Study & Evaluation Scheme

of

Bachelor of Physiotherapy

[Applicable w.e.f. Academic Session 2011-12 till revised]

TEERTHANKER MAHAVEER UNIVERSITY

N.H.-24, Delhi Road, Moradabad, Uttar Pradesh-244 001
Website: www.tmu.ac.in

TEERTHANKER MAHAVEER UNIVERSITY

(Established under Govt. of U. P. Act No. 30, 2008)

Delhi Road, Moradabad (U.P)

Study & Evaluation Scheme
of
Bachelor of Physiotherapy
SUMMARY

Programme : Bachelor of Physiotherapy (BPT)

Duration : Four years full time and six months internship (Annual System)

Medium : English

Minimum Required Attendance : 75 % (Theory) 80 % (Practical)

Maximum Credits : **111**

Minimum credits required for the degree : **107**

Assessment (Theory) :

Internal	External	Total
30	70	100

Internal Evaluation (Theory Papers)

Class Test I	Class Test II	Class Test III	Assignment(s)	Other Activity (including attendance	Total
Best two out of the three					
10	10	10	5	5	30

Evaluation of Practical/Dissertations & Project Reports :

Internal	External	Total
50	50	100

Duration of Examination :

External	Internal
3 hrs.	1.5 hr.

To qualify the course a student is required to secure a minimum of 50% marks in each subject including the year-end examination and teacher's continuous evaluation (i.e. both internal and external).
A candidate, who secures less than 50% marks in the year end examination, shall be deemed to have failed in that subject/course(s). ***To be eligible for the next year-end examination, a candidate must not have failed in more than two papers cumulatively (i.e. at the time of any year-end examination the backlog of reappear papers should not be more than two).*** *Failure to fulfil this requirement will cause the student either to revert back to corresponding junior batch of students and continue his/her studies with them for rest of the program or clear the backlog as an external/ reappear candidate. A student has to pass mandatorily in theory & practical separately. If he / she passes in theory and fails in practical, he has to appear for both i.e. theory, as well as practical, but if he/she passes in practical but fails in theory he / she has to appear for theory exams only.*

A student who has been placed under re-appear category shall be allowed to continue his/her studies in the next year but will have to ensure that he /she meets the eligibility condition of not having more than two reappear papers before the next year-end examination.

Study & Evaluation Scheme
Programme: Bachelor of Physiotherapy
Year -I

Sl. No	*Course Code*	*Subject*	*Periods*			*Credits*	*Evaluation Scheme*		*Total*
			L	*S/T*	*P*		*Internal*	*External*	
1	BPT101	Introduction to Physiotherapy	1	-	-	1	30	70	100
2	BPT102	Human Anatomy	3	-	-	3	30	70	100
3	BPT103	Human Physiology	3	-	-	3	30	70	100
4	BPT104	Biochemistry	2	-	-	2	30	70	100
5	BPT105	Fundamentals of Exercise Therapy	3	-	-	3	30	70	100
6	BPT106	Fundamentals of Electrotherapy	2	-	-	2	30	70	100
7	BPT107	Foundation English	2	2	-	3	30	70	100
8	BPT151	Human Anatomy (Practical)	-	-	3	2	50	50	100
9	BPT152	Human Physiology (Practical)	-	-	3	2	50	50	100
10	BPT153	Biochemistry (Practical)	-	-	2	1	50	50	100
11	BPT154	Fundamentals of Exercise Therapy (Practical)	-	-	3	2	50	50	100
12	BPT155	Fundamentals of Electrotherapy (Practical)	-	-	3	2	50	50	100
13	BPT156	Seminars	-	2	-	2	100	-	100
14	BPT157	Supervised Clinical Training	-	-	3	2	100	-	100
		Total	**16**	**4**	**17**	**30**	**660**	**740**	**1400**

Year – II

Sl. No	*Course Code*	*Subject*	*Periods*			*Credits*	*Evaluation Scheme*		*Total*
			L	*S*	*P*		*Internal*	*External*	
1	BPT201	Electro Therapy & Actino-therapy	3	-	-	3	30	70	100
2	BPT202	Exercise Therapy	3	-	-	3	30	70	100
3	BPT203	Biomechanics & Kinesiology	4	-	-	4	30	70	100
4	BPT204	Pathology & Microbiology	2	-	-	2	30	70	100
5	BPT205	Pharmacology	2	-	-	2	30	70	100
6	BPT206	Psychology & Sociology	3	-	-	3	30	70	100
7	BPT251	Electro Therapy & Actinotherapy (Practical)	-	-	4	2	50	50	100
8	BPT252	Exercise Therapy(Practical)	-	-	4	2	50	50	100
9	BPT253	Biomechanics & Kinesiology (Practical)	-	-	4	2	50	50	100
10	BPT254	Seminars	-	2	-	2	100	-	100
11	BPT255	Supervised Clinical Training	-	-	3	2	100	-	100
		Total	**17**	**2**	**15**	**27**	**530**	**600**	**1100**

Year – III

Sl. No	Course Code	Subject	Periods			Credits	Evaluation Scheme		Total
			L	S	P		Internal	External	
1	BPT301	Surgery	3	-		3	30	70	100
2	BPT302	Medicine	3	-		3	30	70	100
3	BPT303	Cardiothoracic Conditions	2	-		2	30	70	100
4	BPT304	Community Health & Bio-Statistics	3	-		3	30	70	100
5	BPT305	Physical Diagnosis & Manipulative Skills	3	-		3	30	70	100
6	BPT351	Surgery (Practical)	-	-	3	2	50	50	100
7	BPT352	Medicine (Practical)	-	-	3	2	50	50	100
8	BPT353	Cardiothoracic Conditions (Practical)	-	-	2	1	50	50	100
9	BPT354	Community Health & Bio-Statistics (Practical)	-	-	2	1	50	50	100
10	BPT355	Physical Diagnosis & Manipulative Skills (Practical)	-	-	6	3	50	50	100
11	BPT356	Seminars	-	2	-	2	100	-	100
12	BPT357	Supervised Clinical Training	-		6	3	100	-	100
		Total	**14**	**2**	**22**	**28**	**600**	**600**	**1200**

Year – IV

Sl. No	Course Code	Subject	Periods			Credits	Evaluation Scheme		Total
			L	S	P		Internal	External	
1	BPT401	Physiotherapy in Orthopedic Conditions	3	-	-	3	30	70	100
2	BPT402	Physiotherapy in Neurological Conditions	3	-	-	3	30	70	100
3	BPT403	Physiotherapy in Medical & Surgical Conditions	2	-	-	2	30	70	100
4	BPT404	Physiotherapy in Sports Injuries	2	-	-	2	30	70	100
5	BPT405	Community Physiotherapy & Disability Management	3	-	-	3	30	70	100
6	BPT451	Physiotherapy in Orthopedic Conditions (Practical)	-	-	3	2	50	50	100
7	BPT452	Physiotherapy in Neurological Conditions (Practical)	-	-	3	2	50	50	100
8	BPT453	Physiotherapy in Medical & Surgical Conditions (Practical)	-	-	2	1	50	50	100
9	BPT454	Physiotherapy in Sports Injuries (Practical)	-	-	2	1	50	50	100
10	BPT455	Community Physiotherapy & Disability Management (Practical)	-	-	3	2	50	50	100
11	BPT456	Seminars	-	2	-	2	100	-	100
12	BPT457	Supervised Clinical Training	-	-	6	3	100	-	100
		Total	**13**	**2**	**19**	**26**	**600**	**600**	**1200**

L – Lecture P- Practical S= Seminar C-Credits

1L = 1Hr 1P= 1 Hr 1S=1Hr 1C =1Hr of Lecture/Seminar
= 2 Hrs of Practical

Evaluation Scheme for Practical (Internal & External)

Viva (General)	Long Case	Short Case	Student Journal	Total Marks
20 marks	10 marks	10 marks	10 marks	50

Theory Question Paper Structure

The question paper shall be divided in three sections. Section A shall comprise of 10 multiple choice questions (MCQ) of one mark each. Section B shall consist of nine short answer type questions (SAQ) of five marks each, out of which a student shall be required to attempt any six questions.

Section C shall contain three long answer type questions of 15 marks each; student shall be required to attempt any two of them.

B.P.T Year- I
INTRODUCTION TO PHYSIOTHERAPY

Course Code: BPT101 **L-1 T-0 P-0 C-1**

Course Contents:

Part-1: History of physiotherapy

Part-2: Orientation of Physiotherapy as branch of modern medical science, introduction to various processes of examination, assessment, interpretation, physical diagnosis, planning and execution of the treatment including advise to patients for preventing, correcting, alleviating and limiting dysfunctions acute and chronic bodily malfunction including life saving measures via chest physiotherapy, intensive care units, curing physical disorder or disability, promoting physical fitness, facilitating healing and pains, relief and treatment of physical and psychosomatic disorder through modulating physiological and physical response, using physical agents, activities and devices including exercises, mobilization, manipulations, therapeutic ultrasound, electrical and thermal agents and electrotherapy for diagnosis, treatment and prevention.

Year- I
HUMAN ANATOMY

Course Code: BPT102 **L-3 T-0 P-0 C-3**

Course Contents:

Section– I: General Anatomy

Introduction: Scope of Anatomy, origination of tissue, organs and systems. Anatomical position of the body, axis and planes.
Structure of skin.
Muscles Classification & description of the structure.
Bones Classification development, parts of long bones and blood supply of bones.
Joints Definition, classification, movement of different joints.

Section- II: Upper Extremity

Osteology Clavicle, Scapula, Humerus, Radius, ulna, carpels, metacarpels & Phalanges.
Soft tissue parts- Breast, pectoral region, axilla, front of arm, back of arm, cubital fossa, front of forearm, back of forearm, palm, dorsum of Hand, Nerves and vessels of upper extremity.
Joints- Shoulder girdle, shoulder joint, elbow joint, radio- ulnar joint and joints of hand.

Section- III: Lower Extremity

Osteology- Hipbone, femur, tibia, fibula, patella, tarsals, metatarsals and phalanges.
Soft tissue parts: Gluteal region, front and back of the thigh (Femoral triangle, femoral canal and inguinal canal) medial side of the thigh (adductor canal), lateral side of the thigh, popliteal fossa. Anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of lower limb, venous drainage of the lower limb, arterial supply of the lower limb.
Joints- Hip joint, Knee joint, ankle joint, joints of the foot.

Section- IV: Trunk

Osteology –Vertebra and ribs.
Soft tissue parts- pre and para vertebral muscles, intercostals muscles, anterior abdominal wall muscles.
Joints- Costo chondral, Costo vertebral, Intervertebral.
Head and Neck.
Osteology- Mandible and bones of skull.
Soft tissue parts- Muscles of face and neck and their nerve and blood supply.
Joints- Temporomandibular joints.

Section- V: Thoracic Region

Walls of the thorax.
Thoracic cavity and pleura.
Lungs.
Mediastinum.

Pericardium.
Heart.
Trachea.
Oesophagus.
Thoracic Duct.

Section- VI: Abdomen

Anterior abdominal wall.
Abdominal cavity & Peritoneum.
Stomach.
Intestine.
Spleen.
Pancreas.
Liver.
Posterior abdominal wall.
Kidney & Ureter, Urinary Bladder & urethra.
Diaphragm.
Perineum.
Male & female reproductive organs.
Rectum & Anal canal.

Section- VII: Neuro Anatomy

Meninges & C.S.F.; Sulci & Gyri and various areas of cerebral Hemispheres; Thalamus, Hypothalamus and Basal Ganglia; Cerebellum; Pons, Medulla; 3rd, 4th & lateral ventricles.

With special emphasis on applied and clinical aspect with demonstration of brain and spinal cord in following contents: -

1. Sulci and Gyri and various areas of cerebral hemispheres,
2. Thalamus, Hypothalmus, Int. Capsule. Basal Ganglia,
3. Pons & Medulla,
4. Spinal cord with ascending & descending tract in details:
   → Nerve cells synapse and reflex arc,
5. Cerebellum,
6. Third Ventricle, Forth Ventricle & Lateral ventricles,
7. Pathways- Pyramidal tract, pathway of pain & temp, pathway of touch & taste pathways of propioceptive impulses,
8. Cranial nerve,
9. Bones & muscle of skull,
10. Facial muscles and its actions with nerve supply.

Text Books:

1. Chaurasia B.D., *Anatomy* (all three volumes)
2. Cunninghams, Manual of Practical Anatomy.
3. lnderbir Singh, *A Textbook on Human Neuro Anatomy*, Jaypee Brothers
4. Inderbir Singh, *Textbook of Anatomy with Colour Atlas* - Vol.1, 2, 3. Jaypee Brothers,
5. Katherine Wells, *Kinesiology,* Sounders co
6. Adasen, *Human Anatomy* (All three volumes)

7. Vishay Singh, *Neuroanatomy*
8. Quining Wasb, *Extremities*

Reference Books:

1. Gray's *Anatomy*.
2. Tortora & Grabowski, *Principles of Anatomy & Physiology,* Harper Collins College Publishers.
3. Snell Richards, Clinical Anatomy for Medical Students.
4. Smout and Mcdowell, *Anatomy & Physiology*
5. Mariano De Fiore, *Atlas of Histology*
6. Snell, *Neuroanatomy*

Year-I
HUMAN PHYSIOLOGY

Course Code: BPT103 **L-3 T-0 P-0 C-3**
Course Contents:

CELL STRUCTURE AND FUNCTION
PHYSIOLOGY OF THE MUSCLES AND NERVE
Physiology of muscles function .
Types of contractions, all or none principle.
Muscle tone, fatigue, Nerve cell and Electro- Physiology,
Degeneration of nerve.
Reaction of Degeneration.

