

GURU KASHI UNIVERSITY



Bachelor of Physiotherapy

Session: 2022-23

Department of Physiotherapy

PROGRAMME OUTCOMES

- Apply the knowledge of basic medical science, human anatomy and physiology, exercise therapy, and electrotherapy to the solution of complex medical conditions.
- Identify anatomical, physiological and biomechanical abnormalities based on patient assessment and medical tests to reach an appropriate diagnosis.
- Design rehabilitation protocol for complex medical problems with appropriate consideration of therapeutic goals as well as occupational and social requirements of the patient.
- Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- Create, select, and apply appropriate therapeutic techniques, electrotherapy equipment's, and advanced interventions with an understanding of their limitations.
- Integrate theoretical knowledge with sound clinical judgment to assess health issues of the society as well as to fulfill the responsibilities relevant to physiotherapy profession.
- Understand the impact of the physiotherapy in context of healthcare needs of the society and recognize the role of physiotherapist as a part of a health care team.
- Apply ethical principles and commit to professional ethics and responsibilities towards a patient and norms of the medical practice.

Programme Structure

Semester -I						
Course Code	Course Title	Type of Course				
			L	T	P	Credit
BPT101	Human Anatomy-I	Core course	4	0	0	4
BPT102	Human Physiology-I	Core course	4	0	0	4
BPT103	Biophysics and Medical Electronics	Core course	4	0	0	4
BPT104	Human Anatomy-I Lab	Skill Based	0	0	4	2
BPT105	Human Physiology-I Lab	Skill Based	0	0	4	2
BPT106	Electro Therapy-I Lab	Skill Based	0	0	4	2
Discipline Elective (Any one of the following)						
BPT107	Introduction to Health Care Delivery System	Discipline Elective	3	0	0	3
BPT108	General Psychology					
BPT109	Biochemistry	Ability Enhancement	1	0	0	1
BPT199		MOOC	--	--	--	0
Total			16	0	12	22

Semester- II						
Course Code	Course Title	Course Type				
			L	T	P	Credit
BPT201	Human Anatomy-II	Core Course	4	0	0	4
BPT202	Human Physiology-II	Core Course	4	0	0	4
BPT203	Medical Terminology and Record Keeping	Core Course	4	0	0	4
BPT204	Human Anatomy-II Lab	Skill Based	0	0	4	2
BPT205	Exercise Therapy-I Lab	Skill Based	0	0	4	2
Discipline Elective (Any one of the following)						
BPT206	Clinical Psychology	Discipline Elective	2	0	0	2
BPT207	Sociology					
BPT208	Physiotherapy Ethics and Laws	Value Added Course	2	0	0	2
Total			16	0	8	20

Semester-III						
Course Code	Course Title	Course Type	L	T	P	Credit
			BPT301	Exercise Therapy-I	Core Course	4
BPT302	Electro Therapy-I	Core Course	4	0	0	4
BPT303	Pharmacology	Core Course	4	0	0	4
BPT304	Exercise Therapy-II Lab	Skill Based	0	0	4	2
BPT305	Electro Therapy-II Lab	Skill Based	0	0	4	2
Discipline Elective (Any one of the following)						
BPT306	First Aid & Emergency Management	Discipline Elective	2	0	0	2
BPT307	Naturopathy					
Open Elective Course						
		OEC	2	0	0	2
BPT399		MOOC	--	--	--	--
Total			16	0	8	20
Open Elective Course (For other departments)						
BPT308	Nursing Care	OEC	2	0	0	2
BPT309	Hospital management					

Semester-IV

BPT (Batch 2022-23)

Course Code	Course Title	Course Type	L	T	P	Credit
BPT401	Exercise Therapy-II	Core Course	4	0	0	4
BPT402	Biomechanics & Kinesiology-I	Core Course	4	0	0	4
BPT403	Pathology & Microbiology	Core Course	4	0	0	4
BPT404	Exercise Therapy-III Lab	Skill Based	0	0	6	3
BPT405	Biomechanics & Kinesiology-I Lab	Skill Based	0	0	4	2
BPT416	Stretching and Flexibility Exercises	Value Added Course	2	0	0	2
Discipline Elective (Any one of the following)						
BPT406	Systemic Pathology	Discipline Elective	3	0	0	3
BPT407	Infection Prevention and Control					
Total			14	0	8	22

Semester-V

Course Code	Course Title	Course Type	L	T	P	Credit
BPT501	Physiotherapy in Orthopaedic Conditions-I	Core Course	4	0	0	4
BPT502	Physiotherapy in General Medical Conditions	Core Course	4	0	0	4
BPT503	Research Methodology	Core Course	4	0	0	4

BPT504	Physiotherapy in Orthopaedic Conditions - I Lab	Skill Based	0	0	4	2
BPT505	Physiotherapy in Medical Conditions Lab	Skill Based	0	0	4	2
Discipline Elective (Any one of the following)						
BPT506	Yoga Therapy	Discipline Elective	2	0	0	2
BPT507	Pilates Exercise					
BPT508	Diagnostic Imaging for Physiotherapist	Ability Enhancement	2	0	0	2
BPT599		MOOC	--	-	-	--
Total			16	0	8	20

Semester-VI						
Course Code	Course Title	Course Type	L	T	P	Credit
BPT601	Physiotherapy in Orthopaedic Conditions-II	Core Course	4	0	0	4
BPT602	Physiotherapy in Cardiopulmonary Conditions	Core Course	4	0	0	4
BPT603	Biostatistics	Core Course	4	0	0	4
BPT604	Physiotherapy in Orthopaedic Conditions-II Lab	Skill Based	0	0	6	3
BPT605	Physiotherapy in Cardiopulmonary Conditions Lab	Skill Based	0	0	4	2
Discipline Elective (Any one of the following)						

BPT606	Clinical Biomechanics	Discipline Elective	3	0	0	3
BPT607	Vestibular Rehabilitation					
Total			14	0	8	20

Semester-VII						
Course Code	Course Title	Course Type	L	T	P	Credit
BPT701	Physiotherapy in Neurological Conditions -I	Core Course	4	0	0	4
BPT702	Physiotherapy in Surgical Conditions - I	Core Course	4	0	0	4
BPT703	Disability Prevention and Rehabilitation - I	Core Course	4	0	0	4
BPT704	Physiotherapy in Neurological Conditions -I Lab	Skill Based	0	0	4	2
BPT705	Physiotherapy in Surgical Conditions - I Lab	Skill Based	0	0	4	2
Discipline Elective (Any one of the following)						
BPT706	Sports Physiotherapy	Discipline Elective	2	0	0	2
BPT707	Exercise Physiology					
Discipline Elective (Any one of the following)						
BPT708	Physiotherapy in	Discipline	2	0	0	2

	ICU	Elective				
BPT709	Neurodevelopmental Techniques					
BPT799		MOOC	--	-	--	--
	Total		16	0	8	20

Semester-VIII						
Course Code	Course Title	Course Type	L	T	P	Credit
BPT801	Physiotherapy in Neurological Conditions -II	Core Course	4	0	0	4
BPT802	Physiotherapy in Surgical Conditions - II	Core Course	4	0	0	4
BPT803	Disability Prevention and Rehabilitation - II	Core Course	4	0	0	4
BPT804	Physiotherapy in Neurological Conditions -II Lab	Skill Based	0	0	6	3
BPT805	Physiotherapy in Surgical Conditions - II Lab	Skill Based	0	0	4	2
Discipline Elective (Any one of the following)						
BPT806	Hand Rehabilitation	Discipline Elective	3	0	0	3
BPT807	Foot Rehabilitation					
BPT808	Aquatic Therapy					
	Total		14	0	8	20
Grand Total			120	0	50	164

Semester-IX						
Course Code	Course Title	Course Type	L	T	P	Credit
			BPT901	Internship (6 Months)	Skill based	0

Internship Guidelines

Students will go for 6 months of compulsory and rotatory internship in any hospital, where they will maintain a log book of their tasks which will be signed by their incharge at the hospital every week and submit the same to the university at completion of internship.

