4. Internet-
Email, social networking, application in medicine, browsing journals and article using internet

Philosophy of Yoga
(Not for university Examination)

Theory:

Unit-I : General Introduction of Hatha Yoga

Unit-II : Pre-requisites

Unit-III : Principle and Introduction to Hatha Yoga

Unit-IV : Relationship between Patanjala Yoga and Hatha Yoga

Unit-V : Introduction to Yoga Darshana of Patanjali and concept of Citta, Citta Bhoomis, Citta Vrittis and Citta Vritti Nirodhopaya

Unit-VI : Samadhi Pada

Unit-VII : Sadhana Pada

Unit-VIII : Vibhuti and Kaivalya Pada

Practical:

Unit-I : Yogasana [Standing Postures and Body alignments]

Unit-II : Yogasana [Sitting Postures]

Unit- III : Yogasana [Supine lying Postures]

Unit- IV : Yogasana [Prone Lying Postures]

Unit-V : Shatkarma

Unit-VI : Pranayama

Unit-VII : Practices leading to meditation

Unit-VIII : Bandhas

Bachelor of Physiotherapy (BPT) Third Year

EXERCISE THERAPY – II

Subject Code: BPT-301

THEORY

1. Joint mobilization:
Definition – Mobilization, Manipulation, indications, limitations, contraindications and precautions, applications of Mobilization technique to various joints.
Principles of Maitland, Mulligan and Meckzi joint Manipulation techniques.
2. Stretching:
Definition, properties of soft tissue, mechanical and neurophysiological properties of connective tissue, mechanical properties of non contractile tissue. Determinants, type and effect of stretching, precautions, general applications of stretching technique.
3. Resisted exercise:
Definition – strength, power, endurance. Guiding principle of resisted exercise, determinants, types Manual and Mechanical Resistance Exercise, Isometric Exercise, Dynamic Exercise - Concentric and Eccentric, Dynamic Exercise - Constant and Variable Resistance, Isokinetic Exercise, Open-Chain and Closed- Chain Exercise, precautions, contraindications
Progressive Resistance Exercise - de Lormes, Oxford, MacQueen, Circuit Weight Training, Plyometric Training—Stretch-Shortening Drills, Isokinetic Regimens
4. Proprioceptive Neuromuscular Facilitation – Principles, Diagonal patterns of movements, Basic procedures, Upper Extremity Diagonal patterns, Lower Extremity Diagonal Patterns. Technique in PNF – Rhythmic Initiation, Repeated Contractions, Reversal of Antagonists, Alternating Isometrics, Rhythmic Stabilization.
5. Aerobic Exercises – Definitions, Physiological response to Aerobic Exercise, Evaluation of aerobic capacity – exercise testing, Determinant of Aerobic Exercise, Physiological Changes with Aerobic Training, Aerobic Exercise Program, Applications of Aerobic Program in patients with chronic illness.
6. Hydrotherapy:
Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Therapeutic Exercises in Hydrotherapy, Special equipments used.
7. Balance training:
Definition and Key terms, Balance control, Components of balance, Balance Impairment, Examination of Impaired Balance, Balance training Exercises.
8. Posture:
Normal Postural Control, Postural Alignment, Postural Stability, Postural Impairment and Mal-Alignment, Postural Training.
9. Breathing Exercises:
Aims and Goals of Breathing Exercises, Procedures of Diaphragmatic Breathing, Segmental Breathing, Pursed-Lip Breathing, Preventing and Relieving Episodes of Dyspnea, Positive Expiratory Pressure Breathing, Respiratory Resistance Training, Glossopharyngeal Breathing.

Exercises to mobilize the chest, Postural Drainage, Manual Technique used in Postural Drainage, Postural Drainage Positions, Modified Postural Drainage.

10. Gait Training:
Definition, Different methods of Gait Training, Gait Training in Parallel Bars,
Walking Aids: Types: Crutches, Canes, Frames; Principles and training with walking aids.
11. Soft Tissue Injury:
General Description of Inflammation and repair, Acute, Sub Acute, and Chronic stage, General Treatment Guidelines.
12. Yoga: History, Introduction, Classification, Various Asana

PRACTICAL

1. Joint Mobilisation to individual joint
2. Stretching of individual and group muscles
3. Resisted exercises to individual and group muscles, open and closed kinematic exercises
4. PNF patterns to upper and lower limb.
5. Various types breathing exercises, chest mobilization exercises, postural drainage
6. Gait training with various walking aids