PHYSIOLOGY OF BLOOD AND CVS
Composition of blood, formation and function of red blood corpuscles.
Types of contractions, all or none principle.
Formation & function of leucocytes.
The Plasma Proteins.
Blood Groups.
Heart vessels & Cardiac Muscles.
Blood pressure, and factors maintaining and affecting circulations.
Cardiac cycle and output, electro- cardiogram.
Coagulation of blood and Reticuloendothelial system.

RESPIRATORY SYSTEM
Mechanism of respiration- internal and external.
Nervous control of Respiration.
Factors affecting respiration.
Capacity and lung volumes (vital capacity, tidal air, residual air, reserve air, minimal air etc).
Transport of gases and hypoxia.

DIGESTIVE SYSTEM
Introduction to digestive system, Alimentary functional anatomy.
The salivary glands.
The stomach and its secretion.
The bile.
The small intestine.
Digestive processes and functions of liver.
Absorption, Metabolism, Basal Metabolism, Food requirements.
Metabolism.

ENDOCRINE SYSTEM
Physiology of the endocrine glands (pituitary, pineal body, Thyroid, Para thyroid, adrenal, gonads, thymus and pancreas etc.).

PHYSIOLOGY OF UROGENITAL SYSTEM

Physiology of kidney and urine formation.
Constituents of normal urine etc.
Kidney function tests. Miscellaneous aspects renal physiology, Micturition, Male and female reproductive organs.

SKIN

The skin structure and its function.

NERVOUS SYSTEM

Reflex arc.
Physiology of the central nervous system.
Posture, locomotion and Equilibrium.
Reflexes.
Physiology of the sympathetic and parasympathetic nervous system.
Sensory system and receptors.
Motor areas, descending and ascending tracts.
ANS.
Reticular formation.
Cerebrum, Cerebellum, basal ganglia, thalamus, hypothalamus, CSF and Blood brain barrier.

Text Books:

1. Ganong, *Review of Medical Physiology.*
2. Samson & Wrights, A*pplied Physiology.*
3. Chaudhary & Bijlani, *Human Physiology.*
4. Sembulingum, K., *Essentials of Medical Physiology.*

Year-I
BIO-CHEMISTRY

Course Code: BPT104 **L-2 T-0 P-0 C-2**

Course Contents:

Biochemical organization of human cell.

Carbohydrates-

Chemistry, Definition, classification with Digestion and Absorption, glycogenesis, glycolysis, TCA cycle. Hormonal regulation of blood glucose, diabetes mellitus, glycosuria, changes in carbohydrate, protein & lipid metabolism.

Proteins:- definition, Importance, Functional, Classification Digestion & absorption, decarboxylation, deamination, transamination, tranmethylation, Urea cycle, clinical signification of serum urea, function of glycine, phenylalanine, tryptophan, methionine, tyrosine.

Enzymes: - definition Modern Classification, Factors, affecting enzymes action diagnostic & therapeutics uses & enzymes, iso-enzymes, competitive Non competitive inhibition.

Acid base balance.

Vitamins: - definition, Classification, Fat & water soluble vitamins, functions Deficiency manifestations sources & RDA.

Minerals: - Ca, P, Fe, I, Zinc, Se, Fl, Mg, functions, Source, Deficiency manifestations.

Hormones: - definition with mechanism of action, and its classification.

Nutrition: - Composition of food, balanced diet, kwashiorkor, marasmus, nitrogen balance, major dietary & their importance.

Clinical Biochemistry: - liver function test, renal function test, and lipid profile in serum.

Lipid :- definition, classification with examples, biomedical importance, phospholipids & lipoproteins functions, Digestion & absorption of lipid B- oxidation of fatty acid with energetic, ketone bodies and their & metabolism, cholesterol, importance of cholesterol, obesity.

Muscle Contraction: - Mechanism & Biochemical, events Connective Tissue- Biochemistry of connective tissue- collagen-Glyco-protein-proteoglycans.

Nucleic acid: - function of DNA, RNA, genetic code.

Clinical significance of some important biochemical constituents in serum in various diseases.

Introduction to Laboratory apparatus.

Safety of measurements.

Quality control: Accuracy, precision, Specificity, Limits of error, allowable in laboratory, Percentage error.

Basic principles and estimation of blood gases and pH.

Basic principles and estimation of Electrolyte.

Text Books:

1. Deb Jyoti Das, *Biochemistry*
2. Satyanarayan, *Biochemistry*
3. Vasudevan & Shri Kumar, *Text book of Biochemistry for Medical Students*

Reference Books:

1. Harpar, *Review of Biochemistry* (24^{th} edition)

Year-I
FUNDAMENTALS OF EXERCISE THERAPY

Course Code: BPT105 **L-3 T-0 P-0 C-3**

Course Contents:

1. Bio-mechanics
   a. Axes /planes, laws of inertia & motion, mechanics of Forces, levers, pendulum, equilibrium, Torque.
   b. Types of muscle work, angle of pull, Mechanical advantage - applied mechanics in the Therapeutic Gymnasium.
2. Starting & derived positions, stability, base of support.
3. Classification of movements, (active, passive, assisted. resisted) / Goniometry techniques uses, types.
4. Limb length (only lower limb - apparent, true, Supratrochantric) & girth measurements.
5. Assessment of Sensations *I* Reflex testing.
6. Assessment of Blood pressure *I* pulse rate *I* chest expansion & Respiratory rate,- Relaxation - all methods,
7. Gravity: Definition, line of gravity, centre of gravity.
8. Pulleys, system of pulleys, double pulley block. Uses in physiotherapy.
9. Springs: properties of springs, springs in series and parallel.
10. Therapeutic Gymnasium suspension therapy, use of accessories such as pulleys springs, shoulder wheel, axillary crutches, finger ladder, therapeutic balls, parallel bars etc applied Biomechanical principles.
11. Goniometry**:** Normal range of motion of various joints, Description of goniometers, technique of goniometry and measurement of range of motion in various positions.
12. Group & recreational activities - General fitness exercises - Warm up stretching, mobility Strengthening - cool down.
13. Basic principles of General fitness - warming up exercises, aerobics - cooling down exercises.
14. Hydrotherapy – Physics-Application- Effects-Merits/demerits.

Text Books:

1. Dena Gardiner K, *Principles of Exercise Therapy.*
2. Sydney Litch, *Massage, Manipulation & Traction.*
3. Sydney Litch, *Therapeutic Exercise.*
4. Holly*, Massage.*
5. Margaret Hollis, *Suspension Therapy in Rehabilita*tion.
6. Cynthia Norkin, *Bio Mechanics*.
7. Duffield, *Hydrotherapy.*
8. Cynthia Norkins, *Measurement of Physical Function.*
9. Yoga Book for Doctors by *Dr. P.C Malshe.*

Reference Books:

1. Carolyn Kisner, *Therapeutic Exercise.*
2. Jayant Joshi, *Physiotherapy in Orthopedic Conditions.*

Year-I
FUNDAMENTALS OF ELECTROTHERAPY

Course Code: BPT106 **L-2 T-0 P-0 C-2**
Course Contents:

1. Fundamentals of Low frequency currents production of electricity, mains supply:
   (i) AC. currents & Faradic type :current.
   (ii) D.C. currents - Types - Fundamentals of electrical charges, static electricity- physic of direct currents Ohm's law Conductors-Capacitors Rheostats-Potentiometers ammeters-oscilloscopes,
   (iii) types of electrodes galvanic skin resistance - electrode -gels- types significance.
2. Fundamentals of High frequency Currents-
   (i) Magnetism, E.M.F. Conductance - Lenz's Law- transformers -types,
   (ii) Thermionic valves,
   (iii) Semi - conductors - types Transistors,
   (iv) Electronic circuits –oscillators' - pulse generators,
3. E.M. spectrum - Laws of transmission reflection - refraction - absorption - attenuation.
4. Cellular Bio-physics - reception & remission of E.M.F. signals.
5. Environmental currents & fields risk factors on prolonged exposure to E.M. field.
6. Production, Physical principles, panel diagram, Testing of apparatus - S.W.D. Ultra sound, U.V.R., I.F.T. - Beat. frequency currents, I.R. LASER (no panel diagram).
7. Therapeutic continuous / interrupted Direct currents & their various wave forms, AC. Current.
8. Bio-physics of Superficial heat & cold - Physiological effects -Therapeutic effects / uses.
9. Merits / demerits, lndications / contra-indications-skills of application Home remedies,
   (i) Paraffin wax bath,
   (ii) Whirl pool,
   (iii) Contrast bath,
   (iv) Hydro-collator hot packs / cold, packs,
   (v) Cryo therapy,

Text Books:
1. *Clayton's Electro Therapy* - 3rd & 10th ed.
2. Low & Read, *Electro Therapy Explained.*
3. Kahn, *Electro Therapy*.
4. Subhash Khatri C, *Basics of Electrotherapy.*
5. Jagmohan Singh, *Electrotherapy*.
6. Goel's Physiotherapy *Vol.1,2 & 3*.

Reference Book:
1. Nelson & Currier, *Clinical Electro Therapy.*

Year I
FOUNDATION ENGLISH

Course Code: BPT107

(Common with BML106/BRT106/COT105)

L	T	P	C
2	2	0	3

Unit I

Functional Grammar: Patterns & Parts of speech Subject, Predicate, Noun, Pronoun, Adjective, Adverb, Verb, Verb phrases, Conjunction, Interjection. Articles, Preposition, Tenses: functions, Synthesis, Transformation, Spotting errors and correction of sentences.

(12 Hours)

Unit II

Vocabulary: Word formation, Prefix, Suffix, compound words, conversion, Synonyms, Antonyms, Homophones and Homonyms, How to look up a dictionary, The Language of Doctor and Patient, General description and Medical description, Medical abbreviations, Terminology used in Medical Lab Technology etc. **(12 Hours)**

Unit III

Communication: Meaning & importance of communication, elements of human communication, Barriers to effective communication, channels of communication, Language as a tool of communication, 7C's of Communication, Tips for effective communication.

(12 Hours)

Unit IV

Requisites of Sentence writing: Fragmented sentences, a good sentence, expletives, garbled sentences, rambling sentences, loaded sentences, Parallel Comparison, Series, Squinting construction, Loose & periodic sentences, Dangling participles, ellipsis. **(12 Hours)**

Unit V

Requisites of Paragraph writing: Structure of Paragraph, Coherence & Unity, Development of paragraph, Inductive order, Deductive order, spatial order, Linear, chronological orders, expository writing, and Argumentative writing, Factual description of objects, process, experiments.

(12 Hours)

Recommended Books:

1. Wren & Martin, *High School English Grammar & Composition* – S. Chand & Co. Delhi.
2. Lewis Norman, *Word Power Made Easy* – W.R. Goyal Publication & Distributors, Delhi.
3. Raman Meenakshi & Sharma Sangeeta, *Technical Communication-Principles & Practice* – O.U.P. New Delhi. 2007.
4. Medical Lab Technology Terminology.

NOTE:

This syllabus has been designed to improve the oral and written communication skills of students. The faculty members should put emphasis on practical (oral) activities for generating students' interest in language learning.

*** Latest editions of all the suggested books are recommended.**

Year-I

HUMAN ANATOMY (PRACTICAL)

Course Code: BPT151 **L-0 T-0 P-3 C-2**

Course Contents:

- Identification and description of all anatomical structures with help of models, charts, CD ROMs etc.
- Surface making of lung pleura fissures and lobes of lungs heart abdominal viscera and important nerves and blood vessels.
- Demonstration of movements of important joints.
- Identification of body prominences on inspection and palpation in the body especially of extremities.
- Points of palpation of Nerves & Arteries.

Year-I
HUMAN PHYSIOLOGY (PRACTICAL)

Course Code: BPT152 **L-0 T-0 P-3 C-2**

Course Contents

- Haematology – (demonstration only).
- Graphs of:
  i. Skeletal muscle – properties – pre/ after load – fatigue – Starling's low.
  ii. Cardiac muscle – properties – effect of Ach & Adrenaline.
- Physical fitness.
- Breath holding.
- Mercury column test;
- Cardiac efficiency test- Hal lad step test- master step test.
- Blood pressure – effects of change in posture & exercise.
- Stethography.
- Effect of deglutination.
- Voluntary hyperventilation.
- Spirometry .
- Lung volumes.
- Timed vital capacity.
- Bicycle ergography.
- Perimetry.
- Clinical examination.
- (Respiratory, cardio-vascular system / higher functions / memory / time / orientation / reflexes / motor & sensory system).