Evaluation criteria for theory courses

A. Continuous assessment: [25 Marks]

Continuous assessment I [10 Marks]

Continuous assessment II [10 Marks]

Continuous assessment III [5 Marks]

For each CA, conduct surprise test, term-paper, open book test, quiz, assignments etc.

B. Attendance [5 Marks]

C. Mid Semester Test -1: [30 Marks]

D. Mid Semester Test-2: [20 Marks]

E. End-Term Exam: [20 Marks]

Evaluation criteria for Skill Based courses

Practical: [100 Marks]

For each practical,

Practical File: [05 Marks]

Viva: [05 Marks]

Performance/Demonstration: [10 Marks]

A total of 5 practicals will be conducted for each course.

SEMESTER-I**Course Title: HUMAN ANATOMY I****Course Code: BPT101**

L	T	P	Credits
4	0	0	4

Course Outcomes**Total Hours- 60**

On the completion of the course the students will be able to

1. Identify and comprehend the structural organization of human body.
2. Understand the clinical significance of each bone, joint and muscle along with other anatomical structures.
3. Develop skills to examine anatomical and physiological issues based on evidence.
4. Gain proficiency in palpating bony landmarks

Course Content**UNIT I****16 Hours**

1. Histology - Definition & Scope of Anatomy, Anatomical Position, anatomical Terminology. Study of basic structure of Cell, tissues of the body, epithelium, connective tissue, cartilage, bone, lymph, muscle, nerve, Circulatory system (large sized artery, medium sized artery, large sized vein), skin and its appendages.
2. Osteology - Formation, growth, function, classification according to morphology and development.
3. Musculoskeletal Anatomy - Definition-classification, structure of fibrous, cartilaginous joints, blood supply and nerve supply of joints. Anatomical positions of body, axes, planes, common anatomical terminologies (Groove, tuberosity, trochanters etc.)
4. General Embryology: Ovum, Spermatozoa; Fertilization; Germ Layers, Differentiation into various organs / systems and fetal circulation.

UNIT-II**15 Hours**

1. Cardiovascular System - Mediastinum: Divisions and contents, Pericardium: position, shape and parts of the heart; conducting System of heart; blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body – region wise.

2. Respiratory System - Outline of respiratory passages: Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on bronchopulmonary segments.
3. Digestive System - Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum. Large blood vessels of the gut. Location, size, shape, features, blood supply, nerve supply and functions of the following: stomach, liver, spleen, pancreas, intestines, gall bladder.
4. Urogenital System - Position, shape, size, features, blood supply and nerve supply of the male and female reproductive system, kidney and urinary bladder.
5. Endocrine System - Position, shape, size, function, blood supply and nerve supply of the following glands: Hypothalamus and pituitary gland, thyroid glands, parathyroid glands, Adrenal glands, pancreatic islets, ovaries and testes.

UNIT III**14 Hours**

Regional Anatomy (Trunk, Thorax and Abdomen)

1. Osteology – Cervical, thoracic, lumbar, sacral and coccygeal vertebrae,
2. Features of typical Rib and parts of sternum.
3. Myology – Origin, insertion, nerve supply and action pre and para vertebral muscles, intercostal muscles and accessory muscles of respiration, anterior and posterior abdominal wall muscles.
4. Lumbar plexus - Position, formation and branches. Diaphragm- Origin, insertion, nerve supply and action, openings in the diaphragm

UNITIV**13 Hours**

Regional Anatomy (Pelvis)

1. Features of pubic symphysis and sacroiliac joints.
2. Muscles of pubic floor and mention their attachments, action and nerve supply.
3. Difference between male and female pelvis.

Transaction Mode

Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- Singh Inderbir (2014). Textbook of Anatomy with colour Atlas. Vol. 1, 2, 3, JaypeeBrother
- Chaurasia B.D.(2017).Human Anatomy. Volume 1, 2, 3. CBS Publishers &Distributors.
- Singh V. (2012). Anatomy of Head, Neck & Brain. Elsevier
- Kinetics. Champaign;Illinois.

Course Title: HUMAN PHYSIOLOGY- I
Course Code: BPT102

L	T	P	Credits
4	0	0	4

Course Outcomes**Total Hours- 60**

On the completion of the course the students will be able to

1. Comprehend the inter-dependency between different body systems and their role in maintaining biological equilibrium.
2. Interpret and draw inference from the results of physiological function tests, ECG's and spirometry read outs.
3. Identify the course of physiological abnormalities which can lead to disease.
4. Draw conclusion on the basis of hematological parameters

Course Content**UNIT I****16 Hours**

Cell

1. Cell – morphology, structure and function of organelles
2. Transport mechanism across cell membrane.

Blood

1. Body fluids (composition and distribution)
2. Composition and function of blood Plasma proteins – composition, formation and their function. Structure, count, formation, functions and variations of R.B.C., W.B.C.s and platelets. Hemoglobin – structure and function. E.S.R
3. Immunity Hemostatic mechanisms – blood Coagulation – factors and mechanism, Bleeding and Clotting time. Blood groups and their significance, determination, Rh factor.
4. Blood transfusion – cross matching, indications, complications. Lymph – composition, formation circulation and functions.

UNIT II**15 Hours**

Cardiovascular System

1. Introduction: Organization of CVS. Properties of Cardiac muscles, Ionic basis of action potential and pacemaker potential, conducting system
2. Components, Impulse conduction. Cardiac Cycle: Definition. Phases of cardiac cycle.
3. Heart sounds – causes, character.
4. ECG: Definition. Different types of leads. Waves and their causes. P-R interval. Heart block. Cardiac Output: Definition. Normal value. Determinants. Stroke volume and its regulation.
5. Heart rate and its regulation. Their variations
6. Arterial Blood Pressure: Definition. Normal values and its variations. Determinants.
7. Peripheral resistance. Regulation of BP.
8. Arterial pulse. Regional Circulation: Coronary, Cerebral and Cutaneous circulation.
9. Cardiovascular changes during exercise.