ELCTROTHERAPY - II
Subject Code: BPT 302

THEORY

1. Introduction to high frequency current, Electro Magnetic Spectrum
2. SWD: Define short wave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications & Contraindications, Dangers, Dosage parameters. Pulsed Electro Magnetic Energy
3. Micro Wave Diathermy: Define Microwave, Wave length & Frequency, Production of MW, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications & Contraindications, Dangers of MWD.
4. Ultrasound: Define Ultrasound, Frequency, Piezo Electric effects: Direct, Reverse, Production of US, Treatment Dosage parameters: Continous & Pulsed mode, Intensity, US Fields: Near field, Far field, Half value distance, Attenuation, Coupling Media, Thermal effects, Nonthermal effects, Principles & Application of US: Direct contact, Water bag, Water bath, Solid sterile gel pack method for wound. Uses of US, Indications & Contraindications, Dangers of Ultrasound. Phonophoresis: Define Phonophoresis, Methods of application, Commonly used drugs, Uses. Dosages of US.
5. IRR: Define IRR, wavelength & parameters, Types of IR generators, Production of IR, Physiological & Therapeutic effects, Duration & frequency of treatment, Indication & Contraindication.
6. UVR: Define UVR, Types of UVR, UVR generators: High pressure mercury vapour lamp, Water cooled mercury vapour lamp, Kromayer lamp, Fluorescent tube, Theraktin tunnel PUVA apparatus. Physiological & Therapeutic effects. Sensitizers & Filters. Test dosage calculation. Calculation of E1, E2, E3, E4 doses. Indications, contraindications. Dangers Dosages for different therapeutic effects, Distance in UVR lamp.
7. LASER: Define LASER. Types of LASER. Principles of Production. Production of LASER by various methods. Methods of application of LASER. Dosage of LASER. Physiological & Therapeutic effects of LASER. Safety precautions of LASER. Classifications of LASER Energy density & power density.
8. Wax Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers.
9. Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications.
10. Moist Heat Therapy: Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications.
11. Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications.
12. Cryotherapy: Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application with dosage.
13. EMG and Nerve Conduction Velocity test, Biofeed back

PRACTICAL

The student of Electrotherapy must be able to demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.

1. Application of Ultrasound for different regions-various methods of application
2. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
3. Demonstrate the technique of UVR exposure for various conditions – calculation of test dose
4. Calculation of dosage and technique of application of LASER
5. Technique of treatment and application of Hydrocollator packs, cryotherapy, contrast bath, wax therapy

ORTHOPAEDICS
Subject Code: BPT-303

1. Introduction to Orthopaedics:
An Orthopaedic patient, history taking, clinical features, clinical examination, and investigation (X- ray, CT scans, MRI scan, Bone scan)
2. Injuries of muscle & tendons : etiology & management.
3. Bony & Soft tissue injuries :
Injury & repair, Clinical presentation, evaluation & general principles of rehabilitation management, Tenosynovitis, Bursitis etc.
4. Fractures -
 - a. Types, Healing, complications, general principles of treatment.
 - b. Fracture of Spine, pelvis, hip joint, femur, patella, knee joint, cartilage and ligaments, tibia, fibula, ankle, calcaneum, metatarsals, calcicle, scapula, ribs, humerus, elbow joint, radius, ulna, scaphoid, metacarpals & phalanges.
 - c. Fracture separation of epiphysis.
5. Inflammation of bones & joints (Clinical features, evaluation, conservative & surgical management) -
 - a) Bones - Osteomyelitis- osteomyelitis - pyogenic & tubercular, osteoarthritis.
 - b) Joints - Rheumatoid arthritis, Juvenile Arthritis, Reiter's disease, Polymyalgia rheumatica, Gout, Ankylosing spondylitis, Neuropathic- joints, haemophilic arthropathy, Avascular necrosis.
6. Nutritional & metabolic diseases of bones : Rickets, Osteomalacia & Osteoporosis.
7. Spine deformities:
Clinical features, diagnosis, management of Scoliosis, Kyphosis, Lordosis, Spondylosis, prolapse of intervertebral disc, cord compression, sacralization and traumatic deformities (paraplegia & quadriplegia).
8. Infections of Musculoskeletal system -
 - a. Bacterial infections
 - b. Tubercular infections, Leprosy, Pott's paraplegia
9. Congenital malformations (in brief description with outline of treatment):
 - a. Congenital Hip Displasia, Congenital Talipes Equinovarus / Calcaneoalvus, Arthrogyrosis Multiplex Congenita, Congenital Torticollis, Acromelia, phocomelia, Amelia,
 - b. Spina Bifida: all types, clinical presentation, sequel & management
10. Developmental diseases of skeleton:
Osteogenesis imperfecta, heterotopic ossification, Osteochondritis, Perthes' disease.
11. Neuromuscular diseases:
 - a) Volkmann's Ischaemic contracture, obstetrical paralysis, and peroneal muscular atrophy
 - b) Poliomyelitis – orthopaedic aspects and treatment of deformities.
12. Upper Limbs:
Clinical presentation, evaluation, conservative & surgical management of rotator cuff injuries, adhesive capsulitis, bursitis, biceps tendonitis, shoulder dislocation, snapping & winged scapula, tennis and golfer elbow, olecranon bursitis, soft tissue injuries, sprains and strains, Arthritic conditions, tenosynovitis, Carpal tunnel syndrome, wrist drop, claw hand, mallet finger, Dupuytren's contracture, reflex sympathetic dystrophy, common fractures and dislocations.