Year-I
BIOCHEMISTRY (PRACTICAL)

Course Code: BPT153 **L-0 T-0 P-2 C-1**

Course Contents:

- Qualitative estimation.
- Test for carbohydrate.
- Test for protein.
- Different constituents of normal and abnormal urine.
- Qualitative estimation of :
    - Glucose
    - Urea
    - Bilirubin
    - Cholesterol
    - Total protein A/G ratio
    - Demonstration of SGOT, SGPT, GTT.

Year-I
FUNDAMENTALS OF EXERCISE THERAPY (PRACTICAL)

Course Code: BPT154 **L-0 T-0 P-3 C-2**

Course Contents:

Based on Course Code BPT105

(Skills included at Sl. No. 1 to 16 in Course Code BPT105 to be practiced on self and/or models.)

Yoga, Definition, Rules and Regulation for practice of yogic methods. Procedures, Advantage and Physiological effects of some yogic postures. Surya Namaskar, spinal extension exercise, spinal flexion exercises, Abdominal exercise, stretching & balancing exercise. Relaxation technique- yog nidra, shavsan, quick relaxation, Deep Relaxation.

Demonstration of Asanas and its therapeutic use in the physiotherapy in brief:
Group A

- Padahastasana Padmagusthanasana
- Padmasana
- Bhujangasana
- Paschimottanasana

Group B.

- Savasana

Group C.

- Dhanurasana
- Yogamudrasana
- Uttanpadasana
- Vajrasana
- Setu bandhasana
- Gomukhasana
- Pavan muktasana
- Sarvangasana
- Naukasana
- Yog nidra

1. A Comparative study of breathing exercises with pranayam.
2. Preventive and therapeutic benefits of yoga and physiotherapy.
3. Rationale of yoga and physiotherapy.
4. Yoga as applied to physiotherapy.
5. Goniometry practicals.

Year-I
FUNDAMENTALS OF ELECTRO THERAPY (PRACTICAL)

Course Code: BPT155 **L-0 T-0 P-3 C-2**

Course Contents:

1. Panel diagrams - Identification of components - Testing the mains supply & Machines.
2. Skills of application of thermal agents.

Year-I
SEMINAR

Course Code: BPT156 **L-0 S-2 P-0 C-2**

Seminar includes case presentation and Literature review

Clinical / Case Presentation would include observation, Clinical history taking, & technical assistance to the senior clinical staff of the Therapeutic Gymnasium (fundaments of exercise therapy) & Electro Therapy sections at the O.P.D set up.

The student should maintain a journal / file in which the assessment chart & documentation of minimum 15 case histories to be included per assignment. The student would get all the documents duly signed by the section In-Charge and Principal with his/her assessment remarks at the end of each assignment.

Year-I
SUPERVISED CLINICAL TRAINING

Course Code: BPT157 **L-0 T-0 P-3 C-2**

1. Supervised clinical practice and Project.

   Each clinical assignment shall consist of indoor & outdoor section.

2. Project during each of the assignments, the candidate, shall conduct retrospective case studies on minimum 5 samples. He/she shall maintain a separate File/journal for each subject & keep all the records of the clinical assignment & ward exam/seminar etc. in the respective file. However the records of the Project work carried out during the assignments shall be maintained in the file titled as "PROJECT FILE" The candidate shall get the clinical & project work duly verified with the signature from the section In-Charge and Principal at the end each assignment.

II Year
ELECTROTHERAPY & ACTINOTHERAPY

Course Code: BPT201 **L-3 T-0 P-0 C-3**

Course Contents:

1. Low frequency currents.
   a. Cathodal /Anodal Galvanism, Iontophoresis - with various ions & pharmacotherapeutics drugs
   b. Electrical stimulation for re-education - short / long pulse motor points.
   c. Strong surged faradic current under pressure / elevation, T.N.S. types
   d. High voltage currents
   e. Micro -current
   f. Dynamic currents
2. Medium frequency currents - Beat frequency – types, advantage of I.F.T. over low frequency currents.
3. Bio-Feedback methods
4. High frequency thermal agents - S.W.D. types continuous / Pulsed - types of electrodes.
5. Therapeutic Ultra sound pulsed / continuous
6. Actinotherapy
   a. Radiant heat [I.R]
   b. U.V.R. *a / b / c* types - Test dose, local & general application
   c. Laser He / Ne, & I.R. combination.
7. Care of wound - application of Therapeutic currents, Ultrasound, U.V.R. & LASER
8. Electromyography (EMG)
9. Nerve conduction velocity.
10. S.D curve and other diagnostic methodology.
11. Cryotherapy.
12. Micro currents and electro acupuncture.
13. Long wave Therapy.
14. Combination Therapy.

Text book:

1. *Clayton's Electro Therapy*
2. Low & Read, *Electro therapy Explained*
3. Kahn, *Electro Therapy*
4. Sydney Litch, *Therapeutic Electricity*

Reference Book:

1. Nelson & Currier, *Clinical Electro Therapy*

II Year
EXERCISE THERAPY

Course Code: BPT202 **L-3 T-0 P-0 C-3**
Course Contents:

1. Hydrostatics and hydrodynamics:

a. Archimedes principles.
b. Properties of water, properties of liquid and pressure.
c. Buoyancy, law of floatation.
d. Apparent loss in weight, factors determining up thrust, effects of buoyancy and movement performed on water.
e. Movement of force, further effects of apparent loss of weight, equilibrium, floating body, movement of water, inertia, movement of objects in water.

2. Types of muscle work: isotonic (concentric, eccentric), isometric (static).

a. Functional terminologies of muscle contraction: agonist, antagonist, synergists, fixators.

3. Pelvic Tilt:

a. Normal pelvic tilt, alteration from normal, anterior tilt, posterior tilt, lateral tilt.
b. Muscles responsible for alteration and pelvic rotation.
C. Identification of normal pelvic tilt, pelvic rotation and altered pelvic tilt and their corrective measures

4. Movement:

Explain the following terms with example:

1. Anatomic movements: flexion,extention,abduction,inversion,eversion,supination,pronation, Internal rotation, external rotation, gross flexion, gross extension, trunk side flexion.
2. Surface anatomy of the individual joint.
3. Rhythm of movement.
4. Timing of movement.
5. Duration of movement.
6. Classification of movement: Active, Passive.
7. Effects of exercise: Physiological effects, therapeutics effects.
8. Indication and contraindications of the following and demonstrate the technique.
   Active movements: Voluntary (free, active, assisted, -resisted, resisted), involuntary (associated reflex, peristaltic/visceral, cardiac).
   Passive movement: relax passive movements, mobilization, passive stretching.

5. Passive Stretching:

Demonstrate passive stretching of followings. Muscles or muscle groups and describe the indications, contraindications, physiological effects, advantages and disadvantages of following:
Upper limb: pectoralis major, biceps, triceps, long flexors of fingers.
Lower limb: rectus femoris, ilio tibial band (tensor fascia lata), gastrocnemius, soleus, hamstring, hip adductor, iliopsoas, neck: sternocleidomastoid.

6. Active Movements:

1. Describe the various techniques, types, indication, contraindications, physiological effects advantages and disadvantages and demonstrate the progressive resisted exercise in progression for the muscle groups of whole body.
2. Demonstrate practically each system using: delorms method, dumbels, sandbags, pulley, and power board and suspension therapy.

7. Muscle Grading:

Describe the types of muscle grading. Key to muscle grading, techniques of muscle testing (easy, hard and functional test)

8. Re-education of Muscle:

1. Describe the following in re-education of muscles: The term re-education of muscle, technique, spatial summation, temporal summation.
2. Demonstrate the various re-education techniques and facilitation method of various groups of muscle.
3. Demonstrate the progressive exercises in strengthening using various actions (grade 1-grade 5)

9. Joint Mobility:

1. Joint ranges (outer, middle, inner ranges): individual joint structure, joint movements (anatomic, accessory).Causes of joints range limitation, prevention of joint stiffness.
2. Passive range of movement, methods of relaxation, active exercises manual mobilization technique.
3. Pain relieving modalities: moist heat, infra red, ultrasound, SWD, MWD.
4. Forced passive movements: small and large amplitudes.
5. Muscle strengthening techniques (PNF): hold relax, slow reversal, rhythmic stabilization, repeated contractions.
6. Accessory movements: posterior glide, anterior glide, superior and inferior glide traction and approximation
7. Indications and contraindications-indication for mobilization of individual joints, demonstrate practically the various mobilization techniques for individual Joints and teaching home programme.

10. Description of Abnormal Gait.

11. Description of Posture.

12. Massage

1. History of Massage
2. Techniques, Indications and Contraindications.
   - A. Manipulations
   - B. Time of Treatment
   - C. Comfort and Support of the Patient
   - D. Position of Operator
   - E. Using Body Weight
   - F. Contact and Continuity
3. Physiological Effects of Massage on Various Body System, Effects on Excretory System, Circulatory, Muscular, Nervous, Metabolic System.

4. Define and Describe the Various Manipulations Techniques Used in Massage:
   A. Stroking: Effleurage
   B. Pressure Manipulations: Kneading, Squeezing, Reinforced Kneading, Finger Kneading, Petri sage, Picking up, Wringing, Rolling, Frictions
   C. Percussions: Tapotement, Hacking, Clapping, Beating &Pounding.
   D. Shaking & Vibration.

5. Define and Describe the Technique, Effects, Uses and Contraindications of above mentioned manipulations.
   A. Types of massage on upper limb, its effects, indications and contraindication's
   B. Types of massage on lower limb, its effects, indications and contraindication's
   C. Types of massage for back, its effects, indications and contraindication's
   D. Types of massage for face, its effects, indications and contraindication's

Text Books:

1. Kisner and Colby. F.A. Davis, *Therapeutic Exercises Foundations and Techniques*
2. Williams and Wilkins, *Therapeutic Exercise,* Basmajian.
3. Hollis, *Practical Exercise Therapy,* Blackwell Scientific Publications.
4. Gardiner, *Principle of Exercise Therapy*, C.B.S. Delhi.
5. Norkins & White F.A. Davis, *Measurement of Joint Motion: A Guide to Goniometry*
6. Williams and Wilkins, Voss et al,. *Proprioceptive Neuromuscular Facilitation*
7. Wood - W.B. Saunders, *Beard's Massage*.
8. A.G. Sinha, *Massage for Physiotherapist*

Reference Books:

1. Motor Control: Theory and Practical Applications Shumway - Cook & Wallcott – Lippincott
2. Hydrotherapy, Principles and Practices - Campion - Butterworth Heinmann.
3. Muscle testing and functions - Kendall - Williams & Wilkins.
4. Daniels and Worthingham's - Muscle testing - Hislop & Montgomery - W.B. Saunder.
5. Manipulation and Mobilizations extremities and spinal techniques- Edmond- Mosby.
6. Aquatic Exercise Therapy- Bates and Hanson – W.B. Saunders.
7. Manual examination and treatment of spine and extremities- Wadsworth- Lippincott
8. Massage for therapist: MARGARETT HOLLIS

II Year
BIO-MECHANICS & KINESIOLOGY

Course Code: BPT203 **L-4 T-0 P-0 C-4**

Course Contents:

1. Biomechanics of joints of the skeletal system [spine, extremities, T.M. joint & Thoracic cage]
2. Kinetics & Kinematics of various activities of daily living e.g. supine to sitting to standing, squatting, climbing up & down, lifting, pulling, pushing, overhead activities, walking running, jogging.
3.
    a. Assessment of muscle strength, [group/individual] subjective & objective methods 1/10 RM dynamometry
    b. Factors that influence the strength of the normal muscle/hypertrophy,
    c. Recruitment of motor units, change after training / type of contraction Isometric /Isotonic / Isokinetic / Eccentric.
    d. General principles of strength training: overload intensity Motivation learning duration frequency reversibility specificity
4.
    a. Bio-physical properties of connective tissue, [contractile & non-contractile] elasticity/ Plasticity - response to sudden/ slow sustained loading-strain curve- Creep - Hysteresis
    b. Mobilization - Methods - stretching / traction [cervical & lumber] / Hold - Relax method rhythmic movements / oscillations.
    c. Mobilization of muscles & Fasciae-around the shoulder / elbow/wrist /Hip/knee/ankle/ Spine [dorso-lumbar fascia]
5. Methods of Assessment of the Posture - Sitting / standing/Lying/Physiological deviations of the posture
6. Methods of assessment of Gait-measurements for walking aids - axillaries / elbow· crutches, walking sticks - Pre-crutch training, crutch gaits.
7. Co-ordination & Balance - neural control - Methods of co-ordination exercises Frankel's exercises.
8. Principle of P.N.F. [no practical]
9. Breathing exercises - Goals - Inspiratory - Expiratory / Segmental - Forced expiratory coughing - huffing / Modified Inspiratory / Active cycle of breathing.
10. Bronchial Hygiene - postural drainage position/ humidification
11. Principles of Home programme & Ergonomic advise
12. Functional Re-education
    a. Functional motor skills, e-Motor skills to function independently in ADL
    b. Mobility, Bed / Wheel chair mobility, ambulation
13. Application of mat exercises [to practice on self & on models]
14. 6 Minute walk test - on models (only technique)