Respiratory System

1. Introduction: Functions of respiratory system. Respiratory muscles.
2. Mechanics of breathing: Intra-pleural and Intrapulmonary pressure changes during respiration. Chest expansion. Lung compliance: Normal value, factors affecting compliance and its variations.
3. Lung Volumes and capacities. Ventilation - Types. Ventilation-perfusion ratio and its importance.
4. Dead Space: Types and their definition. Transport of respiratory gases: Diffusion across the respiratory membrane.
5. Oxygen transport – Different forms, oxygen-hemoglobin dissociation curve.
6. Factors affecting it. Carbon dioxide transport: Different forms.
7. Regulation of Respiration: Neural Regulation. Chemical Regulation.
8. Hypoxia: Effects of hypoxia. Types of hypoxia. Hyperbaric oxygen therapy. Acclimatization

9. Hypercapnia. Asphyxia. Cyanosis – types and features.
10. Disorders of Respiration: Dyspnea. Orthopnea. Hyperpnoea, hyperventilation, apnoea, tachypnea.
11. Periodic breathing – types, Artificial respiration. Respiratory changes during exercise.

Unit III

14 Hours

Digestive System

1. Introduction: Physiological anatomy and nerve supply of alimentary canal.
2. Enteric nervous system Salivary Secretion: Saliva: Composition. Functions. Regulation. Stomach: Functions. Gastric juice: Gland, composition, function, regulation.
3. Gastrin: Production, function and regulation.
4. Pancreatic Secretion: Composition, production, function. Regulation.
5. Liver: Functions of liver. Bile secretion: Composition, functions and regulation.
6. Gall bladder: Functions. Intestine: Succus entericus: Composition, function and regulation of secretion.
7. Intestinal motility and its function and regulation.
8. Movements of GIT – Mastication, Swallowing, Vomiting. Mechanism of Defecation.

UNITIV

15 Hours

Endocrine System

1. Outline of various hormones, mechanism of action and function.

Excretory System

1. Nephrons – cortical and juxtamedullary, Juxta-glomerular apparatus.
2. Glomerular membrane. Renal blood flow and its regulation.
3. Mechanism of Urine Formation:
4. Glomerular Filtration: Mechanism of glomerular filtration.
5. GFR – normal value and factors affecting.

6. Renal clearance. Inulin clearance.
7. Creatinine clearance. Tubular Reabsorption: Reabsorption of Na⁺, glucose, HCO₃⁻, urea and water.
8. Renal tubular transport maximum. Tubular Secretion: Secretion of H⁺ and K⁺.
9. Mechanism of concentrating and diluting the Urine: Counter-current mechanism.
10. Regulation of water excretion. Diuresis. Diuretics.
11. Micturition: Mechanism of micturition. Skin and temperature regulation.

Transaction mode

Flipped teaching, Open learning, Group discussion, Video based teaching, Case based teaching, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested readings

- Ghai, C. L. (2012). A textbook of practical physiology. JP Medical Ltd.
- Sembulingam, K., & Sembulingam, P. (2012). Essentials of medical physiology. JP Medical Ltd.
- Hall, J. E., & Hall, M. E. (2020). Guyton and Hall textbook of medical physiology. Elsevier Health Sciences.

Course Title: BIOPHYSICS AND MEDICAL ELECTRONICS

Course Code: BPT103

L	T	P	Credits
4	0	0	4

Course Outcomes

Total Hours- 60

On successful completion of this course, the students will be able to:

1. Describe the working of various electrotherapy modalities on basis physics principles.
2. Elaborate the construction of therapeutic modalities on basis of currents and magnetic fields.
3. Understand the physical principles of sound and thermal agents.
4. Test out the working condition of modalities.

Course Content**UNIT I****16Hours**

Physical Principles in Relation to Physiotherapy

1. Structure and Properties of matter - solids, liquids and gases, adhesion, surface tension, viscosity, density and elasticity. Structure of atoms, molecules, elements and compounds. Electricity – Definition and types, therapeutic uses, units of electricity
2. Static electricity – Production of electric charge, characteristics of charged body
3. Current Electricity: Units of Electricity: farad, Volt, Ampere, Coulomb, Watt Condensers: Definition, principle, Types- construction and working, capacity & uses. Conductors, Insulators, Potential difference, Resistance and Intensity.
4. Transmission of electrical energy through solids, liquids, gases and vacuum.
5. Ohm's Law its application to AC and DC currents
6. Rectifying Devices-Thermionic valves, semiconductors, Transistors, Amplifiers, Transducers, Oscillator Circuits. Capacitance, Condensers in DC and AC circuits.

UNITII**15 Hours**

Effects of Current Electricity

1. Chemical effects- ions and electrolytes, ionization
2. Production of E.M.F by chemical actions
3. Magnetic effects, Molecular theory of Magnetism
4. Magnetic fields, electromagnetic induction.
5. Ionization: Principles, effects of various technique of medical ionization
6. Electromagnetic radiation – physical principles and relevance to physiotherapy.

UNITIII**14 Hours**

Electrical Supply

1. Brief outline of main supply of electric current.
2. Dangers short circuits, electric shocks.
3. Precautions safety devices, earthing, fuses etc.

4. First and initial management of electric shock.

UNIT IV

15 Hours

Various Agents

1. Ultrasound - Physical principles of sound and its properties.
2. Thermal agents- Physical principles of cold, superficial and deep heat

Transaction Mode

Demonstration method, Video based teaching, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- Robertson, V., Ward, A., Low, J., Reed, A., & MCSP, D. (2006). Electrotherapy explained: principles and practice. Elsevier Health Sciences. Claytons Electro therapy, Forster & Palastange (2005), CBS publishers.
- Watson, T. (Ed.). (2008). Electrotherapy: evidence-based practice. Elsevier Health Sciences.
- Singh, J. (2012). Textbook of electrotherapy. Jaypee Brothers Publishers.

Course Title: HUMAN ANATOMY I LAB

Course Code: BPT104

L	T	P	Credits
0	0	2	2

Course Outcomes

Total Hours- 30

On successful completion of this course, the students will be able to:

1. Identify and demonstrate parts of human body on a model.
2. Recognize the structure of human organs.
3. Understand the structure and clinical relevance of each bone, joint and muscle.
4. Develop competency to palpate major surface landmarks.

Course Content

UNIT I

10 Hours

Surface Anatomy: To study, identify and mark the surface landmarks on human body.

UNIT II**5 Hours**

To study the bones and muscles of thorax and abdomen on human body models

UNIT III**8 Hours**

Embryology using models and charts.

UNIT IV**7 Hours**

To study the gross anatomy of Respiratory, Digestive, Endocrine, Urinary and Genital system on models, charts and Cds.

Transaction Mode

Demonstration method, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- Singh, I. (2011). Textbook of Anatomy: Volume 1: Upper Extremity, Lower Extremity (Vol. 1). Elsevier Health Sciences.
- Singh, I. (2011). Textbook of Anatomy: Volume 3: Head and Neck, Central Nervous System (Vol. 3). Elsevier Health Sciences.
- Singh, V. (2014). Textbook of Anatomy Abdomen and Lower Limb; Volume II (Vol. 2). Elsevier Health Sciences.