13. Lower Limb:
Clinical presentation, evaluation, conservative & surgical management of Arthritic conditions, soft tissue injuries, sprains and strains, achillis tendonitis, bursitis, plantar fasciitis, deformities, reflex sympathetic dystrophy, neuropathic Joints, common fractures and dislocations, pes cavus, pes valgus, hallus valgus, footstrains, metatarsalgia, hallus rigidus, ingrowing toe nail.
14. Neuro-vascular Diseases :
Orthopaedic aspects and treatment of - Nerve injuries (major nerves), Plexus injuries
15. Amputations :
Justification, outline of surgical approaches, incisions, procedures, indications, contraindications, complications & management.
16. Bone tumors : benign & malignant (in brief)
17. Operations :
Reconstructive arthroplasty, arthodesis, bone grafting, osteotomy, tendon transplantation & transfer, nerve- neurolysis, suture, graft and decompression.
18. Orthopaedic splints and appliances.
19. Traction : Skin, skeleton (in brief).
20. Foot arches & their complications.
21. Rehabilitation of patients.

GENERAL MEDICINE INCLUDING PEDIATRICS & PSYCHIATRY
Subject Code: BPT – 304

1. Introduction:
Brief outline of subject of medicine, a medical patient, common signs & symptoms of disease
2. Infectious Diseases:
Brief description of concept of infection, types, classification & common clinical manifestation of infection and general principle of management
3. Nutritional & Metabolic Diseases:
Brief description of following diseases along with outline of management: Diabetes Mellitus, Vitamins (A, B, C, D & K) and Minerals (iron, calcium phosphorus, iodine) deficiencies, and Obesity
4. Alimentary tract:
Brief description of manifestations of alimentary tract disease & general principle of diagnosis & outline of management of following diseases: Peptic ulcer disease, common infections of small & large intestine
5. Brief description of liver diseases along with outline of management:
Hepatitis, & Jaundice
6. Diseases of connective tissues:
Brief description of manifestations along with outline of management of - SLE, polymyositis
7. Diseases of skin:
Brief description of manifestations along with outline of management of common skin diseases - scabies, pediculosis, taeniasis, impetigo & psoriasis
8. Geriatrics-
Physiology of ageing, manifestations of diseases in old people and general principles of management. Implications of aging in physical therapy. lung disease, Pleurisy & Pulmonary embolism
9. First Aid in common Medical Emergencies
10. Cardio-vascular System:
Manifestations of heart & vascular disease & general principle of diagnosis. Brief description of following diseases along with outline of management: Cardiac failure, Ischaemic heart disease, hypertension, atherosclerosis, Deep vein thrombosis
11. Respiratory System:
Manifestations of respiratory disease & general principle of diagnosis. Brief description of following diseases along with outline of management:
Obstructive Pulmonary diseases (Bronchial Asthma, COPD), pulmonary infections (Pneumonia, Bronchitis, Lung abscess, Tuberculosis), Respiratory failure, occupational lung diseases
12. Neurology:
Brief Description of Headache, migraine, raised intra-cranial pressure. Inflammatory conditions – meningitis (bacterial, tubercular), rabies
Disorders of cerebral circulation - ischaemia, haemorrhages (CVA), HT encephalopathy
Demyelinating diseases- acute disseminated encephalomyelitis, multiple sclerosis Extra pyramidal syndromes - Parkinson's disease, Chorea, Athetosis, Dystonia, hemiballismus, Spasmodic Torticollis
Convulsive disorders - epilepsy (GM, PM, Psychomotor), tetany
13. Developmental and degenerative syndromes –
Cerebral palsy, kernicterus, hereditary ataxias, motor neuron disease, Peroneal muscular atrophy
14. Disorders of Spinal cord and Cauda Equina-
Spinal cord injury, paraplegia, quadriplegia, spina-bifida, transverse myelitis, Neurogenic bladder and bowel
15. Peripheral nerve disorders –
Traumatic / compression or entrapment neuropathy, polyneuritis, GB syndrome, diabetic polyneuropathy

and spinal radiculopathies. Special emphasis on brachial and lumbo-sacral plexuses and major nerves – radial, ulnar, median, femoral, and sciatic nerve

16. Muscle disorders –
Progressive muscular dystrophy, polymyositis, myasthenia gravis, floppy infant syndrome

PEDIATRICS

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

PSYCHIATRY

1. Modalities of psychiatric treatment
2. Psychiatric illness and physical therapy link
3. Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses -
 - a. Anxiety neurosis
 - b. Depression
 - c. Obsessive compulsive neurosis
 - d. Psychosis- Définition & types
 - e. Maniac-depressive psychosis
 - f. Post-traumatic stress disorder
 - g. Psychosomatic reactions: Stress and Health, theories of Stress – Illness Link
4. Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illness
 - a. Drug dependence and alcoholism
 - b. Somatoform and Dissociate Disorders – conversion reactions, Somatization, Dissociate Amnesia, and Dissociate Fugue
 - c. Personality disorders
5. Child psychiatry:
Brief descriptions of manifestations, and management of childhood disorders - attention deficit syndrome, and behavioral disorders
6. Geriatric Psychiatry (in brief)