Text book:

1. *Progressive resisted exercises* - by Margaret Hollis,'
2. *Therapeutic Exercise* by Carolyn Kisner
3. *Kinesiology* by Cynthia Norkins
4. *PNF* - Knott and Voss

Reference Books:

1. *Therapeutic exercise* by Basmijjan & Wolf.
2. *Muscle testing* by Daniel Kendall
3. *Clinical evaluation* - Lacote (for Isolated assessment of abdominal muscles)
4. *Muscle stretching & Auto stretching* - Olaf Evjenth
5. *Orthopedic Evaluation* - Magee (only for assessment of posture)

II Year
PATHOLOGY & MICROBIOLOGY

Course Code: BPT204 **L-2 T-0 P-0 C-2**

Course Contents:

1.
   a. General Pathology- Cell injury-causes, mechanism & toxic injuries with special reference to Physical, Chemical, & ionizing radiation
   b. Reversible injury (degeneration)- types-morphology,- swelling, hyaline, fatty changes,
   c. Intra-cellular accumulation-hyaline mucin,
   d. Irreversible cell injury-types of necrosis- apoptosis - calcification- dystrophic & metastasis,
   e. Extra-cellular accumulation-amyloidosis, calcification-Pathogenesis- morphology

2. Inflammation & Repair
   a. Acute inflammation - features, causes, vascular & cellular events,
   b. Morphologic variations,
   c. Inflammatory cells & mediators,
   d. Chronic inflammation:- causes, types, non-specific & granulomatous - with examples
   e. Wound healing by primary & secondary union factors promoting & delaying healing process.
   f. Healing at various sites- including-bones, nerve & muscle
   g. Regeneration & repair

3. Immuno - pathology (basic concepts)
   a. Immune system:- organization-cells- antibodies- regulation of immune responses,
   b. Hyper-sensitivity,
   c. Secondary immuno-deficiency including HIV,
   d. Organ transplantation

4. Circulatory disturbances
   a. Edema - pathogenesis - types - transudates /exudates,
   b. Chronic venous congestion- lung, liver, spleen,
   c. Thrombosis - formation - fate -:- effects,
   d. Embolism - types- clinical effects.
   e. Infarction - types - common sites
   f. Gangrenes - types – aetiopathogenesis
   g. Shock - Pathogenesis, types, morphological changes
5. Deficiency disorders - Vitamins A, B, C, D.
6. Growth Disturbance
   a. Atrophy-malformation, agenesis, dysplasia,
   b. Neoplasia classification, histogenesis, biologic behaviour, difference between benign & malignant tumour
   c. Malignant neoplasms- grades-stages-local & distal spread,
   d. Carcinogenesis - environmental carcinogens
   e. Chemical, Occupational, heredity, viral
   f. precancerous lesions & ca in situ
   g. Tumor & host interactions - systemic effects-metastatic or direct spread of tumors affecting bones, spinal cord, leading to paraplegia, etc.

7. Medical Genetics - (In Brief)

8. Specific Pathology:
   A. CVS

a. Atherosclerosis - Ischemic heart diseases - myocardial infarction Pathogenesis / Pathology
b. Hypertension
c. C.C.F.
d. Peripheral vascular diseases

B. Respiratory

a. COPD,
b. Pneumonia (lobar, bronco, viral),
c. T. B. Primary, secondary - morphologic types,
d. Pleurisies complications.
e. Lung collapse - atelectasis

C. Neuro Pathology

a. Reaction of nervous tissue to injury - infection & ischemia
b. Pyogenic meningitis, TBM, Viral,
c. Cerebrovascular diseases - atherosclerosis - Thrombosis, embolism, aneurysm, hypoxia, infarction & hemorrhage.
d. Effects of Hypotension on CNS
e. Coma
f. Polio myelitis- Leprosy- Demyelinating diseases - Parkinsonism'- Cerebral palsy- metachromatic leucodystrophy - Dementia - Hemiplegia *I* paraplegia -. Pathogenesis & pathology of Wilson's disease
g. SOL- (in brief)
h. Peripheral nerve injury

9. Muscle diseases - Muscular dystrophy-hypertrophy-Pseudo-hypertrophy-atrophy Polio-myelitis Myositis ossificance, necrosis. Regeneration-Myotonia.
10. Neuro - muscular junction - Myasthenia gravis - Myasthenic syndrome.
11. Bone & Joints - a)fracture healing - Osteomyelitis - rickets – Osteomalacia, Bone tumors Osteoporosis Spondylosis, P.I.D- Scoliosis - Haemarthrosis - Gout - T.B.
    a. Arthritis - degenerative - inflammatory - RA-Ankylosing spondylitis, Tenosynovitis.
12. Urinary - commonly encountered in paralytic bladder, common urinary tract infections (brief) - urinary calculi.
13. G.1. System- Gastric/ duodenal ulcer, enteric fever, TB, enteritis, Gastritis (related to consumption of NSAID)
14. Endocrine - Hyperthyroidism - Diabetes
15. Hepatic diseases - Cirrhosis - emphasis to systemic effects of portal hypertension.
16. Skin-Melanin pigment disorders - Vitiligo - Taenia versicolor-Psoriasis, Bacterial/fungal infections - cutaneous TB, Soleroderma. SLE, Leprosy Alopacia.
17. Clinical pathology - (including Demonstrations)
    a. Anemia - (deficiency) - T.L.C./ DL.C./ Eosinophilia, E.S.R., C.P.K,
    b. Muscle / skin / nerve biopsy
    c. Microscopic appearance of muscle necrosis- fatty infiltration
    d. Lab investigation in liver & renal failure

Text Books:

1. Harsh Mohan, *Text Book of Pathology*
2. Cotran, Kumar, Hobbins, *Pathologic Basis of Disease*
3. Bhende, *General Pathology*

MICROBIOLOGY

Course Contents:

1. General Microbiology- Introduction & scope
2. Classification of Micro-organisms & morphology of Bacteria
3. Sterilization & disinfection [basic concepts] hospital acquired infection, universal safety precautions, waste disposal
4. Immunology
    b. Antigen antibody - reaction & application for diagnosis;
    c. Immune response - normal/abnormal
    d. Innate immunity & acquired immunity [vaccination]
    e. Hyper - sensitivity & auto-immunity
5. Laboratory Diagnosis of Infection
6. Bacteriology
    a. Infection caused by gram +ve cocci; Gas gangrene - clostridium - Diptheria
    b. Infection caused by gram –ve cocci, Septicemia-cholera - Shock Typhoid diarrhoea
    c. Mycobacterial infection tuberculosis: Leprosy-Atypical Mycobacterium
    d. syphilis - morphology & pathogenesis [VDRL]
7. Viruses
    a. Introduction & general properties,
    b. HIV
    c. Hepatitis
    d. Polio, measles, congenital viral infections, Rubella, CMV Herpes
8. Mycology
9. Parasites affecting C. N. S.
10. Malaria - Filaria - Toxoplasma – Cystiscercosis
11. Applied Microbiology as relevant to diseases involving Bones, Joints - Nerves - Muscles-Skin - brain-cardiopulmonary system & burns.

Text Book:

1. *Text Book of Microbiology* - by R. Ananthnarayan & C.K. Jayram Panikar

II Year
PHARMACOLOGY

Course Code: BPT205 **L-2 T-0 P-0 C-2**

Course Contents:

Unit-I

1. Definition of Pharmacology.
2. Scope of Pharmacology in Physiotherapy.
3. Dosage forms and models of drug administration.
4. Processes of drug absorption.
5. Biotransformation of drugs & factors affecting drug metabolism.

Unit-II

1. Elementary knowledge of drug toxicity & drug allergy, Drug resistance.
2. Pharmacodynamics-mechanism of drug action and factor effecting drug action.
3. Elementary concept of drug –response relationships.
4. Drug potency and efficacy.
5. Drug-antagonism.

Unit-III

Basic pharmacology and physiotherapeutic role of following pharmacodynamics agents- General and local anaesthetics, anxiolytics, anti-convulsants, sedatives, anti-histaminic agents, anti-inflammatory analgesics agents, neuro muscular blockers and muscle relaxants.

Unit-IV

Classifications of drugs used in various system and indications, pharmacological effects and side effects of some common groups of Drugs.

Unit-V

1. General- Pharmacology Drug Pharmco-kinetics - Pharmacology - adverse reaction - factors modifying drug effect
2. Drug activity of CNS
   Introduction [1 hr] alcohols + Sedatives & hypnotics, Anti-convulsions
   Analgesics & antipyretics - especially Gout & R.A. Psycho Therapeutics
   General anesthetic + local anesthetic
3. Drugs acting on peripheral nervous system
   a. Adrenergic
   b. Cholinergic
4. Drug therapy in Parkinsonism
5. Skeletal muscle relaxants
6. Drugs acting on CVS
   a. Hyper tension
   b. B-blockers,
   c. Ca channel ACEI,
   d. Blockers [prazosin]
   Diuretics CCF - Angina Antiarrythmia + Shock, Drug satisfying Homeostasis
7. Drugs acting on Respiratory system for upper respiratory tract infections - sinusitis- cough, laryngitis, pharyngitis.
   For Bronchial asthma - for COPD - effects of prolonged drug administration
8. Insulin & oral anti-diabetic drugs
9. Chemo-therapy
   a. general principles
   b. anti Tuberculosis, &

c. anti -leprosy

10. Other Chemo Therapeutic drugs
    a. Sulfa drugs in urinary tract infection,
    b. Tetracycline
    c. penicillin
    d. cephalosporin,
    e. amino glycosides,
11. Endocrine
    a. introduction, Thyroid & Anti thyroid
    b. Estrogen + Progesterone [1]
    c. steroids- anabolic steroids
12. Drugs in G.I. tract
    a. Peptic ulcer + antiemetic [3hrs]
    b. Diarrhea & constipation
13. Heamatinics, Vitamin B, lron
14. Dermatological Scabies - Psoriasis Local antifungal
15. Vaccines & Sera
16. Vitamin - O, Calcium, Phosphorus, Magnesium

Text Books:

1. *Pharmacology* by Gaddum
2. *Medical Pharmacology* by Drill
3. *Pharmacology principle of Medical practice* - by Krantx, & Carr
4. *Pharmacological basis of Therapeutics* - by Goodman, L.S. Gilman A

II Year
PSYCHOLOGY & SOCIOLOGY

Course Code: BPT206 **L-3 T-0 P-0 C-3**

Course Contents:

1. Learning - Role of learning in human life - Conditioning
2. Emotions- nature & relationship with autonomic nervous system- Theories of emotions
   a. James Lange theory
   b. Schechter Singer theory
   c. Cannon Bard theory
3. Memory - types - Forgetting causes
4. Attention & perception Nature of attention [in brief] Nature of perception Principles of grouping
5. Conflict & Frustration - Types -Common Defense mechanism 'stress-common reactions to frustrations.
6. Abnormal Psychology [in brief]
   a. Introduction
   b. difference between normal & abnormal psychology,
   c. Causes,
   d. Anxiety disorders - Phobias, Obsessive compulsive, Hysterical convulsion disorder
   e. Affective disorders - Depression, mania, Bipolar disorders;
   f. Psychotic disorders - Types of Schizophrenia

Text Books:

1. Morgan C.T. & King R.A. *Introduction to Psychology* – 7th edn. [Tata McGraw-Hill publication]
2. Munn N.L. *Introduction to Psychology* [Premium Oxford, I.B.P. publishing co.]
3. *Clinical Psychology* - By Akolkar

SOCIOLOGY

1. Introduction - Definition & Relevance with Physiotherapy.
2. Sociology & Health - Social factors affecting Health Status, Social Consciousness & Perception of Illness, Decision Making in taking Treatment.
3. Socialization - Definition, Influence, of Social Factors, on Personality, Socialization in the Hospital & Rehabilitation 'of the patients.
4. Social groups-Concepts, Influence of formal & informal groups of Health & Diseases, Role of Primary & Secondary Groups in the Hospital & Rehabilitation Setting.
5. Family-Influence on human personality, Individual Health, Family & Nutrition, Effects of Sickness on Family Psychosomatic Diseases & Family
6. Community Role of Rural & Urban communities in Public Health, Role of community in determining Beliefs, Practices & Home Remedies in Treatment.
7. Culture-Components Impact on Human Behavior Cultural Meaning of Sickness Response to Sickness & Choice of Treatment, [Role of Culture as Social Consciousness in molding the Perception of Reality] ICU induced Symptoms & Diseases, Sub-Culture of Medical Workers
8. Caste systems- Features of Modern Cast Systems & its Trends
9. Social change factors- Human Adaptation, Stress, Deviance, Health Programme Role of Social Planning in the improvement of Health & in Rehabilitation.
10. Social Control - Definition, Role of norms, Folkways, Customs, Morals, Religion, Law & other means of social controls in the regulation of Human Behavior, Social Deviance & Disease.
11. Social problems of the Disabled- Consequences of the following social problems in relation to sickness disability, remedies to prevent these problems

a. Population Explosion
b. Poverty & Unemployment
c. Beggary
d. Juvenile Delinquency
e. Prostitution
f. Alcoholism
g. Problems of Women in Employment

12. Social Security & Social Legislation in relation to the Disabled
13. Role of a Social Worker

Text Books:

1. Sachdeva, & Bhusan- *An Introduction to Sociology,* Kitab Mahal Ltd, Allahabad.
2. Madan, *Indian Social Problems*, Vol- I, Allied publications, Madras

II Year
ELECTROTHERAPY & ACTINOTHERAPY (PRACTICAL)

Course Code: BPT251 **L-0 T-0 P-4 C-2**

Practical

Skills of application to be practiced on models / subjects from Sr. No 1 to 14 as mentioned in syllabus of course code BPT201.