Course Title: HUMAN PHYSIOLOGY I LAB**Course Code: BPT105**

L	T	P	Credits
0	0	2	2

Course Outcomes**Total Hours- 30**

On the completion of the course the students will be able to

1. Examine human vital signs and draw inference on their basis.
2. Identify and differentiate between normal and abnormal heart sounds.
3. Identify and differentiate between normal and abnormal lung sounds.
4. Develop skills to examine various hematological parameters.

Course Content

UNIT I**15 Hours**

To study the following Physiological Phenomenon: -Identification of blood cells and different counts. W.B.C. Count. R.B.C. Count. Haemoglobin percentage and color index. E.S.R. and Blood groups. Bleeding time and clotting time.

UNIT II**15 Hours**

To study the following Physiological Phenomenon: -

Cardio - Respiratory efficiency tests. Artificial respiration and C.P.R. Pulse rate, Heart rate and measurement of Blood Pressure. Respiratory rate and Auscultation. Normal E.C.G.

Transaction Mode

Demonstration method, Case based teaching, Video based teaching, Group Discussion.

Suggested Readings

- Ghai, C. L. (2012). A textbook of practical physiology. JP Medical Ltd.
- Sembulingam, K., & Sembulingam, P. (2012). Essentials of medical physiology. JP Medical Ltd.
- Hall, J. E., & Hall, M. E. (2020). Guyton and Hall textbook of medical physiology. Elsevier Health Sciences.

Course Title: ELECTRO THERAPY- I LAB**Course Code: BPT106**

L	T	P	Credits
0	0	2	2

Course Outcomes**Total Hours- 30**

On successful completion of this course, the students will be able to:

1. Understand the working principle of all the electrotherapy modalities.
2. Use electrotherapy modalities to treat various musculoskeletal conditions.
3. Apply the knowledge of indications, contraindications and precautions in planning treatment sessions.
4. Set-up and maintain their own electrotherapy lab.

Course Content

UNIT I**10 Hours**

To study the basic operation of electric supply to the equipment and safety devices

UNITII**20 Hours**

Equipment care

1. Checking of equipments.
2. Arrangement of exercise therapy and electro therapy equipment.
3. Calibration of equipment. Purchase, billing, document of equipment.
4. Safety handling of equipments.
5. Research lab equipment maintenance. Stock register, movement register maintenance

Transaction Mode

Demonstration method, Case based teaching, Video based teaching, Group discussion.

Suggested readings

- Watson, T. (Ed.). (2008). Electrotherapy: evidence-based practice. Elsevier Health Sciences.
- Singh, J. (2012). Textbook of electrotherapy. Jaypee Brothers Publishers.

Course Title: INTRODUCTION TO HEALTHCARE DELIVERY SYSTEM

Course Code: BPT107

L	T	P	Credits
3	0	0	3

Course Outcomes**Total Hours- 30**

On successful completion of this course, the students will be able to:

1. Identify the social, legal, and economic factors that affect the delivery of healthcare.
2. Explain the development of the health information profession from its beginnings until the present and into the future.
3. Describe the critical health policy issues in the U.S. and explain the future trend in health care.
4. Discuss documentation requirement for various hospitals and health care organizations.

Course Content**UNIT I****10 Hours**

1. Healthcare Providers

2. Historical Perspective of the Healthcare Delivery System
3. Health Promotion and Disease Prevention
4. Managed Care Organizations Regulations and Accreditation

UNIT II**5 Hours**

Medicaid and Medicare

1. Cost of Care
2. Health Insurance
3. Impacts of Information Technology

UNIT III**8 Hours**

1. Characteristics of leaders and managers
2. Primary roles and goals of leaders and managers

UNIT IV**7 Hours**

Written and verbal communication styles of selected healthcare providers/ administrator/managers/staff/patients and families.

Transaction mode

Group discussion, Video based teaching, open learning, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- Kisner, C., Colby, L. A., & Borstad, J. (2017). Therapeutic exercise: foundations and techniques. Fa Davis. The Principle of Exercise Therapy -Gardiner (2005) - C.B.S.Delhi.
- Norkin, C. C., & White, D. J. (2016). Measurement of joint motion: a guide to goniometry. FA Davis.
- Gardiner, M. D. (1973). Principles of Exercise Therapy: M Dena Gardiner.

Course Title: GENERAL PSYCHOLOGY**Course Code: BPT108**

L	T	P	Credits
3	0	0	3

Course Outcomes**Total Hours- 30**

On successful completion of this course, the students will be able to:

1. Get acquainted with the meaning and scope of psychology.
2. Develop skills to conduct various psychological tests.
3. Identify and understand the behavioural processes involved in learning and memory.
4. Learn about the developmental milestones of children.

Course Content

UNIT I

8 Hours

1. Definition of psychology, basic information in relation to schools, methods and branches of psychology.
2. Schools: Structuralism, functionalism, behaviorism psychoanalysis.
3. Methods: Introspection, observation, inventory and experimental method.
4. Branches: General, child, social, industrial, clinical, counseling, educational.
5. Psychology and physiotherapy.

Development and Growth Behavior:

Life span - Infancy, childhood, adolescence, adulthood, middle age, old age. Heredity and environment – its importance and role in physical and psychological development.

Emotions - Definition and differentiate from feelings. Three levels of analysis of emotions, (physiological level, Subjective state, and overt behavior). Theories of emotion. Stress and management of stress.

UNIT II

10 Hours

1. Motivation - Motivation cycle (need, drive, incentive, reward). Classification of motives. Abraham Maslow's theory of need hierarchy
2. Learning - Factors effecting learning. Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory. The effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.
3. Personality - Definitions: List of components: Physical characteristics, character, abilities, temperament, interest and attitudes Discuss briefly the role of heredity, nervous system, physical characteristics, abilities, family and culture of personality development. Basic concepts of Freud: unconscious, conscious, Id, ego and superego, List and define the oral, anal and phallic stages of personality department list and define the 8 stages as proposed by Erickson, 4 concepts of learning as proposed by Dollard and Miller; drive, cue, response and reinforcement.

UNIT III**6 Hours**

1. Intelligence - Theories of intelligence. Distribution of intelligence. Assessment of intelligence.
2. Sensation, Perception and Attention - Attention: Types of attention, Determinants of attention (Subjective determinants and objective determinants). Sensation: Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium and visceral sense. Illusion and hallucination: different types.
3. Frustration: sources of frustration. Conflict: types of conflict. Management of frustration and conflict

UNIT IV**6 Hours**

1. Stress: Anxiety, Tension, Physiological symptoms, psycho-somatic problems, coping strategies, professional stress burnout.
2. Behavior modification: Application of various conditioning and learning principles to modify patient behavior.
3. Clinical Psychology: psychological reactions of a patient during admission and treatment. Anxiety, shock denial, suspicion. Loneliness, shame, guilt, rejection, fear, withdrawal, depression, egocentric, justify and loss of hope.

Transaction mode

Video based teaching, open learning, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- Baum, J. R., Frese, M., & Baron, R. A. (Eds.). (2014). The psychology of entrepreneurship. Psychology Press.
- Kearney, C., & Trull, T. J. (2014). Abnormal psychology and life: A dimensional approach. Cengage Learning.