GENERAL SURGERY/OPHTHALMOLOGY/ENT/OBSTRETICS & GYNAECOLOGY

Subject Code: BPT-305

1. Fluid, Electrolyte and Acid-Base disturbances –
Diagnosis and management ; Nutrition in the surgical patient., Shock - Clinical feature, pathology & management.
2. Transfusion therapy in surgery – blood components, complications of transfusion .
3. Wounds :
 - a) Classification, acute wounds, chronic wounds.
 - b) Wound healing – Basic process involved in wound repair, basic phases in the healing process, clinical management of wounds, factors affecting wound healing, scars - type and treatment.
 - c) Wound Infections, - physiology & manifestation, types of infections, treatment, principle of antimicrobial treatment.
4. Pre & postoperative complications of surgery and their management.
5. Hemostasis –
Components, hemostatic disorders, factors affecting bleeding during surgery.
6. Types of anaesthesia and its affects on the patient, pain relief.
7. Types of Incisions ; Clips Ligatures and Sutures; General Thoracic Procedures, Radiologic Diagnostic procedures, Endoscopy–types, Biopsy – uses and types. Overview and Drainage systems and tubes used in Surgery.
8. Burn:
Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management.
9. Skin Grafts :
Types, Grafting Procedures, Survival of Skin Graft ; Flaps – Types and uses of Flaps.
10. Infections and injuries of Hand :
Hand infection, suppurative infection, other infection, hand injuries, Dupuytren's contracture.
11. Surgical Oncology – Cancer –
Definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer.
12. Disorders of muscles, tendons and ligaments, sports related injuries. Periarticular inflammations acute muscle injury, chronic muscle injury, Tendon disorders, tendon sheath disorder, fascia, Ganglia, Bursae, Repetitive strain injury.
13. Neurological disorder affecting to musculo-skeletal system. , Motor dysfunction and treatment, cerebral palsy, acquired abnormalities, inherited disorder, neuromuscular disorder, sensory disorder.
14. The cranium :
The scalp, the skull, head injuries.
15. Thoracic and cardiac surgery :
Thoracotomy, lobectomy, pneumonectomy, thoracoplasty, mitral valvotomy, open heart surgery.
16. Various surgical heart diseases with respect to clinical presentation, complications and management -
Valvular heart disease, congenital heart disease –e.g., ASD, VSD, PDA, Ischaemic heart disease. Outline of postoperative complications in cardiac surgery and their management.

17. Diseases of the Arteries and Veins :
Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases : Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease, Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins.
18. Definition, Indication, Incision, Physiological changes and Complications following Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy Mastectomy, Nephrectomy, Prostectomy.
19. Obstetrics & Gynecology :
Surgical procedures involving child birth. Incontinence – Types, Causes, Assessment and Management, Common gynecology disorders - salpingitis, parameteritis, retroverted uterus prolapse of uterus, pelvic inflammation , Definition & indications of– Hysterosalpingography, Dilatation and Curettage, Laproscopy, Colposcopy, & Hysterectomy,
20. ENT:
Common problems of ear, otitis media, Otosclerosis, functional aphonia and deafness, facial palsy - classification, medical and surgical management of lower motor neuron type of facial palsy.
21. Ophthalmology:
common inflammation and other infections of eye, ptosis, defects of the external rectus, cataract, refractions, pleoptic exercises, physiologic defects of vision.

COMMUNITY MEDICINE

Subject Code: BPT-306

1. Health and Disease: Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine, The role of socio-economic and cultural environment in health and disease.
2. Epidemiology, definition and scope. Principles of Epidemiology and Epidemiological methods: Components and Aims, Basic measurements, Methods, Uses of epidemiology, Infectious disease epidemiology, Dynamics and modes of disease transmission, Host defenses and Immunizing agents, Hazards of Immunization, Disease prevention and control, Disinfection. Screening for Disease: Concept of screening, Aims and Objectives, Uses and types of screening.
3. Epidemiology of communicable disease: Respiratory infections, Intestinal infections, Arthropodborne infections, Zoonoses, Surface infections, Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, Obesity, Blindness Accidents and Injuries.
4. Public health administration- an overview of the health administration set up at Central and state levels. The national health program-highlighting the role of social, economic and cultural factors in the implementation of the national programs. Health problems of vulnerable groups- pregnant and lactating women, infants and pre-school children, occupational groups.
5. Health programs in India: Vector borne disease control program, National leprosy eradication program, National tuberculosis program, National AIDS control program, National program for control of blindness, Iodine deficiency disorders (IDD) program, Universal Immunisation program, Reproductive and child health program, National cancer control program, National mental health program. National diabetes control program, National family welfare program, National sanitation and water supply program, Minimum needs program.
6. Demography and Family Planning: Demographic cycle, Fertility, Family planning- objectives of national family planning program and family planning methods, A general idea of advantage and disadvantages of the methods.
7. Preventive Medicine in Obstetrics, Paediatrics and Geriatrics: MCH problems, Antenatal, Intranatal and post natal care, Care of children, Child health problems, Rights of child and National policy for children, MCH services and indicators of MCH care, Social welfare program for women and children, Preventive medicine and geriatrics.
8. Nutrition and Health: Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition program.
9. Environment and Health: Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology.
10. Hospital waste management: Sources of hospital waste, Health hazards, Waste management.
11. Disaster Management: Natural and man made disasters, Disaster impact and response, Relief phase, Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness.
12. Occupational Health: Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts.
13. Mental Health: Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health.
14. Health Education: Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education.