II Year
EXERCISE THERAPY (PRACTICAL)

Course Code: BPT252 **L-0 T-0 P-4 C-2**

Practical

Skills of application to be practiced on models / subjects from Sr. No. 1 to 13 as mentioned in syllabus of course code BPT202

BIO-MECHANICS & KINESIOLOGY (PRACTICAL)

Course Code: BPT253 **L-0 T-0 P-4 C-2**

Practical

Skills of application to be practiced on models / subjects from Sr.No-1 to 14 as mentioned in syllabus of course code BPT 203

SEMINAR

Course Code: BPT254 **L-0 S-2 P-0 C-2**

Course Contents:

Seminar includes case presentation + Literature review
Clinical / Case Presentation should include observation, Clinical History taking, & technical assistance to the senior clinical staff of the Therapeutic Gymnasium (fundaments of exercise therapy) & Electro Therapy sections at the O.P.D set up. The student should maintain a journal / file in which the assessment chart & documentation of minimum 15 case histories to be included per assignments. The student should get all the documents duly signed by the section In-Charge and Principal with his/her assessment remarks at the end of each assignment.

SUPERVISED CLINICAL TRAINING

Course Code: BPT255 **L-0 T-0 P-3 C-2**

Course Contents:

Supervised clinical practice + Project

Each clinical assignment shall consist of cases from indoor & outdoor section.

During each clinical assignment, the student shall functionally diagnose plan & practice Clinical skills on patients in consultation with the experienced senior staff.

Project During each of the 7 assignments, the candidate, shall conduct retrospective case studies on Minimum 5 samples. He/she shall maintain a separate File/journal for each subject & keep all the records of the clinical assignment & ward exam/Seminar etc. in the respective file. However the records of the Project work carried out during the 7 assignments shall be maintained in the file titled as "PROJECT FILE" The candidate shall get the clinical & project work duly verified with the signature from the section In-Charge and Principal at the end each assignment.

- Emphasis on Goniometry/range of motion on the patients/ subjects to be maintained in a separate file.

III Year
SURGERY

Course Code: BPT301 **L-3 T-0 P-0 C-3**
Course Contents:

General Surgery
1. Effect of Anesthesia & surgical trauma, Hemorrhage, Shock, Water & Electrolyte imbalance
2. Inflammation - acute & chronic-signs, symptoms, complications & management
3. Wounds / ulcers - classification, healing process, management
4. Common abdominal surgeries for G.I. tract, Genito-urinary system Scar during surgical approach through abdominal wall. Scar management in brief
5. Radical mastectomy - complications & management
6. Amputation - types, sites, complications & management
7. Burns - causes, complications, classification & management

Neuro Surgery
1. Head Injury - management
2. Intra cranial & Spinal tumors
3. Surgeries of Head & neck, neurosurgical conditions & post operative care

Cardio vascular - thoracic surgery
1. Surgical approach
2. Post operative complications & management in Thoracotomy, Thoracoplasty, Lobectomy, pneumonectomy, Decortication, CABG, Valvular Surgery, Congenital Heart Disease Surgeries, and Surgery for Peripheral Vascular Disease.

E.N.T. Surgery
1. Upper respiratory track surgery & post operative care
2. Tracheostomy - indications. surgical approach & management
3. Surgery for cancer - indications & post operative care
4. Surgical procedures in VIIth nerve palsy
5. Vertigo

Ophthalmic Surgery
1. Surgeries for III. IV & VI cranial nerve palsy

Plastic Surgery
1. Skin grafts & flaps - Types, indications with special emphasis to burns, wounds, ulcers
2. Tendon transfers, with special emphasis to hand, foot & facial paralysis,
3. Keloid & Hypertrophied scar management
4. Reconstructive surgery of peripheral nerves
5. Micro vascular surgery

Orthopedics Surgery

1. Post trauma Pathology, clinical manifestations, healing process in bone & intra articular & extra articular soft tissues.
2. Fractures & dislocations of upper extremity & lower extremity
   a. Classification
   b. Conservative treatment
   c. Surgical intervention :
      (i) Surgical approach
      (ii) soft tissue section / repair

(iii) internal / external fixation / arthroplasty
(iv) post operative complications
(v) post operative management & management of complications.

3. Fractures & dislocations of spine, thoracic cage, shoulder girdle & pelvis
   a. Conservative treatment
   b. Surgical intervention:
      (i) Surgical approach
      (ii) soft tissue section / repair
      (iii) internal / external fixation / arthroplasty
      (iv) post operative complications
      (v) Post operative management & management of complications.
4. Management of Metabolic disorders
   a. Osteoporosis
   b. Osteomalacia
5. Brachial Plexus / Lumbo Sacral Plexus & Peripheral nerve injuries - sites, management
6. Deformities of the spine - scoliosis kyphosis
7. Deformities of extremities like Varus *I* Valgus, Torsion, Deformities of hands & feet
8. Congenital Malformation Spina Bifida, Meningocoele meningomyocele
9. Vascular Disorders like Avasular Necrosis, Perthe's Disease, Compartmental Syndrome
10. Reconstructive surgery for bone lengthening
11. Reconstructive surgery in Polio & Cerebral Palsy
12. Inflammatory / Infectious diseases of the bone & joints e.g. T.B, Osteomyelitis
13. Tumors of bone & their management
14. Surgical intervention for Arthritis like O.A., RA, Ankylosing Spondylitis
15. Reconstructive surgery in soft tissue lesions of Shoulder, Knee & Ankle
16. Aetiology of Back Pain & surgical management
17. Common Sports injuries *I* overuse injuries & management
18. Traumatic Amputation & management.
19. Hand injury & management
20. X-rays of extremities & spine

Obstetrics & Gynecology

1. Physiology of Puberty & Menstruation, Abnormalities & common problems of Menstruation
2. Pregnancy - Fertilization, Development of the foetus, Normal gestations, Abnormal *I* Multiple gestations, Common Complications during pregnancy like P I H, Eclampsia Diabetes, Hepatitis, German Measels, TORCH infection.
3. Labour
   a. Normal - Events of 1st IInd & III rd Stages of labour
   b. Complications during labour & management
   c. Caesarian section
4. Post Natal - Purperium, lactation, Methods of Contraception complications of repeated child bearing with small gaps.
5. Sterility management
6. Methods of family planning
7. Uro genital dysfunction
   a. Uterine prolapse - classification & management (Conservative *I* Surgical)
8. Neoplasm of Female reproductive organs - surgical management
9. Pre, Peri & Post Menopause - Physiology, Complications & management
   Pelvic Inflammatory Diseases with special emphasis to backache due to Gynae / Obstetric conditions.

Observation

1. At least 2 surgeries of internal fixation, one knee/hip replacement & Reconstructive surgery of the tendons.
2. One abdominal & one thoracic surgery & one surgery of skin graft / flap.

Text Books:

1. *Adam's* outline of fractures - 8th edition
2. *Adams* outline of Orthopaedics - 8th edition
3. *Apley's* textbook of Orthopaedics
4. *Ebnezar's* Textbook of Orthopedic with Clinical Exam methods in Orthopedics
5. *Mohanty's* Managing Common Musculoskeletal Conditions by Physiotherapy and Yoga
6. *Kochar's* Principles and Practice of Trauma Care
7. *Ebnezar's* Essentials of Orthopedics for Physiotherapists
8. *Dutta,* Text book of Gynecology, New Central Book Agency
9. *Dutta* Text book of Obstetrics, New Central Book Agency

Reference Book:

1. Nan Bailey & Love's, *Short Practice of Under Graduate Surgery,* 21st edition

III Year
MEDICINE

Course Code: BPT302 **L-3 T-0 P-0 C-3**
Course Contents:

B. Neurology

1. Circulation of the brain & spinal cord
2. Cerebra - vascular accidents - Thrombosis, Embolism, Hemorrhage
3. Stroke - Level of Lesion & Management
4. Extra Pyramidal lesions - Basal Ganglia
   a. Parkinsonism
   b. Athetosis, Chorea, Dystonia & Spasmodic Torticollis
5. Polyneuropathy
   a. G B Syndrome
   b. Diabetic, Alcoholic & SACD
6. Disorders & Diseases of muscle
   a. Myopathy - Types
   b. Muscular Dystrophy – Types
   c. Inflammatory Disorders - Polymyositis & Dermatomyositis
   d. Myotonia
7. Disorders of Anterior Horn Cell
   a. Motor Neuron Disease
   b. SMA, Syringomyelia, Peroneal Muscular Atrophy, Polio
8. Multiple Sclerosis
9. Infections of the nervous system like Encephalitis, Neurosyphilis, H I V infection, Herpes, Meningitis, Transverse Myelitis, Tabes Dorsalis & T.B. Spine.
10. Epilepsy
11. Tetanus
12. Alzheimer's Disease
13. Disorders of cerebellar function
14. Disorders of cranial nerves & Special Senses
15. Disorders of Myoneural Junction - Myasthenia Gravis & Myasthenic Syndrome
16. Dysfunction of Autonomous Nervous System, Spinal Cord Lesions
17. Neurogenic Bladder
18. Cerebro Spinal Fluid
    a. Formation & Absorption
    b. Status in Various Disorders
19. Sexually transmitted diseases

C. General Medicine

1. Disorders of Endocrine system
   a. Diabetes
   b. Thyroid, Pituitary & Adrenal conditions
   c. Calcium Metabolism

2. Rheumatological Conditions
   a. Rheumatoid Arthritis
   b. Systemic Lupus Erythmatosus
   c. Seronegative Spondylo Arthopathy
   d. Gout
   e. Polymyositis

3. Geriatric Conditions

a. Aging Process
b. Osteoporosis
c. General Health Care, Wellness Clinic
d. Hypertension

1. Nutrition Deficiency Disease
2. Drug Abuse I Intoxication

Pediatrics

1. Normal intra-uterine development of foetus
2. Normal development & growth
3. Immunization, Handling of the child, Significance of breast-feeding
4. Common causes for Developmental disorders like Sepsis, Prematurity, Asphyxia & Brain damage-Cerebral Palsy-types & Medical Management
5. Spinal Cord Disorders like Poliomyelitis, Spina Bifida, Meningocele, Myelomeningocele.
6. Common infections
   a. C.N.S. & peripheral nervous system
   b. typhoid, rubella, mumps, measles, tetanus, diphtheria, chicken pox, hepatitis
7. Epilepsy
8. Mental Retardation
9. Genetically transmitted neuro-muscular conditions.
10. Malnutrition related condition.
11. Juvenile R A & other immunological conditions of Musculoskeletal system
12. Common diseases of the respiratory system like Asthma, Bronchitis, T.B. & Pneumonia & bronchictasis.
13. Rheumatic & Congenital heart disease

Text Book:

1. O.P. Ghai, *Essentials of Paediatrics*, Inter Print publications
2. *D.K. Series in Paediatrics*
3. API- Text Book of Medicine - 5th edn
4. Golwalla*, Medicine for Students*
5. Davidson, Principles & Practice of Medicine, 6th Ed.
6. Mukherjee*, Growth and Development*
7. Banga, *Child Development and Developmental Diagnosis*
8. *Brain's Disorders of Nervous System*
9. Herman Kabat*, Proprioceptive Neuro Muscular Facilitation*

III Year
CARDIOTHORACIC CONDITIONS
(INCLUDING PULMONARY CONDITIONS)

Course Code: BPT303 **L-2 T-0 P-0 C-2**
Course Contents:

1. **Cardio-vascular diseases**
   a. Hypertension - systemic
   b. I.H.D. -Myocardial infarction
   c. Arrhythmia - classification
   d. Valvular Heart Disease - i) Congenital ii) Acquired e) Rheumatic Fever
   e. Congenital Heart Disease
   f. Infective Endo Cordites
   g. Geriatric Cardio Vascular Problems & management
   h. ECG - Normal & Variations due to ischemia & infarction

2. **Diseases of the respiratory system**
   a. Common Infectious diseases like Tuberculosis Pneumonia, Lung Abscess, Bronchiectasis
   b. Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydropneumothorax, Empyema
   c. Occupational lung diseases like Silicosis Asbestosis, Pneumoconiosis, Brucellosis, Farmer's
   d. Obstructive Lung Diseases like Bronchitis, Emphysema, Bronchial Asthma, 'Cystic Fibrosis
   e. Interstitial Lung Diseases
   f. Geriatric respiratory problems & management
   g. Intensive Medical Unit - Infrastructure & Treatment
   h. Introduction of clinical examination - Breath sounds / X ray chest / Blood gas analysis / P.F.T.