Course Title: BIOCHEMISTRY**Course Code: BPT109**

L	T	P	Credits
1	0	0	1

Course Outcomes**Total Hours- 30**

On successful completion of this course, the students will be able to:

1. Understand the basic concepts of nutrition and its role in maintenance of

good health.

2. Identify the source and metabolism of carbohydrates, lipids, proteins and vitamins in human body.
3. Identify structures of biomolecules and their chemical reactions essential to life.
4. Relate bio chemistry with clinical outcomes and conduct treatment accordingly.

Course Content

UNIT I

10 Hours

1. Carbohydrates: Concepts of pH and buffers, acid base equilibrium osmotic pressure and its physiological application. Definition, structure, functions, sources, monosaccharides, Disaccharides, Polysaccharides, muco polysaccharide and its importance.
2. Lipids: Definition, function, sources, classification and properties of fatty acids, triacylglycerol, phospholipids, cholesterol and lipoproteins. Essential fatty acids and their importance.
3. Proteins: Definition, sources, Classification and functions of proteins
4. Bioenergetics: definition of biologically important peptides. Concept of free energy charge, Exogenic and endogenic reactions, concepts regarding energy rich compounds. Respiratory chain and Biological oxidation

UNIT II

8 Hours

1. Carbohydrate Metabolism: Glycolysis, citric acid cycle, glycogenesis, glycogenolysis, Glucogenesis, Cori cycle, Maintenance of Blood glucose.
2. Lipid Metabolism :Lipolysis, Fatty acid oxidation, lipogenesis, fatty acid synthesis, Metabolism of cholesterol, Ketone body metabolism, Atherosclerosis, fatty liver.
3. Protein Metabolism: Transamination, Deamination, Fate of ammonia and urea cycle.

UNIT III

7 Hours

1. Nucleic acid: Structure and function of DNA and RNA, Nucleosides, nucleotides, Genetic code, biologically important nucleotides.
2. Enzymes: Definitions, mode of action, factor affecting enzyme action, clinical importance of enzyme.
3. Vitamins: Classification, fat soluble vitamins, A, D.E & K water soluble vitamin B complex & C, Daily Requirements Physiological functions and diseases of Vitamin deficiency.

4. Connective tissue & Nerve tissue: Mucopolysaccharide, connective tissue proteins, glycoprotein, chemistry & Metabolism of bone and tooth, metabolism of skin. Composition, metabolism, chemical mediators of Nerve activity.

UNIT IV**5 Hours**

1. Water and Electrolyte: Fluid compartment, daily intake and output sodium and potassium metabolism.
2. Nutrition - Balanced diet, BMR – normal values, metabolism in exercise and injury. Diet for chronically ill and terminally ill patients.
3. Isotopes: Isotopes and their role in treatment and diagnosis of diseases, Liver & Renal Function Tests.

Transaction Mode

Open learning, Seminars, Group discussions, Lecture, Seminar, e-Team teaching, e-Tutoring, Dialogue, Peer Group Discussion

Suggested Reading

- Satyanarayana, U., & Chakrapani, U. (2008). Essentials of biochemistry. Book and Allied, Kolkata, India,. Textbook of Biochemistry for Medical Students - Vasudeval D.M.(2019) - JaypeeBrothers.
- Marshall, W. J., Lapsley, M., Day, A., & Ayling, R. (2014). Clinical Biochemistry: Metabolic and Clinical Aspects. Elsevier Health Sciences.

SEMESTER-II**Course Title: HUMAN ANATOMY- II****Course Code: BPT201**

L	T	P	Credits
4	0	0	4

Course Outcomes**Total Hours- 60**

On the completion of the course the students will be able to

1. Identify the bony structures and the soft tissues present in human body.
2. Understand the clinical significance of each bone, joint and muscle along with other anatomical structures.
3. Develop skills to examine anatomical and physiological issues based on evidence.
4. Identify physical deformities.

Course Content**UNIT I****16 Hours**

1. Osteology : Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges
2. Myology: Origin, insertion, nerve supply and action of Muscles of upper arm, forearm and hand.
3. Joints of upper limb: Shoulder girdle, Shoulder joint, Elbow joints, radioulnar joints, Wrist joint and joints of hand.
4. Regional Anatomy: Nerves, blood supply and lymphatic drainage of upper extremity. Breast, axilla, pectoral region, scapular region, front of arm, back of arm, cubital fossa, front of forearm, back of forearm, palm, dorsum of hand, important spaces of hand, brachial plexus.
5. Arches of hand, skin of the palm and dorsum of hand.

UNIT II**15 Hours**

1. Osteology : Hip bone, femur, Tibia, Fibula, Patella, tarsals, metatarsals and phalanges.
2. Myology : Origin, insertion, nerve supply and action of Muscles of thigh, lower leg and foot.
3. Joints of lower limb : Hip joint, Knee joint, Ankle joint, joints of foot.
4. Regional Anatomy: Nerves, blood supply and lymphatic drainage of lower extremity. 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, arches of foot, skin of foot.

UNIT III**14 Hours**

Head & Neck

- Osteology: Mandible and bones of the skull.
- Soft parts: Muscles of the face and neck and their nerve and blood supply-extra ocular muscles, triangles of the neck.
- Gross anatomy of eyeball, nose, ears and tongue.

UNIT IV**15 Hours**

Neuro – Anatomy

1. Cranial nerves. Peripheral Nerve Neuromuscular Junction.
2. Sensory End Organs.
3. Spinal Cord Segments & Areas. CNS & PNS.
4. Brainstem. Cerebellum. Inferior colliculi. Superior Colliculi.

5. Hypothalamus. Thalamus.
6. Cerebral hemispheres Corpus striatum Lateral ventricles. Meninges.
7. Blood supply of the brain.
8. Internal Capsule
9. Pyramidal systems,
10. Extra – pyramidal systems.
11. Anatomic integration

Transaction Mode

Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Case based studies Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Singh Inderbir. Textbook of Anatomy with colour Atlas. Vol. 1, 2, 3, Jaypee Brother
- Chaurasia B.D.(2017).Human Anatomy. Volume 1, 2, 3. CBS Publishers & Distributors

Course Title: HUMAN PHYSIOLOGY- II

Course Code: BPT202

L	T	P	Credits
4	0	0	4

Course Outcomes

Total Hours- 60

On the completion of the course the students will be able to

1. Understand the structure and functioning of human neurological system.
2. Learn about the physiological effects of exercise on human body systems.
3. Identify sense organs of the human body and their associated abnormalities.
4. Interpret results of haematological tests.

Course Content

UNIT I

16 Hours

Nerve Muscle Physiology

1. Nerve - structure and function of neurons.
2. Classification, properties and impulse transmission of nerve fibres.
3. Nerve injury - degeneration and regeneration.
4. Neuroglia - types and functions.
5. Muscle - classification. Skeletal muscle - structure.
6. Neuromuscular junction - structure. Neuromuscular transmission.