RESEARCH METHODOLOGY AND BIostatISTICS
Subject Code: BPT 307

RESEARCH METHODOLOGY

1. Introduction to Research methodology:

Meaning of research, objectives of research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research.

2. Research problem:

Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem

3. Research design:

Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design.

4. Measurement & scaling techniques: Measurement in research-

Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification, important scaling techniques.

5. Methods of data collection:

Collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules.

6. Computer technology:

Introduction to Computers, computer application in research computers & researcher.

BIOSTATISTICS:

1. **Introduction:** Meaning, definition, characteristics of statistics. Importance of the study of statistics, Branches of statistics, Statistics and health science, Parameters and Estimates, Variables and their types, Measurement scales.
2. **Tabulation of Data:** Basic principles of tabulation and graphical representation, Types of diagrams – histogram, frequency polygon, smooth frequency polygon, cumulative frequency curve, and Normal probability curve.
3. **Measures of Central Tendency:** Need for measures of central Tendency, Definition and calculation of **Mean** – ungrouped and grouped, interpretation and calculation of Median-ungrouped and grouped, Meaning and calculation of Mode, Geometric mean & Harmonic mean, Guidelines for the use of various measures of central tendency.
4. **Measures of Dispersion:** Range, mean deviation, standard deviation & variance.
5. **Probability:** Definition, Uses of Probability, Addition theorem & Multiplication theorem.
6. **Correlation & Regression:** Correlation Coefficient, linear regression & regression equation.
7. **Testing of Hypothesis:** Null hypothesis & Alternative, Type-I error & Type-II error, Level of significance, Degrees of freedom.
8. **Chi-square test, test of Goodness of fit & student t-test- Independent & Paired t-test.**
9. **Sample size and Sampling technique:**
 - Some common terminology used in statistics - Parameter, Statistics, Population, Sample, Sampling Unit, Sampling frame, Sample size determination for quantitative and qualitative data.
 - Types of Sampling – Probability Sampling & Non Probability Sampling .
 - Probability Sampling:** Simple random sampling, Stratified sampling, Systematic sampling, Cluster sampling.
 - Non-Probability Sampling:** Purposive sampling, Judgment sampling, Multistage sampling, Convenience sampling.

Applications: Collection, presentation and analysis of hospital statistical data with examples. Collection, presentation and analysis of Physiotherapy outdoor & indoor patient data with few examples.

Application of Yoga
(Not Included in University Exam)

Theory:

Unit-I : Concept of body, health and disease

Unit-II : Causes of ill-health and re-medial measures according to Patanjali

Unit-III : Yogic principles and practices of healthy living-I

Unit-IV : [Yogic principles and practices of healthy living-II

Unit-V : Yogic health for school

Unit-VI : Yoga in physical education, Sports sciences

Unit-VII : Yoga for techno-stress

Unit-VIII : Yoga for Geriatric care

Practical:

Unit-I : Shatkarmas

Unit-II : Yogasana-I

Unit- III : Yogasana-II

Unit- IV : Yogasana-III

Unit-V : Bandha and Mudras

Unit-VI : Kriyas

Unit-VII : Pranayama

Unit-VIII : Practice leading to meditation

Bachelor of Physiotherapy (BPT) Fourth Year

PHYSIOTHERAPY IN ORTHOPEADIC CONDITIONS

Subject Code: BPT – 401

1. PT assessment for Orthopedic conditions - SOAP format. Subjective - history taking, informed consent, personal, past, medical and socioeconomic history, chief complaints, history of present illness. Pain assessment- intensity, character, aggravating and relieving factors, site and location. Objective- on observation - body built swelling, muscle atrophy, deformities, posture and gait. On palpation- tenderness-grades, muscle spasm, swelling-methods of swelling assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances. On examination – ROM – active and passive, resisted isometric tests, limb length-apparent, true and segmental, girth measurement, muscle length testing-tightness, Contracture and flexibility, manual muscle testing, peripheral neurological examination dermatomes, myotomes and reflexes, special tests and functional tests. Prescription of home program. Documentation of case records, and follows up.
2. Fractures - types, classification, signs and symptoms, complications. Fracture healing – factors affecting fracture healing. Principles of fracture management - reduction - open and closed, immobilization - sling, cast, brace, slab, traction - manual, mechanical, skin, skeletal, lumbar and Cervical traction, external fixation, functional cast bracing. PT management in complications - early and late - shock, compartmental syndrome, VIC, fat embolism, delayed and mal union, RSD, myositis ossificans, AVN, pressure sores etc. Physiotherapy assessment in fracture cases. Aims of PT management in fracture cases - short and long term goals. Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period.
3. Specific fractures and dislocations: PT assessment and management of upper limb fractures and dislocations. PT assessment and management of lower limb fractures and dislocations including pelvis. PT assessment and management spinal fractures.
4. Principles of various schools of thought in manual therapy – Maitland, Mackenzie, Mulligan
5. Degenerative and inflammatory conditions: Definition, signs and symptoms, clinical features, path physiology, radiological features, deformities, medical, surgical management. Describe the PT assessment and management and home program for the following conditions – Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritic shoulder.
6. Infective conditions: Definition, signs and symptoms, clinical features, pathophysiology, radiological features, medical, surgical management. Describe PT assessment and management for following conditions – Osteomyelitis – acute and chronic, Septic arthritis, Pyogenic arthritis, TB spine and major joints - knee and hip.
7. Define; review the postural abnormalities of spinal column, clinical features, deformities, medical and surgical management. Describe PT assessment and management and home program.

8. Deformities:
Review in detail the causes, signs and symptoms, radiological features, medical and surgical management. Describe the PT. assessment and management of the following conditions : Congenital : CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. Acquired: scoliosis, kyphosis, coxa vera, genu varum, valgum and recurvatum.
9. Poliomyelitis:
Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management. PT. assessment and management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program.
10. Leprosy:
Definition, cause, clinical features, medical and surgical management. PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and post operatively.
11. Amputations:
Definition, levels, indications, types, PT assessment, aims, management pre and post operatively. PT management with emphasis on stump care and bandaging. Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management.
12. Spinal conditions:
Review the causes, signs and symptoms, investigations, radiological features, neurological signs. PT assessment, aims, and management and home program of the following conditions: Cervical spondylosis, Lumbar spondylosis, Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina bifida occulta.
13. Osteoporosis : Causes, predisposing factors, investigations and treatment.
14. Orthopedic surgeries:
Pre and post operative PT assessment, goals, precautions and PT management of following surgeries such as: Arthrodesis, Osteotomy, Arthroplasty-partial and total- Excision arthroplasty, excision arthroplasty with implant, interpositional arthroplasty and total replacement; Tendon transplant, Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Re- attachment of limbs, External fixators, Synovectomy.
15. Shoulder joint:
Shoulder instabilities, TOS, RSD, Impingement syndrome – conservative and Post operative PT management. Total shoulder replacement and Hemi replacement. - Post operative PT management. AC joint injuries - rehabilitation. Rotator cuff tears- conservative and surgical repair. Subacromial decompression - Post operative PT management.
16. Elbow and forearm:
Excision of radial head - Post operative PT management. Total elbow arthroplasty- Post operative PT management.
18. Wrist and Hand:
Total wrist arthroplasty. Repair of ruptured extensor tendons. Carpal tunnel syndrome. Flexor and extensor tendon lacerations - Post operative PT management.

19. Hip:
Joint surgeries- hemi and total hip replacement - Post operative PT management Tendonitis and bursitis. - Management.
20. Knee:
Lateral retinacular release, chondroplasty- Post operative management. Realignment of extensor mechanism. ACL and PCL reconstruction surgeries - Post operative rehabilitation. Meniscectomy and meniscal repair - Post operative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome - conservative management. TKR- rehabilitation protocol. Patellar tendon ruptures and Patellectomy- rehabilitation.
21. Ankle and foot: Ankle instability. Ligamentous tears- Post operative management.

PRACTICALS

1. Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of physiotherapy in orthopaedics conditions.
2. Student must maintain a logbook. The duly completed logbook should be submitted during practical examination.

PHYSIOTHERAPY IN NEUROLOGICAL CONDITIOINS

Subject Code: BPT – 402

THEORY

- 1) Review of basic Neuro - Anatomy and Physiology
- 2) Physiotherapy evaluation of a neurological patient, electro diagnostic procedures, interpretations and prognosis in different neurological conditions, Upper and Lower motor neuron lesions.
- 3) Principles of physiotherapy programs, reeducation and retraining techniques in neurological conditions, approaches like: Bobath's / neuro developmental therapy, Rood's approach, PNF, Vojta techniques, biofeedback, Brunnstorm movement therapy, Motor Relearning programming, sensory integration therapy.
- 4) Disturbance of speech and aphasia
- 5) Spinal cord injury:
review of anatomy and physiology, Physiotherapy Assessment of Spinal cord injury, Principles of Physiotherapy at various stages of Spinal cord injury Rehabilitation goals and ADL training
- 6) Assessment and principles of therapeutic management of following neurological conditions:
 - Stroke, meningitis, encephalitis, Parkinson's disease, Cerebral palsy, cerebellar lesions, Brain tumors, Multiple Sclerosis, facial palsy.
 - Motor neuron disease, Disseminated sclerosis, transverse myelitis, polio, syringomyelia, spina bifida,
 - Neuropathies, neuromuscular junction disorders and myopathies
- 7) Peripheral nerve injuries, surgical resection & repair:
 - Classification & types
 - Functional assessment, investigation, diagnosis & prognosis
 - Physiotherapeutic management
 - Poly neuropathy
- 8) Traumatic brain injury:
 - Types and Mechanisms of head injury
 - Clinical features, potential complications
 - Physiotherapy principles of immediate and postoperative therapeutic management
- 9) Neurosurgery:
Post surgical Physical therapy in neurosurgical procedures – craniotomy, shunts, SOL resection, surgical treatment of spasticity, cervical cord decompression.