Text Book:

1. *Madhuri* – Textbook of physiotherapy for Cardiorespiratory cardiac surgery and Thoracic surgery conditions
2. *Hough* – Physiotherapy in Respiratory Care
3. *P.A Downie* - Cash's Textbook of heart, chest & vascular disease for physiotherapist

III Year
COMMUNITY HEALTH & BIO-STATISTICS

Course Code: BPT304 **L-3 T-0 P-0 C-3**

Course Contents:

Community Health

1. General concepts & Determinants of Health & Diseases - National & International. Definition of Health, Role of Socio-Economic & Cultural Environment in Health & Disease
   a. Epidemiology - Definition & Scope
   b. Environmental Hygiene including man & his surrounding, Occupational & Industrial hygiene, Village & Town Sanitation, Bacteriology of Water, Milk, & Food Hygiene [Overview]
2. Overview of Public Health Administration at Central & State levels - Strategies of Health Delivery System for "The Health for All" National health programme [brief Role of WHO]
3. Socio-Economical & Cultural Issues related to Morbidity owing to the Physical Disability & Handicaps of Structural / Neuro-motor & Psycho-somatic origin:
   a. Health problem vulnerable groups
      (i) Pregnant & lactating women, Pelvic floor Dysfunction, Urinary incontinence,
      (ii) Pre-term babies with high risk, Infants & Pre-School Children-Brain Damage, during birth injury, Congenital & Acquired structural Deformities, T.B. Meningitis, Polio, Cerebral palsy, Other Hereditary Neuro-motor Conditions, such as Myopathies & Muscular Dystrophies, Malnutrition - Rickets.
      (iii) Occupational Diseases & Hazards - Definition, Scope, Accident prevention, Hand Injuries, Amputations, Disc Lesions Head Injuries, Backaches, Respiratory Illnesses due to exposure to asbestoses, tobacco, fumes, COPD, Asthma, Stress.
   b. Traumatic *I* Paralytic morbidity, Head Injury, Quadric / paraplegia, Urinary/Bowel Incontinence, Amputation, Skeletal Deformities due to multiple Fractures & Prolonged Bed Rest & Mental Retardation.
   c. Nutritional - Osteomalacia, Rickets, Neuropathies due to Vitamin- deficiency, Skeletal Deformities
   d. Auto-immune & Hereditary diseases- Rheumatoid arthritis, S.L.E. Sero¯ve arthritis, Ankylosing Spondylitis, Multiple Sclerosis, Spinal Muscular Atrophies & Myopathies, Dystrophies in adults.
   e. Geriatric-Osteoporosis, Malnutrition, Alzheimer's disease, Parkinsons, Ataxia, CHD, Hypertension.
   f. Addiction - Alcoholic - Neuromotor & Psychosomatic disorders, Smoking, asthma, COPD,
4. Family planning - objectives of National Family Planning Programmes & Family Methods General Idea of Advantage & Disadvantage of the Methods.
5. Mental health -socio-economical & cultural aspect,
6. Communicable diseases-an over-view [including prevention & control] TB, HIV Leprosy, & Other conditions leading to Paralysis & Arthritis, Respiratory diseases causing Bronchiectesis COPD.
7. Immunization programmes - children & hospital staff

Dermatology

1. Introduction to Dermatology, basic skin lesions & History taking
2. Skin infections (Part I) - Scabies / Pediculosis / Bacterial infections
3. Skin infection (Part II) viral/Fungal/Cutaneous T.B.
4. Psoriasis / Sebaceous Dermatitis / Atopic Dermatitis / Hand eczemas (Psoriasis & Eczema)

5. Pigmentary Disorders (Vitiligo, Melasma) & Drug Reactions (Urticaria, Fixed Drug Eruption, Maculo Papular Drug Rash, Erythema Multiform minor, Steven Johnson Syndrome, Toxic Epidermal Necrolysis)
6. Leprosy & Deformity
7. Autoimmune Disorders (Scleroderma, Systemic Lupus Erythematosus. Dermatomyositis)
8. Acne & treatment of Acne (Including cosmetic & Dermatosurgical procedures, Chemical peels, MDA etc.)
9. Disorders of Scalp (Dandruff, Chronic Hair loss, Alopecia)
10. Sexually Transmitted skin lesions
11. HIV,& Cutaneous manifestations
12. Topical therapy in Dermatology.

Psychiatry

1. Psychiatric History, & examination of mental status
2. Classification of Mental status
3. Schizophrenia & its types-in brief Psychotic disorder, delusional disorder, schizoaffective disorders, post-partum psychosis, mood disorders, organic mental disorders, Anxiety disorder, phobia. obsessive compulsive dissociative conversion disorder, hypochondriacs, post-traumatic disorder, personality disorder, substance related disorders-adjustment & impulse control, disorder, psycho-sexual disorders, psycho-somatic disorder, psychiatric emergencies suicide stress management disorders of infancy - childhood & adolescence disruptive behavior, conduct disorder, attention deficit, & hyper-reactivity-eating disorder, tic, disorder, elimination disorder - child abuse, eneuresis.
4. Management -ECT, Chemotherapy, group therapy, psycho therapy, cognitive behavioral therapy.

Bio-Statistics

1. Introduction - Uses of statistical methods in Physiotherapy - Measurement Scales, variables, & their Measurements, Symbolic Data, Operations
2. Statistical data - Tabulation, Calculation of Central Tendency, & Dispersion, Linear Regression & Correlation - Presentation of Data in Diagrammatic & Graphic Form,
3. Probability & Sampling as a Mathematical System, Population & Samples, Sampling Distribution, Sampling Methods.

Text Books:

1. *B.K. Mahajan*, Methods in Biostatistics
2. *Ahuja - Jaypee Bros,* A short book of Psychiatry - 3rd ed., medical publishers
3. *Shah L.P.,* Handbook of Psychiatry
4. *Chattopadhaya* – Common Skin Diseases – A Clinical Approach
5. *Chattophaya* – Essential of Dermatology, Venerology and Leprosy
6. *Sarabhai* - Principles and Practices of Burn Care
7. *Shukla, mani et al* – Management of Wound healing
8. *K. Park* - Park's Textbook of Preventive & Social Medicine.
9. *P.K. Mahajan & M.C. Gupta* - Textbook of Preventive & Social Medicine.

III Year
PHYSICAL DIAGNOSIS & MANIPULATIVE SKILLS

Course Code: BPT305 **L-3 T-0 P-0 C-3**

Course Contents:

1. **General principles of Human development & maturation**
   a. Aspects like:
      (i) physical
      (ii) motor
      (iii) sensory
      (iv) cognitive
      (v) emotional
      (vi) cultural
      (vii) social
   b. Factors influencing human development & growth:
      (i) Biological
      (ii) Environmental
      (iii) Inherited.
   c. Principles of maturation:
      (i) in general
      (ii) in anatomical directional pattern Cephalo-caudal, Proximo – distal, Centero - lateral mass to specific pattern, gross to fine motor development, reflex maturation tests.
      (iii) Development in specific fields: oromotor development, sensory development, neurodevelopment of hand function.
2. **Electro diagnosis**
   a. Physiology of resting membrane potential & action potential Propagation of Action Potential, Volume conduction.
   b. Physiology of muscle contraction
   c. Motor unit & Recruitment pattern of motor unit - Size principle
   d. Therapeutic current -as a tool for electro diagnosis.
      (i) Physiological principles
      (ii) Faradic Galvanic Test, Strength Duration Curve, Test for Sensory & Pain Threshold, Test for Pain Tolerance - tests should be carried out on relevant patients.
   e. Electro-myography
      (i) Principles
      (ii) Instrumentation - Basic components like CRO, Filter, Amplifier & Preamplifier, Types of Electrodes, and Panel diagram.
      (iii) **Normal & Abnormal EMG pattern**
         - at rest
         - on minimal contraction
         - on maximal contraction
   f. Nerve Conduction Studies
      (i) Principles & Technique
      (ii) F wave
      (iii) H reflex
3. **Basics in Manual Therapy & Applications with Clinical reasoning**
   a. Examination of joint integrity
      (i) Contractile tissues
      (ii) Non contractile tissues
   b. Mobility - assessment of accessory movement & End feel
   c. Assessment of articular & extra-articular soft tissue status

(i) Myofascial assessment
(ii) Acute & Chronic muscle hold
(iii) Tightness
(iv) Pain-original & referred

d. Basic principles, Indications & Contra-Indications of mobilization skills for joints & soft tissues.
(i) Maitland
(ii) Mulligan
(iii) Mckenzie
(iv) Muscle Energy Technique
(v) Myofascial stretching
(vi) Cyriax
(vii) Neuro Dynamic Testing

4. Basics in Neuro Therapeutics Skills & Applications with Clinical reasoning.

a. Principles of Neuro Developmental Technique, Rood's Technique, PNF, Brunnstrom, techniques
b. Indications for Application of above techniques

5. Assessment of Movement Dysfunction

a. Higher functions
b. Cranial nerves
c. Sensations & sensory organization
d. Joint mobility
e. Body image
f. Tone
g. Reflexes-Superficial & Deep
h. Voluntary control
i. .Muscle Strength
j. Co-ordination
k. Balance
l. Endurance
m. Trick movements
n. Limb Length
o. Posture
p. Gait
q. Scales-Berg's Balance, Ashworth, Glasgow Coma, DGI
r. Functional Diagnosis using ICF
s. Interpretation of Electro diagnostic findings, routine Biochemical

6. Assessment of Cardio Vascular & Pulmonary Dysfunction

a. Vital parameters
b. Chest expansion
c. Symmetry of chest movement
d. Breath Holding Test
e. Breath Sounds
f. Rate of Perceived Exertion (RPE)
g. Quality of life questionnaire
h. Exercise Tolerance - six minutes walk test, Theoretical bases of Bruce's protocol
i. Peak Flow Meter
j. Interpretation of reports - ABG, PFT, ECG- (Normal & Variations due to Ischemia & Infarction)
k. X-ray Chest
l. Ankle Brachial Index
m. Tests for Peripheral Arterial & Venous circulation

7. **Assessment of Musculoskeletal Dysfunction**
    a. Tightness
    b. Joint Mobility
    c. Muscle strength
    d. Limb Length
    e. Trick Movement
    f. Posture
    g. Gait
    h. Special Test
    i. Functional Diagnosis using ICF
    j. Interpretation of X-ray of extremities & spine, routine, bio-chemical investigations
8. **Assessment of Hand**
    a. Sensations
    b. Mobility of joints
    c. Strength
    d. Special Tests like Froment's Sign, Bunnel- Litter's Test, Phalen's Test, Tinel's Sign, Wattenberg's Sign.
    e. Hand Function - Precision & Power Grips
9. **Assessment of pain**
    a. Intensity & quality
    b. Objective assessment & documentation - VAS, Mc Gill's modified questionnaire, Numerical Rating Scale.
10. **Assessment of Obesity**
    a. Path physiology
    b. Assessment - BMI, Waist - Hip Ratio
11. **Introduction to Quality of Life**

Text Book:

1. Maitlands book on *Manual therapy.*
2. *Nelson – Currir,* Clinical Electro Therapy Appleton & Lange publication
3. *Mishra,* Clinical Electromyography
4. *Kaltenborn*, Mobilisation
5. *Susan B O's Sullivan,* Physical Rehabilitation, Assessment and treatment

Reference Book:

1. *Magee,*Orthopaedic Physical examination
2. *Kaltonborn,* Mobilization methods
3. *Kimura,* Clinical Electromyography
4. *Donnatelli*, Orthopaedic Physical therapy
5. *Wenger & William 0 Mc'Ardle*, Exercise & Heart Exercise Physiology
6. *Lois Bly Allison Whiteside,* Facilitation techniques based on NDT principles
7. *John Patten,* Neurological Examination
8. *Brunnstrom*, Movement therapy in Hemiplegia
9. *Patricia Downie,* Cash textbook of Physiotherapy in neurological conditions
10. *Tromble Scoot* Physical Dysfunction

III Year
SURGERY (PRACTICAL)

Course Code: BPT351 **L-0 T-0 P-3 C-2**

Course Contents:

1. Evaluation / presentation and recording of one case each in burns, wound & ulcer, Head Injury case, peripheral vascular condition, post Radical mastectomy, post thoracic surgery, post abdominal surgery
2. Auscultation & its interpretation with special emphasis to Reading & interpretation of the X-ray chest.
3. Independent clinical orthopedic evaluation presentation & recording of
   a. one acute soft tissue lesion [including nerve injury]
   b. 2 cases of degenerative arthritis of extremity joint
   c. 2 degenerative arthritis of spine
   d. one case of acute P.I.V.D
   e. 2 chronic backaches
   f. 1 post operative case of fractures of extremities
   b. one traumatic paraplegia /quadriplegia
4. Evaluation & presentation of two cases each in
   a. Uro-genital dysfunction
   b. Antenatal care
   c. Postnatal care
      (i) Following normal labour
      (ii) Following Caesarean section
   d. Pelvic Inflammatory Diseases
   e. One Normal & One Caesarian delivery, one case of Tubectomy & One Hysterectomy / Repair of the Uro-genital Prolapse.