7. Introduction - Resting membrane potential
8. Action potential - ionic basis and properties.

UNIT II**15 Hours**

Nerve Physiology:

1. Introduction - organization of Nervous System - central and peripheral system. Functions of nervous system.
2. Neuron and classification of nerve fibres.
3. Motor units. Structure of synapse and synaptic transmission.
4. Types and properties of sensory Receptors, types of sensations.
5. Sensory Tracts of Spinalcord - Ascending tracts - posterior column tract, lateral spinothalamic tract and anterior spinothalamic tract - their origin, course, termination and function.
6. Somatic sensations - crude touch, fine touch, tactile localization, tactile discrimination, vibration sense, kinesthetic sensations and stereognosis.
7. Pain sensation - mechanism of pain. Cutaneous pain -slow and fast pain, hyperalgesia. Deep pain - visceral pain - referred pain. Gate control theory of pain.
8. Motor Mechanism - Motor pathway, descending tracts - Pyramidal and Extrapyramidal Tracts -origin, course, termination and function. UMN and LMN.
9. Reflex action - componenta, Bell-magendie law, classification and properties. Monosynaptic and polysynaptic reflexes, superficial reflexes, deep reflexes.
10. Stretch reflex -structure of muscle spindle, pathway, higher control and functions. Inverse stretch reflex, muscle tone, defination and properties. Hypotonia, atonia and hypertonia. UMNL and LMNL.
11. Hemi section and complete section of spinal cord, upper and lower motor neuronlesions.
12. Cerebral Cortex - lobes and Brodmann's area and their functions. Higher functions of cerebral cortex- learning, memory and speech.
13. EEG - Waves and features.
14. Posture and equilibrium - postural reflexes - spinal, medullary, midbrain and cerebral reflexes.
15. Functions of Cerebellum Thalamus and Hypothalamus- functions.
16. Basal ganglia- structure and function.
17. CSF - formation, composition, circulation and functions.
18. Automatic NervousSystem - Functions and actions of parasymphatic and symphatic.

UNIT III**14 Hours**

Special sense

1. Vision - Introduction, Functional anatomy of eyeball, Functions of

cornea, iris, pupil, aqueous humor - glaucoma, lens - cataract, vitreous humor, rods and cones. Photopic vision, scotopic vision, visual pathway.

2. Refractive errors - myopia, hypermetropia, presbyopia, and astigmatism.
3. Visual reflexes - accommodation - pupillary and light. Visual acuity and visual field. Light adaptation. Dark adaptation. Color vision -color blindness.
4. Audition- physiological anatomy of ear. Functions of external ear, middle ear and inner ear. Structure of cochlea and organ of corti. Auditory pathway. Types of deafness. Test for hearing. Audiometry.
5. Taste - taste buds, primary taste, Gustatory pathway.
6. Smell - Olfactory membrane, olfactory pathway.

UNIT IV

15 Hours

Physiology of exercise and work:

1. Effects of acute and chronic exercise on - O₂ transport
2. Muscle strength/power/endurance
3. Cardiovascular system and Respiratory system
4. Body fluids and electrolyte.
5. Effect of gravity/altitude/acceleration/pressure on physical parameters.

Transaction Mode

Lecture, Seminar, Case based teaching, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning, Flipped teaching

Suggested Readings

- Ghai, C. L. (2012). A textbook of practical physiology. JP Medical Ltd.
- Sembulingam, K., & Sembulingam, P. (2012). Essentials of medical physiology. JP Medical Ltd.
- Hall, J. E., & Hall, M. E. (2020). Guyton and Hall textbook of medical physiology. Elsevier Health Sciences

Course Title: MEDICAL TERMINOLOGY AND RECORD KEEPING

Course Code: BPT203

L	T	P	Credits
4	0	0	4

Course Outcomes

Total Hours- 60

On the completion of the course the students will be able to

- Identify the characteristics and quality of a medical record
- Create and store medical records as per the requirement
- Manage and lead the department responsible for medical record maintenance.
- Classify the records as per the criteria.

Course Content

UNIT I

16 Hours

Characteristics of quality Medical Records

1. Definition, Characteristics of 'Good' Medical Record
2. Values of 'Good' Medical Record to various users
3. Required Characteristics of entries in medical Records
4. Responsibility for Medical Record Quality
5. Source-oriented, Problem-oriented, and Integrated medical records
6. Medical Record Forms and their Content
7. Standard Order of Arrangement of Medical Record forms
8. Analysis of Medical Record-Quantitative & Qualitative
9. Incomplete Record Control

UNIT II

15 Hours

Filing Methods, Storage, and Retention

1. Numbering and Filing Systems
2. Filing
3. Storage- Microfilming and Disk Storage
4. Retention
5. Registers & Indexes
6. Record movement control & Tracking system

UNIT III

14 Hours

Medical Record Department Management

1. Planning, Organizing, Directing and Controlling Personnel
2. Principal Responsibilities and Duties of the Medical Record Administrator/ Director
3. Tools of Management in the Hands of the Medical Record Administrator

UNIT IV

15 Hours

Medical Records for different patient encounters with health care facility

1. Ambulatory Care Records {Emergency & Outpatient Records}

2. Clinical Records in Long Term Care and Rehabilitation Facilities
3. Mental Health

Transaction Mode

Open learning, Team learning, flipped teaching, Lecture, Seminar, Case based teaching, Peer Group Discussion, Self-Learning, Collaborative Learning and Cooperative Learning.

Suggested Readings

- Robertson, V., Ward, A., Low, J., Reed, A., & MCSP, D. (2006). Electrotherapy explained: principles and practice. Elsevier Health Sciences.
- Watson, T. (Ed.). (2008). Electrotherapy: evidence-based practice. Elsevier Health Sciences.
- Singh, J. (2012). Textbook of electrotherapy. Jaypee Brothers Publishers.

Course Title: HUMAN ANATOMY II-LAB
Course Code: BPT204

L	T	P	Credits
0	0	4	2

Course Outcomes**Total Hours- 30**

On the completion of the course the students will be able to

1. Identify and demonstrate parts of human nervous system on a model.
2. Recognize the structure of human organs.
3. Understand the structure and clinical relevance of each bone, joint and muscle.
4. Develop competency to palpate major surface landmarks.

Course Content**UNIT I****10 Hours**

Surface Anatomy: To study, identify and mark the surface landmarks on human body.

UNIT II**8 Hours**

To study the muscles of upper and lower extremities on a dissected human body

UNIT III**5 Hours**

To study the bones of human body with special emphasis on origin on a dissected human muscles and ligaments. To study the anatomy of joints of upper and lower extremities on models, charts and CDs.

UNIT IV**7 Hours**

To study the anatomy of C.N.S. and P.N.S. on models, charts and CDs.

Transaction Mode

Demonstration method, Team teaching, Video based teaching

Suggested Readings

- Singh, I. (2011). Textbook of Anatomy: Volume 1: Upper Extremity, Lower Extremity (Vol. 1). Elsevier Health Sciences.
- Singh, I. (2011). Textbook of Anatomy: Volume 3: Head and Neck, Central Nervous System (Vol. 3). Elsevier Health Sciences.
- Singh, V. (2014). Textbook of Anatomy Abdomen and Lower Limb; Volume II (Vol. 2). Elsevier Health Sciences.
- Chaurasia, B. D. (1996). BD Chaurasia's Handbook of General Anatomy. CBS.