PRACTICAL

1. Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of physiotherapy in neurology conditions.
2. Student must maintain a logbook. The duly completed logbook should be submitted during practical examination.

PHYSIOTHERAPY IN CARDIO-RESPIRATORY & GENERAL CONDITIONS

Subject Code: BPT – 403

THEORY

1. Anatomical and Physiological differences between the Adult and Pediatric lung.
2. Bedside assessment of the patient-Adult & Pediatric.
3. Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiography, PFT, ABG, ECG, Hematological and Biochemical Tests
4. Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP, IPPB
5. Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP
6. Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning
7. Drug therapy – Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhaled Nebulisers.
8. Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars- U.V.R and other electro therapeutics for healing of wounds, prevention of Hypergranulated Scars Keoloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues
9. Physiotherapy in dermatology -Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhidrosis. Care of anesthetic hand and foot; Evaluation, planning and management of leprosy- prescription, fitting and training with prosthetic and orthotic devices.
10. Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit.
11. Physiotherapy in Obstructive lung conditions
12. Physiotherapy in Restrictive lung conditions.
13. Management of breathlessness.
14. Pulmonary Rehabilitation.
15. Physiotherapy following Lung surgeries.
16. Respiratory failure – Oxygen Therapy and Mechanical Ventilation.
Introduction to ICU : ICU monitoring –Apparatus, Airways and Tubes used in the ICU -Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU.
17. Burns management - Role of physiotherapy in the management of burns, post grafted cases- Mobilization and Musculo-skeletal restorative exercises following burns.
18. Physiotherapy management following cardiac surgeries.

19. Cardiac Rehabilitation.
20. Physiotherapy management following Peripheral Vascular Disease (PVD).
21. Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax.
22. Management of Amputations following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes
23. Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases
24. Home program and education of family members in patient care.
25. Physiotherapy in Obstetrics – Antenatal Care, Antenatal Education, Postnatal Care. Electrotherapy and Exercise Therapy measures for the re-education of Ano-Urethral sphincter.
26. Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity.
27. Geriatrics: Problems in old age, role of physiotherapy in elderly

PRACTICAL

1. Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of physiotherapy in cardio – respiratory, OBG, Skin, and other medical conditions.
2. Student must maintain a logbook. The duly completed logbook should be submitted during practical examination.

PHYSIOTHERAPY IN SPORTS
Subject Code: BPT – 404

THEORY

1. Pre-exercise evaluation
2. Diet and nutrition
Measurement of fitness components and sports skills - Measurement of muscular strength, Measurement of muscular endurance, Measurement of flexibility, Determination exercise endurance,
3. Physiological effects of exercise on body systems - Muscular system, Endocrine system, Cardio-respiratory system, Nervous system
4. Sports injuries - Spine – PIVD, Kissing spine, cervical whiplash injuries, facet joint syndrome, SI joint dysfunction, Hip – muscle strain, piriformis syndrome, ITB syndrome, osteitis pubis, Knee – menisci, cruciate, collateral, osteochondritis, chondromalacia patellae, biceps femoris tendonitis, swimmers knee, patello-femoral pain syndrome, Leg & ankle – shin splint, achillis tendonitis & rupture, TA bursitis, ankle sprain, plantar fasciitis, turf toe syndrome, Head & face – maxillo- facial injuries, helmet compression syndrome.
5. Sports injuries
Shoulder – instability, rotator cuff injury, biceps tendonitis and rupture, pectoralis major rupture, scapular dyskinesis and acromio-clavicular joint injuries, Elbow – tennis elbow, golfer’s elbow, Wrist and hand – carpal tunnel syndrome, gamekeeper’s thumb.
6. Principles of injury prevention.
7. Principles of training & Rehabilitation in sports injuries.
8. Sports in Special age groups: Female athletic triad, Younger athlete- Musculo- skeletal problems, management, children with chronic illness and nutrition. Older athlete- Physiological changes with aging, benefits, risks of exercise in elderly, exercise prescription guidelines for elderly.

PRACTICAL

1. Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of sports physiotherapy
2. Student must maintain a logbook. The duly completed logbook should be submitted during practical examination.