III Year
MEDICINE (PRACTICAL)

Course Code: BPT352 **L-0 T-0 P-3 C-2**

Course Contents:

1. Normal & abnormal reflexes in neonate & child
2. Examination of the nervous system
3. Examination of Pediatric cases
4. Evaluation, presentation and recording of Two' cases Each in
   a. U.M.N. lesion
   b. L.M.N. lesion
   c. Degenerative / Rheumatological Conditions
   d. General Medicine Conditions like Obesity, Nutritional disorders, Diabetes Mellitus & Metabolic bone disorders

III Year
CARDIOTHORACIC CONDITIONS (PRACTICAL)
(INCLUDING PULMONARY CONDITIONS)

Course Code: BPT353 **L-0 T-0 P-2 C-1**

Course Contents:

Clinical /practical with emphasis on conditions mentioned in course code no BPT 303.

III Year
COMMUNITY HEALTH & BIO-STATISTICS (PRACTICAL)

Course Code: BPT354 **L-0 T-0 P-2 C-1**

Course Contents:

Clinical / practical's methods of training and treatment in community as mentioned in course code no BPT 304.

III Year
PHYSICAL DIAGNOSIS & MANIPULATIVE SKILLS (PRACTICAL)

Course Code: BPT355 **L-0 T-0 P-6 C-3**
Course Contents:

1. Practice of Manual Therapy in Maitland, Mulligan & Cyrix on extremities only & only on models
2. Electro-diagnostic assessment - S D Curve, Faradic Galvanic Test, Test for Sensory & Pain Threshold, Test for Pain Tolerance.
3. Identification of abnormal breath sounds, measurement of chest expansion, pattern of breathing, vital parameters, Grades of Dyspnoea, Rate of Perceived exertion, Ankle Brachial Index.
4. Exercise tolerance testing - 6 minutes' walk test & Bruce's protocol on models only
5. Practice to Neuro Therapeutic Skills of NDT, PNF, and Rood's Technique & Brunnstrom on models only.
6. Interpretation of reports - EMG, NCV Studies, ABG, PFT, X-ray of Chest. Extremities & Spine & ECG.
7. Methods of evaluation, assessment and manipulations

A. Documentation & Interpretation of following investigations
   a. Electro diagnosis
      (i) SDC
      (ii) Faradic Galvanic Test
      (iii) Test for Sensory / pain Threshold
      (iv) Test for Pain tolerance - Any 3
   b. Cardio Vascular & Pulmonary - ABG, PFT, ECG, X-ray Chest, Exercise Tolerance Test-1 each.
   c. Neurological - Scales like Modified Ashworth. Berg's Balance, DGI. Glasgow Coma, Barthel Index, STREAM Format - Any 3 & EMG & NC Studies - 2 each.

B. Case presentation with Functional diagnosis. Three cases Each in
   a. Musculoskeletal
   b. Neurological
   c. Cardiovascular & Pulmonary

.

III Year
SEMINAR

Course Code: BPT356 **L-0 S-2 P-0 C-2**

Course Contents:

Seminar includes case presentation + Literature review
Clinical / Case Presentation should include Observation, Clinical History taking, & technical assistance to the senior clinical staff of the Therapeutic Gymnasium (fundaments of exercise therapy) & Electro Therapy sections at the O.P.D set up. The student should maintain a journal / file in which the assessment chart & documentation of minimum 15 case histories to be included per assignments. The student should get all the documents duly signed by the section In-Charge and Principal with his/her assessment remarks at the end of each respective assignment.

III Year
SUPERVISED CLINICAL TRAINING

Course Code: BPT357 **L-0 T-0 P-6 C-3**

Course Contents:

Supervised clinical practice + Project

Each clinical assignment shall consist of indoor & outdoor section respectively in each of the subjects mentioned at 1, 2, 3, 4 & 5 above.

During each clinical assignment, the student shall functionally diagnose plan & practice Clinical skills on patients in consultation with the experienced senior staff.

Project During each of the 7 assignments, the candidate, shall conduct retrospective case studies on Minimum 5 samples. He/she shall maintain a separate File/journal for each subject & keep all the records of the clinical assignment & ward exam/Seminar etc. in the respective file. However the records of the Project work carried out during the 7 assignments shall be maintained in the file titled as "PROJECT FILE" The candidate shall get the clinical & project work duly verified with the signature from the section In-Charge and Principal at the end each respective assignment.

IV Year
PHYSIOTHERAPY IN ORTHOPEDIC CONDITIONS

Course Code: BPT401 **L-3 T-0 P-0 C-3**
Course Contents:

1. Evaluation, interpretation of investigations & functional diagnosis (ICF) with appropriate clinical reasoning. for planning & implementation of management techniques.
2. Planning, Prescription & Implementation of short term & long term goals with clinical reasoning.
3. Documentation.
4. Application of appropriate electro therapeutic modes for relief of acute & 'chronic pain & swelling; wound healing, .re-education etc with clinical reasoning.
5. Application of simple therapeutic modes for muscle strength / joint mobility.
6. Application of Advanced therapeutic modes of mobility like Mobilizations Techniques (Techniques covered in IIIrd B.P.T) (to be applied only on extremities), Friction Massage, Myofascial Release, Muscle Energy Techniques & Neuro Dynamic -Techniques on patients. (Non-thrust mobilization methods only).
7. Application of various taping methods for support & relief of pain.
8. Posture Correction & Gait Training.
9. Prescription of appropriate orthotic & prosthetic devices & fabrication of simple temporary splints.
10. Application of appropriate Therapeutic exercise using therapeutic gymnastic tool as and when necessary, for the relief of pain, structural stability, strength/endurance: & Functional restoration including gait training/ maintenance of functions & / or for the preventive measures.
11. Appropriate Home Program & Ergonomic advise for preventive measures & Functional efficiency at home & work place, Advice to Parents & Care Givers.

Physiotherapy management for the following conditions:

1. Manifestations of trauma & diseases of the bones & soft tissues of the musculo skeletal tissue.
2. Fractures of the spine, extremities - classification/ management & complications.
3. Metabolic & hormonal disorders of the bone tissue - Osteoporosis.
4. Peripheral nerve injuries, management complications - V.I.C.
5. Deformities of the spine, extremities - congential malformation - Spina Bifida, meningocele/ meningo myelocele, CTEV (Foot Deformities) CDH.
6. Re- constructive surgeries in Polio & cerebral palsy.
7. Inflammatory/ Infectious disease of the bone & joints T.B. / Osteomyelitis.
8. Tumours of the bone.
9. Degenerative / Rheumatoid arthritis.
10. Soft tissue injuries/common soft tissue injuries encountered during sports/ Over - use.
11. Amputation - classification - prosthetic management.
12. Hand injury - management.

Text Books:

1. *Cash's Textbook of Orthopedics & Rheumatology* for Physio Therapists- Jaypee
2. *Freddy Kaltenborn,* Maitland Manual mobilization of extremity joints
3. *Kolby & Kisner,* Therapeutic exercise
4. *0' Sullivan,* Therapeutic exercise
5. *Rose Mac Donald,* Taping Techniques

Reference book:

1. *Donatelli,* Orthopedic Physical therapy
2. *Maitland*, Manual Therapy,
3. *Butler*, Neural tissue mobilization

IV Year
PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Course Code: BPT402 **L-3 T-0 P-0 C-3**

Course Contents:

1. Hemiplegia, disorders of cerebral circulation & space occupying lesions such as cortical, thalamic & Brain-stem lesions
2. Cranial nerves-emphasis on & 7^{th} & 8^{th} nerves.
3. Cerebral Palsy
4. Subdural haematoma & birth injuries, hydrocephalus
5. Disease of meninges,
6. Neuro-syphilis, Tabes dorsalis, H.I.V. infection
7. Viral infection of nervous system-encephalitis Herpes, poliomyelitis, viral meningitis.
8. Demyelinating diseases of the nervous System-Multiple sclerosis
9. Lesions of Extra-pyramidal system & Basal ganglia, Parkinsonism, spasmodic torticollis, Athetosis, Chorea, Dystonia.
10. Congenital & Degenerative disorders, Hereditary Ataxia, Peroneal muscle atrophy, Disorders of spinal cord-paraplegia, syringomyelia, Transverse myelitis, spinal Dysraphysm.
11. Deficiency disorders-Sub-acute combined degeneration of spinal cord.
12. Disorders of peripheral nerves, tumors traumatic, infective infective & metabolic lesions of nerves.
13. Disorders of voluntary muscles-Dystrophies & Neuro-muscular junction disorders
14. Disorders of Autonomic nervous system
15. Psycho-somatic Pain & Paralysis.

Text Books:

1. *Cash's* Text book for physio Therapist in Neurological disorders, *Jaypee bros*
2. *Margaret Hollis,* Practical Physical Therapy
3. *O'Sullivan,* Therapeutic exercise - by "Right in the middle" - by Patricia Davis
4. *Margaret Johnson,* Stroke rehabilitation
5. *Mitra,* Handbook of Practical Neuro Physiotherapy
6. *Raj,* Physiotherapy in Neuro conditions

Reference book:

1. *Basmajiian,* Therapeutic exercise 5^{th} edn.
2. Krusen, Physical Rehabilitation

IV Year
PHYSIOTHERAPY IN MEDICAL & SURGICAL CONDITIONS
(Including Cardio-Vascular & Respiratory Conditions)

Course Code: BPT403 **L-2 T-0 P-0 C-2**
Course Contents:

1. Assessment of Respiratory & haemo-dynamics, by means of assessment of breath sounds, interpretation of dysfunction by spirometry / Exercise tolerance test / assessment of thoracic mobility & breathing pattern.
2. Interpretation of radiological & Biochemical investigations & co-relate the same with clinical findings.
3. Functional diagnosis of cardio-respiratory dysfunction & associated Movement dysfunction.
4. Planning short / long terms goals with clinical reasoning - documentation of the conditions given.
5. Application of appropriate skills for breathing re-training & bronchial Hygiene, as preventive (used specifically in preoperative care), restorative & rehabilitative measures.
6. Prescription of appropriate therapeutic exercise program for conditioning.
7. Prescription of home program & ergonomic advice/parents education in case of Pediatric cases with reference to energy cost.
8. Importance of life style modification in prevention of IHD. .
9. Use, application of electro therapeutic modalities for relief of pain, swelling and wound healing.
10. Cardio respiratory changes associated with ageing and fitness Programme.
11. Familiarization with concept of quality of life.

Physiotherapy management for the following conditions:

1. Cardiac disorders (Congenital, Acquired, Rheumatic, Rhythm Disturbances IHD, Post Cardio-thoracic surgeries)
2. Pulmonary disorders (Obstructive, Restrictive, Occupational & Pediatric, pulmonary infective.) Precautions with HIV.
3. Peripheral Vascular Diseases.
4. Diabetes (Wound, Ulcer, Glycemic control with exercise)
5. Obesity
6. Amputation
7. Burns
8. General Surgery (Mastectomy & Abdominal surgery)
9. Intensive care unit suctioning, measures to improve Bronchial Hygiene, Positioning for Bronchial Hygiene, Continuous monitoring of the patient, general mobilization.

Clinical:

1. Skill to palpate all pulses, rhythm, rate, volume & Heart rate / pulse rate discrepancy.
2. Skill to assess B.P. at various sites, & its Physiological variation, & to assess Ankle Brachial Index.
3. Skill of exercise testing
   a. 6/12 min walk,
   b. symptom limited
4. Interpretation of
   a. Treadmill & Ergo-cycle test findings.
   b. ECG, I.H.D. & Blocks,
   c. Biochemical analysis-serum enzymes, C.P.K. Levels, L.D.H.,
   d. S.G.P.T., Lipid profile, electrolyte balance.
   e. Chest x-ray
   f. P. F.T. obstructive/restrictive/reversibility
   g. A.B.G.

h. R.P.E. Borge's scale
i. Quality of life questionnaires

5. Evaluation & treatment planning, presentation & documentation of ONE Case Each in
   a. Medical Respiratory condition
   b. Pediatric respiratory condition
   c. Thoracic Surgical condition
   d. Cardiac Medical condition
   e. Cardiac Surgical condition
   f. Peripheral vascular disorders
   g. Abdominal surgical condition
   h. Mastectomy *I* Amputation

Text Books:

1. *Cash's* Textbook for Physiotherapists in Chest, Heart & Vascular diseases.
2. *Cash's* text book in General Medicine & Surgical conditions for Physiotherapists.
3. *Donna Frown filter,* Chest Physical therapy & pulmonary rehabilitation
4. *Brompton's* hospital guide.