Course Title: EXERCISE THERAPY - I LAB**Course Code: BPT205**

L	T	P	Credits
0	0	4	2

Course Outcomes**Total Hours- 30**

On the completion of the course the students will be able to

1. Classify human muscles and understand their specific actions.
2. Identify the fundamental and derived positions of human body and their uses.
3. Develop proficiency in measuring range of motion.
4. Prescribe flexibility exercises proficiently to the patients.

UNIT I**10 Hours**

To practice the relaxed passive movement, assisted movements and resisted movements region wise.

UNIT II**8 Hours**

To study the position of joints, muscle work, and stability of various fundamental and derived positions.

UNIT III**5 Hours**

To study the different types of muscle contraction, muscle work

UNIT IV**7 Hours**

To study group action of muscles and co-ordinated movements.

Transaction Mode

Demonstration method, Team teaching, Video based teaching

Suggested Readings

- Kisner, C., Colby, L. A., & Borstad, J. (2017). Therapeutic exercise: foundations and techniques. Fa Davis. The Principle of Exercise Therapy -Gardiner (2005) - C.B.S.Delhi.
- Norkin, C. C., & White, D. J. (2016). Measurement of joint motion: a guide to goniometry. FA Davis

Course Title: CLINICAL PSYCHOLOGY**Course Code: BPT206**

L	T	P	Credits
2	0	0	2

Course Outcomes**Total Hours- 30**

On the completion of the course the students will be able to

1. Develop Scientist-Practitioner approach
2. Inculcate advanced clinical skills in the field of mental health
3. Become proficient in-patient counseling and support
4. Transfer knowledge and skills to students as well as younger professionals.

Course Content**UNIT I****10 Hours**

1. Classification systems in psychopathology
2. Early diagnostic classification systems.
3. ICD DSM –
4. Approaches to psychopathology: Biological, psychodynamic, Behavioural, cognitive, socio- cultural.

UNIT II**5 Hours**

1. Anxiety disorders: Approaches and etiology of Generalized anxiety disorder
2. Panic disorder, Phobia, Obsessive-compulsive disorder and Post-traumatic stress disorder.
3. Somatoform disorders: Approaches and etiology of Somatization,
4. Hypochondriasis, Pain disorder and Conversion disorder.

UNIT III**8 Hours**

1. Psychotic disorders: Approaches and etiology of Schizophrenia
2. Paranoid and Mood disorders.
3. Cognitive impairments: Approaches and etiology of Delirium, Dementia and Amnesic syndromes, Dementia of the Alzheimer's type, Pre-senile Dementia, Pick's disease, Huntington's chorea.

UNIT IV**7 Hours**

1. Child Psychopathology: Historical overview
2. Models: Medical, Behavioral, psychodynamic, cognitive, and developmental.
3. Neurotic disorders: Childhood compulsive, obsessive and phobic reactions.
4. Childhood psychosis: childhood schizophrenia: Symptoms and causes.
5. Specific Disorders in Children: Attention deficit hyperactivity disorder, Learning disability and Intellectual Disability
6. Autism: Symptoms and causes.

Transaction Mode

Flipped teaching, Group discussions, Task based teaching, Lecture, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Carson, R.C., Butcher, J.N., & Mineka, S. (2001). Abnormal psychology in modern life (11th ed). New York. Allyn and Bacon.
- Kaplan, H.I., Saddock, B.J. & Gribb, J.A. (1994). Synopsis of Psychiatry. New Delhi. B.I Waruly.
- Barlow, D.H. & Durand, V.M. (1999). Abnormal psychology: An integrative approach (2nd ed.). Pacific Grove: Brooks/Cole.
- Davison, G.C. & Neals J.M. (1996). Abnormal psychology (Revised ed.). New York: John Wiley.

Course Title: SOCIOLOGY**Course Code: BPT207**

L	T	P	Credits
2	0	0	2

Course Outcomes**Total Hours- 30**

On the completion of the course the students will be able to

1. Identify the economic, cultural and political factors affecting structure of society.

2. Understand the importance of race, class and gender inequality
3. Recognize the social norms and values.
4. Understand the role of socialization in patient rehabilitation process.

Course Content

UNIT I

10 Hours

1. Introduction - Meaning, definition and scope of sociology. Its relation to social psychology.
2. Socialization - Meaning, process and agencies. Primary, Secondary and Anticipatory socialization.
3. Social Groups - In hospitals, socialization in the rehabilitation of patients. Meaning, definition, features and influence of formal and informal groups on health and sickness.

UNIT II

5 Hours

1. **Family** - Meaning, definition, types, features and functions.
2. **Social factors in health and disease situations:** Meaning of social factors. Role of social factors

UNIT III

8

Hours

1. Community - Rural community – meaning and features – health hazards to ruralities. Urban community - meaning and features – health hazards to urbanities.
2. Social Worker - Meaning and Role of medical social worker.
3. Social Change - Meaning, factors, human adaptation and social change, social change and stress, social change and health programmes.

UNIT IV

7 Hours

1. Social Problems - Meaning, definition and characteristics.
2. Social Problems of disabled - Population explosion. Poverty. Beggary. Juvenile delinquency. Prostitution. Drugs. Crime. Alcoholism. Problems of working women.

Transaction Mode

Open learning, Problem solving, Flipped teaching, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Kupuswamy - Social Changes in India – (2006) - Vikas, Delhi.
- Ahuja - Social Problems – (2014) - Bookhive, Delhi.

Course Title: Physiotherapy Ethics and Laws

Course Code: BPT208

L	T	P	Credits
2	0	0	2

Course Outcomes**Total Hours- 30**

On the completion of the course the students will be able to

1. To be aware of History of physiotherapy.
2. To be aware of ethics and laws of physiotherapy.
3. To be aware of the rules that govern the profession.
4. To follow ethical guidelines while dealing with patients.

Course Content**UNIT I****10 Hours**

1. History of Physiotherapy
2. History of physiotherapy
3. Ethical principles in health care
4. Ethical principles related to physiotherapy,
5. Scope of practice
6. Enforcing standards in health profession-promoting quality care
7. Professional ethics in research
8. education and patient care delivery
9. Informed consent issues
10. Medical ethics and Economics in clinical decision-making

UNIT II**5 Hours**

1. Ethical issues
2. Ethical issues in physiotherapy
3. Ethical issues in clinical practice
4. Ethical issues in private practice

UNIT III**8 Hours**

Laws and legal concepts

1. Concepts.
2. Protection from Malpractice claims.
3. Consumer protection Act.
4. Liability and Documentation.
5. Laws vs. Regulations
6. Professional ethics

Standards of practice for physical therapy assistant (PTA)

1. Value based behaviors for PTA
2. Palliative care
3. Bioethics

UNIT IV**7 Hours**

Rules of professional conduct

1. Physiotherapy as a profession
2. Relationship with patients

3. Relationship with health care institutions
4. Relationship with colleagues and peers
5. Relationship with medical and other professional.
6. Confidentiality and Responsibility,
7. Malpractice and negligence,
8. Provision of services and, advertising
9. Resolution of conflicts

Role of physiotherapy

1. Role of PT in health care
2. Ethical responsibilities of a PT
3. Core values
4. Decision Making process

Policy statement -World Confederation of Physical Therapy

Transaction Mode

Open learning, Problem solving, Flipped teaching, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Ethical Issues Perspectives for the physiotherapists – Kavita Raja, Fiddy Davis
- Essentials of Community Physiotherapy and Ethics – Prof.Dr. Rajinder Rajput
- Physical Therapy Ethics-Donald L Gabard

SEMESTER-III

Course Title: EXERCISE THERAPY- I

Course Code: BPT301

L	T	P	Credits
4	0	0	4

Course Outcomes

Total Hours- 60

On the completion of the course the students will be able to

1. Describe the basic concepts of therapeutic exercises.
2. Prescribe therapeutic exercises for different conditions.
3. Plan an exercise protocol specific to a particular condition.
4. Modify and improve exercise therapy outcomes according to the needs and abilities of the patient.