REHABILITATION ON MEDICINE
Subject Code: BPT – 405

THEORY

1. Introduction of Rehabilitation & History
2. Epidemiology of disability (Impairment, disability, phases of disability process, etc.).
3. Principles of Rehabilitation & concept of team approach with rolls of each individual participant.
4. Organization of Rehabilitation unit.
5. Disability prevention evaluation & principles of Rehabilitation Management.
6. Role of Physiotherapy in Rehabilitation (Preventive, treatment & restoration)
7. Brief outline of Communication disorder & its implications on Rehabilitation process.
8. Brief outline of psychosocial & vocational aspects of Rehabilitation.
9. Introduction to Occupational therapy.
10. Activities of daily living, functional assessment & training for functional independence.
11. Brief outline of basic community medicine with special reference to community based Rehabilitation, infrastructure and role of CBR
12. Assessment of disability in rural & urban setups. Health care delivery system & preventive measures with specific reference to disabling conditions. Community education program.
13. Application of Physiotherapy skills at community level with special reference to the need at rural level.
14. Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies – National level and International NGO's, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockefeller, Ford foundation, CARE, RED CROSS.
15. National District Level Rehabilitation Program: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker.
16. Role of Physiotherapy in CBR: Screening for disabilities, Prescribing exercise program, Prescribing and devising low cost locally available assistive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation program for various neuro-musculoskeletal and cardiothoracic disabilities.

ORTHOTICS AND PROSTHOTICS

1. Introduction to surgical anatomy and various pathological deviations with respect to brace fitting.
2. Rationale of prescribing Prosthetic and Orthotic devices.
3. Types of Prosthetic and Orthotic devices: Spinal, Lower limb, and Upper limb.
4. Checkout, usage advice, precautions, and follow-up.
5. Walking aids and wheel chairs: prescription, usage advice, and follow-up.

PRACTICAL

1. Demonstration of methods of using orthotics & prosthetics devices.
2. Methods of organization of community based rehabilitation centres.
3. Visit of different rehabilitation centres and preparing a report of the visit & viva- voce of the aforesaid report.

THERAPEUTIC YOGA
(Not Included in University Exams)

Theory:

Unit-I : Introduction to common ailments and respiratory disorders

Unit-II : Cardio-vascular disorders

Unit-III : Endocrinal and Metabolic Disorders

Unit-IV : Obstetrics and Gynaecological Disorders

Unit-V : Cancer and Gastro-intestinal Disorders

Unit-VI : Musculo-skeletal Disorders

Unit-VII : Neurological Disorders

Unit-VIII : Psychiatric Disorders

Practical:

Unit-I : Respiratory disorders

Unit-II : Cardio-vascular disorders

Unit- III : Endocrinal-metabolic disorders

Unit- IV : Obstetrics and Gynaecological disorders

Unit-V : Cancer and Gastro-intestinal Disorders

Unit-VI : Musculo-skeletal Disorders

Unit-VII : Neurological Disorders

Unit-VIII : [Psychiatric Disorders

GUIDELINES FOR INTERNSHIP TRAINING PROGRAMME

Introduction:

- ❖ Internship is a phase of training wherein a graduate is expected to conduct actual practice of physiotherapy and health care and acquire skills under supervision so that he/she may become capable of functioning independently.
- ❖ Internship is a phase of training where in a candidate is expected to conduct actual Physiotherapy practice, with fair independence in clinical decision making in low risk cases where as to work under supervision at high risk areas; so that at the end of Internship he/ she is capable to practice Physiotherapy independently.
- ❖ The Internship programme shall mainly focus on acquisition of specific skills listed in the major areas of training by —hands on experience & also on ability to conduct a scientific project.

1. GENERAL OBJECTIVES:

1. The Principal/Dean of Faculty of Paramedical Sciences or Chief of the Institute where candidate opt for Internship shall be responsible for implementation of Internship programme & also for the issue of Internship completion certificate.
2. Internship shall commence not later than 15 days from the day of declaration of results of IV Year B.P.T. examination.
3. On successful completion of Internship, to the satisfaction of the Head of Physiotherapy Department & the Chief of the parent institution, the Internship completion certificate shall be issued by the parent institution; and it will be forwarded to the Rama University for the Award of B.P.T. Degree and to the State Medical Faculty for further reference and registration.

START OF INTERNSHIP PROGRAMME

- ❖ The programme will commence within 15 days after the declaration of Final B.P.T. result by the University. In special circumstances with the permission of the head of the institute, student can start internship within 45 days of declaration of results.

LEAVE FOR INTERNS

- ❖ An internee shall be entitled for maximum 6 days leave during six months period of internship posting. An internee will not be permitted to avail more than 1 day leave in any department. Period of leave in excess of 1 day in a department will have to be extended in the same department.
- ❖ However if any student wants to attend any state/national/international conference, workshop or seminar then maximally 3 days study leave can be granted to the students with production of the proper documents or certificate. It should not be more than 3 days in any conditions.