Reference book:

1. *Webber,* Physiotherapy in Cardio - Vascular rehabilitation
2. *Wenger*, Exercise & the Heart
3. *P.J. Mehta*, *ECG*
4. *Irwin Scott,* Cardiopulmonary Physical Therapy

IV Year
PHYSIOTHERAPY IN SPORTS INJURIES

Course Code: BPT404 **L-2 T-0 P-0 C-2**

Course Contents:

- Introduction to common sports injuries in India
- Evaluation of common sports injuries like, injuries in cricket, hockey, football, swimming, basketball, baseball etc
- Evaluation of Physical, Cardio- Respiratory, Psycho-social and Emotional aspects of sports
- Dietics and Nutrition for sports persons
- Sports and Sports Training procedures
- Evaluation of Pre-requisite of sports and Training
- Instrumentation in sports training isokinetic Exercise, Treadmill with Cardio respiratory evaluation
- Modern principles of Sports Analysis and Training
- Investigation in sports injuries
- Sports Injuries Management
- Principles of sports injuries management at the following stages
- Immediately after injury
- Acute stage
- Chronic stage
- Rehabilitation stage
- Soft tissue injury management
- Injuries and management in the following
- Hip, Knee, Ankle and Foot injuries
- Shoulder, Elbow, Wrist and Hand injuries
- Spine, Head and Neck injuries
- Pharmacology in Sports
- Rehabilitation in Sports

Text Books:

1. *Cash's* Text book of Rheumatology for Modern Principle of Athletic Training – by Corl E. Klafs and Daniel D. Arnheim. Sports injuries: Diagnosis and Management for Physiotherapist.
2. *Moorthi's* Sport Physiotherapy
3. *Gupta's* Textbook of Spots fitness medicine

Reference Book:

David Kennedy, The Children's Sports injuries of Dynamics of Clinical Rehabilitation Exercise of order.
Cramer, Basic Athletic Training
Kingston, Understanding Muscles: A Practical Guide to Muscle Function (Ex)
Mcmahon, Lange current diagnosis and treatment sports medicine

IV Year
COMMUNITY PHYSIOTHERAPY & DISABILITY MANAGEMENT

Course Code: BPT405 **L-3 T-0 P-0 C-3**
Course Contents:

1. W.H.O definition of health and disease.
2. Health delivery system - 3 tier.
3. Physical fitness definition and evaluation.
   a. Effect of growth.
   a. Physical fitness in women-pregnancy, menopause.
   b. Physiology of aging – neuro musculoskeletal, CVS, metabolic and degenerative.
   c. Physiological effects of aerobic exercise - clinical reasoning for advocating aerobic exercise as preventive measure in obesity & its related conditions / in cardio-respiratory conditions / Aging/deconditioning effect after prolonged bed rest / Diabetes.
4. Women's Health - Women in India, Social issue having impact on physical Function, Legal rights and benefits. Anatomical & Physiological variations associated with pregnancy & menopause. Antenatal, post natal care, advice on labor positions, pain relief, - Urogenital dysfunction, prolapse, incontinence and therapeutic interventions.
5. Geriatrics - Senior citizens in India, NGOS, Legal rights, benefits. Institutionalized & Community dwelling elders. Physiology of ageing. Ms & neuro / Cardio respiratory, metabolic, scheme of evaluation & role of PT in Geriatrics.
   a. Definition of International classification of functioning.
   b. Disability- evaluation, types, prevention.
   c. Rehabilitation- definition, types {institutional, reach out and CBR}
   d. Team work of medical practitioner, *PT/OT,* AST, P&O, Clinical psychologist, and vocational counselors and social workers. CBR - Role of PT. National policies for rehabilitation of disabled - Role of PT.
   e. CBR strategies in
      (i) Urban area e.g. UHC, community centre, clubs, mahila mandals, Social centers. Ii. Schools, industries, sports centers.
      (ii) Rural area- by using PHC / rural hospital, district hospital / in infrastructure.
6. Industrial health:
   a. Ability Management Job analysis:-
      (i) Job description, Job demand Analysis, Task Analysis, Ergonomics Evaluation, Injury Prevention, and Employee Fitness Programme.
      (ii) Disability Management: - Acute care, Concept of Functional Capacity Assessment, Work Conditioning, Work Hardening.
   b. Environmental stress in the industrial area - accidents due to
      (i) Physical agents e.g. heat/cold, light, noise. Vibration, UV radiation, ionizing radiation.
      (ii) Chemical agents- inhalation, local action and ingestion.
      (iii) Mechanical hazards-overuse/fatigue injuries due to ergonomic alternation and ergonomic evaluation of work place. Mechanical stresses per hierarchy-
         - Sedentary table work-executive's clerk.
         - Inappropriate seating arrangement-vehicle drivers.
         - Constant standing- watchman, defense forces, surgeons.
         - Over execution in laborers-stress management.
      (iv) Psychological hazards e.g. monotonicity and dissatisfaction in job, anxiety of work completion with quality, Role of PT. in industrial set up and stress management relaxation modes.
         - Clinical posting / Visits to UHC, PHC.

Disability Management
Disability, Its causes, Methods of prevention, Rehabilitation, different laws related to disability

Bio-Engineering
1. Classification of Aids & appliances-
2. Biomechanical principles in designing of appliances & assessment Procedures for static & dynamic alignment of the following-Aids & appliances /Splints /Orthosis -for spine-upper & lower limb, Prosthesis- for Lower limbs, Upper limbs,
3. Project-Temporary splints -to fabricate ONE splint each – (to use P.O. P, aluminum strips /sheets / wires, rubber bands, rexin, Orfit etc)
   a. cock up (dorsal/volar)
   b. outrigger,
   c. Opponence splint
   d. Anterior and posterior guard splints for gait training,
   e. Foot drop splint"·
   f. Facial splint
   g. Mallet Finger Splint,
   h. C bar for 1st web space of hand.

Professional Issues/ Administration/ Management & Marketing
Section I - Professional Issues [Including Ethics]

1. Concepts of morality, Ethics & Legality-rules of professional conduct & their Medico- legal & moral implications-The need of Council Act for Physiotherapy
2. Constitution & Functions of the Indian association of Physical therapy-
3. Functioning of the World Confederation of Physical therapy[W.C.P.T.] & its various branches-Special Interest groups [brief]
4. Role of W.H.O.& WCPT

Section II - Administration/Management & Marketing

1. Management studies related to -local health care organization management & structure,-planning delivery with quality assurance & funding of service delivery -information technology -Time management -career development in Physiotherapy
2. Administration-principles-based on the Goal & functions -at large hospital set up / domiciliary services/ private clinic academic
3. Methods of maintaining records
4. Budget-planning
   Performance analysis--physical structure / reporting system [man power / status /functions / quantity & quality of services/turn over-cost benefit revenue contribution

Text Books:

1. *Poldon*, Physiotherapy in Gynaecological & Obsterical conditions, Jaypee
2. *Astrand P A Rodahe K*-Text book of Work Physiology
3. *Kisner*, Therapeutic Exercise
4. *Bhaskar Rao,* Text book of Community Medicine & Community Health
5. *Andrew Guccione* Geriatrics Physiotherapy
6. *Glenda Key,* Industrial Therapy
7. *Wilton*, Hand Splinting
8. *Chinnathurai,* Short textbook of prosthetics and orthotics
9. *Pruthvish*, Community Based Rehabilitation of Persons with Disabilities
10. *Madhuri,* Geriatric Medicine and Rehabilitation Medicine for Physiotherapist
11. *Squires,* Rehabilitation of the Older Person

Reference Books:

1. *Mural K F*, Ergonomics Man in his working environment
2. *Mc'Ardle* Exercise Physiology
3. *Nordin Andersons Pope,* Musculoskeletal Disorders in work place- Principle & Practice
4. *G R Madan, Indian Social Problem Vol 2*
5. *Disability 2000-RCI*
6. *Gautam Bannerjee* , Legal Rights of disabled in India
7. *ICF -WHO Health Organisation* 2001 publication
8. *Park,* Preventive &Social Medicine
9. *Hallender Padmini Mendes,* Training in the Community for the people with disability
10. *David Werner* , Disabled Village Children
11. *Chorin C& M Desai, C Gonsalves*, 1999, Women & the Law, Vol. I & II Socio legal Information Centre Mumbai

IV Year
PHYSIOTHERAPY IN ORTHOPEDIC CONDITIONS (PRACTICAL)

Course Code: BPT451 **L-0 T-0 P-3 C-2**

Course Contents:

Evaluation & treatment planning: its presentation & documentation of Minimum two cases each in –

1. Upper Limb (Including hand injury),
2. Lower limb,
3. Soft tissue lesion (any)
4. Spine with/without Neurological condition
5. Degenerative arthritis of skeletal joint
6. Muscular - skeletal condition of Hand & foot.
7. Emphasis on conditions of importance in physiotherapy.

IV Year
PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS (PRACTICAL)

Course Code: BPT452 **L-0 T-0 P-3 C-2**

Evaluation & Treatment planning, its presentation & documentation of minimum two case each In 1) U.M.N. lesion, 2) L.M.N. lesion, 3) Pediatric neuro case 4) Importance on physiotherapy conditions.

IV Year
PHYSIOTHERAPY IN MEDICAL & SURGICAL CONDITIONS (PRACTICAL)

Course Code: BPT 453 **P-2, C-1**

On Importance of physiotherapy conditions as mentioned in course code no BPT 403.

IV Year
PHYSIOTHERAPY IN SPORTS INJURIES (PRACTICAL)

Course Code: BPT 454 **P-2, C-1**

All sports injuries/events played nationally and internationally for normal individuals and person with disability.

IV Year
COMMUNITY PHYSIOTHERAPY & DISABILITY MANAGEMENT (PRACTICAL)

Course Code: BPT455 **P-3, C-02**

Project: Survey in anyone community in one of the above posting.
Practical's related with geriatrics, bio-engineering, professional issues, skills and administration.

IV Year

SEMINAR/S

Course Code: BPT 456 **S-2, C-2**

Syllabus

Seminar includes case presentation + Literature review

Clinical / Case Presentation should include Observation, Clinical History taking, & technical assistance to the senior clinical staff of the Therapeutic Gymnasium (fundaments of exercise therapy) & Electro Therapy sections at the O.P.D set up. The student should maintain a journal / file in which the assessment chart & documentation of minimum 15 case histories to be included per assignments. The student should get all the documents duly signed by the section In-Charge and Principal with his/her assessment remarks at the end of each respective assignment.

IV Year

SUPERVISED CLINICAL TRAINING

Course Code: BPT 457 **P-6, C-3**

Syllabus

1. Supervised clinical practice + Project

   Each clinical assignment shall consist of indoor & outdoor section respectively in each of the subjects mentioned at 1, 2, 3, 4 & 5 above.

   During each clinical assignment, the student shall functionally diagnose plan & practice Clinical skills on patients in consultation with the experienced senior staff.

2. Project During each of the 7 assignments, the candidate, shall conduct retrospective case studies on Minimum 5 samples. He/she shall maintain a separate File/journal for each subject & keep all the records of the clinical assignment & ward exam/Seminar etc. in the respective file. However the records of the Project work carried out during the 7 assignments shall be maintained in the file titled as "PROJECT FILE" The candidate shall get the clinical & project work duly verified with the signature from the section In-Charge and Principal at the end each respective assignment.

INTERNSHIP

(6 months after B.P.T. – IV Yr)

Guidelines:

Placement in a recognized hospital where Indoor and Outdoor facilities are available.

Following fields of Internship programme to be given by HOD/ Principal of Physiotherapy departments in a college

1. Muskulo-Skeletal [Surgical / Medical
2. Traumatology / Rheumatology & old cases
3. Burns & Plastic Surgery
4. Neuro-Sciences [Surgical / Medical / Psycho-somatic
5. Paediatric
6. Psychiatry / Psycho-somatic
7. Cardio-Respiratory-[Surgical/ Medical
8. Surgical / Medical
9. Intensive Care (Surgical / Medical / Trauma)
10. Obstetrics & Gynecology
11. Geriatrics
12. Community based Rehabilitation
13. Project

[Internship Includes Project on evidence based investigation measures or Clinical trials / Prospective case studies having sample size of minimum 20 subjects.]

Evolution of the Internship

1. The student shall put up not less than 90% attendance during EACH assignment. Student's performance shall be graded by the respective clinic section In-charge at the end of each assignment. The candidates shall repeat the particular assignment if the performance is found unsatisfactory [Grade-C or 0]

2. **Project-**submitted by the candidate will be dully verified & a viva shall be conducted on the same at the end of the Internship& a grade shall be granted. Internship completion certificate shall be issued to the candidate ONLY after the satisfactory performance in Project Viva as well as in the "Attitude" during EACH clinical assignment. Completion certificate shall be given after satisfactory report from different departments. Only six leaves are allowed to an internee during the period of his/her internship. If he/she extends his/her leaves during the duration of internship, the period the internship shall be extended by double of the days for which the student was absent.

3. **Grading in Projects** - Evaluation of the project shall be carried out by a committee comprising of the subject teacher(s) and the two others teachers nominated by the Principal. Based on the committee's recommendation the project shall be graded in following manner.
   Grade C: for marks from 50% to 60%
   Grade B: for marks from 61% to 75%
   Grade A: for marks from 76% and above
   Grading includes performance of intern, his/her attitude towards patients, seniors, doctors, nurses, care givers, behavior, performance, skill ability, assessment, evaluation and method of presentation before the committee.