Course Content

UNIT I

16 Hours

Introduction to exercise therapy and Muscle Work

1. Aims, techniques of exercise therapy and general areas of its application
2. Group action of muscles
3. Angle of pull
4. Mechanical efficiency of muscles.

UNIT II

15 Hours

1. Starting Positions: Describe the following fundamental starting positions and their derived positions including joint position, their muscle work, effects and uses, Standing, Kneeling, Sitting, Lying, Hanging.
2. Introduction to Movements Analysis of joint motion, Muscle work, Neuro – muscular coordination.

UNIT III

14 Hours

Active Movements

1. Definition of strength, power & work, endurance, muscle actions
2. Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction & relaxation,
3. Muscle fibre type, motor unit, force gradation.
4. Causes of decreased muscle performance.
5. Physiologic adaptation to training: Strength & Power, Endurance.
6. Types of active movements.

Passive movement

1. Causes of immobility
2. Classification of Passive movements
3. Principles of giving passive movements, Indications, contraindications, effects and uses
4. Techniques of giving passive movements.

UNIT IV

15 Hours

1. Free exercise, and: Classification, principles, techniques, indications, contraindications, effects and uses. Principles, techniques, indications, contraindications, effects and uses.
2. Active assisted exercises- Definition, principles, techniques, indications, contraindications, precautions, effects and uses.
3. Resisted exercises- Types of resisted exercises: Manual and Mechanical resistance exercise, Isometric exercise, Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Isokinetic exercise, Open-Chain and Closed-Chain exercise.

Transaction Mode

Lecture, Demonstration method, flipped teaching, Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning, Video based teaching, Demonstration method, Flipped teaching

Suggested Readings

- Kisner, C., Colby, L. A., & Borstad, J. (2017). Therapeutic exercise: foundations and techniques. Fa Davis. The Principle of Exercise Therapy -Gardiner (2005) - C.B.S.Delhi.
- Norkin, C. C., & White, D. J. (2016). Measurement of joint motion: a guide to goniometry. FA Davis.
- Gardiner, M. D. (1973). Principles of Exercise Therapy: M Dena Gardiner.

Course Title: ELECTRO THERAPY- I
Course Code: BPT302

L	T	P	Credits
4	0	0	4

Course Outcomes

Total Hours- 60

On the completion of the course the students will be able to

1. Understand the clinical relevance of various electrotherapy modalities.
2. Choose appropriate modality for treatment based on patient assessment.
3. Apply therapeutic modalities clinically.
4. Become proficient in conducting electro-diagnostic tests.

Course Content

UNIT I

16 Hours

1. Electrical Reactions and Electro-Diagnostic Tests:
2. Nerve conduction velocity studies.
3. S.D. Curve - Methods of Plotting SD Curve, Apparatus selection, Characters of Normally innervated Muscle, Characters of Partially Denervated Muscle, Characters of Completely denervated Muscle.
4. Chronaxie and Rheobase.
5. EMG: Construction of EMG equipment.
6. Biofeedback: instrumentation, principles, therapeutic effects, indications, precautions, operational skills and patient preparation.

UNIT II

15 Hours

1. Low Frequency Currents:
2. Basic types of current – Direct Current: types, physiological & therapeutic

effects. Alternating Current.

3. Types of Current used in Therapeutics. Modified D.C - Faradic Current and Galvanic Current Modified A.C - Sinusoidal Current and Diadynamic Current.
4. Faradic Current: Definition, Modifications, Techniques of Application of Individual, Muscle and Group Muscle stimulation, Physiological & Therapeutic effects of Faradic Current, Precautions, Indications & Contra-Indications, and Dangers.

UNIT III

14 Hours

1. Galvanic Current: Definition, Modifications, Physiological & Therapeutic effects of Galvanic Current, Indications & Contra-Indications, Dangers, Effect of interrupted galvanic current on normally innervated and denervated muscles and partially denervated muscles.
2. Iontophoresis: Techniques of Application of Iontophoresis, Indications, Selection of Current, commonly used Ions (Drugs) for pain, hyperhydrosis, wound healing.
3. Principles of Application: Electrode tissue interface, Tissue Impedance, Types of Electrode, Size of Electrode – Water bath, Unipolar, Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance.

UNIT IV

15 Hours

Transcutaneous Electrical Nerve Stimulation (TENS):

1. Theories of Pain, Define TENS.
2. Types of TENS - Conventional TENS, Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS
3. Theories of pain relief by TENS.
4. Principles of clinical application, Dosage parameters
5. Physiological & Therapeutic effects
6. Indications & Contraindications

Transaction Mode

Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Robertson, V., Ward, A., Low, J., Reed, A., & MCSP, D. (2006). Electrotherapy explained: principles and practice. Elsevier Health Sciences. Clayton's Electrotherapy, Forster & Palastange (2005), CBS publishers.
- Watson, T. (Ed.). (2008). Electrotherapy: evidence-based practice. Elsevier Health Sciences.
- Singh, J. (2012). Textbook of electrotherapy. Jaypee Brothers Publishers

Course Title: PHARMACOLOGY**Course Code: BPT303**

L	T	P	Credits
4	0	0	4

Course Outcomes**Total Hours- 60**

On successful completion of this course, the students will be able to:

1. To understand the pharmacological actions of different categories of drugs.
2. To understand the application of basic drugs in the prevention and treatment of various diseases.
3. To gain knowledge about the positive and negative effects of different medicinal drugs on human body.
4. To understand the ill effects of overdose

Course Content**UNIT I****16 Hours**

General Pharmacology:

1. Definitions, classification of drugs.
2. Sources of drugs.
3. Routes of drug administration.
4. Distribution, metabolism and excretion of drugs.
5. Pharmacokinetics and Pharmacodynamics.
6. Factors modifying drug response. Adverse effects.

UNIT II**15 Hours**

1. Autonomic nervous system: Cholinergic and anticholinergic drugs.

- Adrenergic and Adrenergic blocking drugs. Peripheral muscle relaxants.
2. Disorders of Movement: Drugs used in Treatment of Parkinson 's disease. Antiepileptic Drugs. Spasticity and Skeletal Muscle Relaxants
 3. Geriatrics: Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension.

UNIT III**14 Hours**

Cardio-vascular Pharmacology

1. Drug used for treatment of heart failure – digitalis, diuretics, vasodilators, ACE inhibitors. Antihypertensive drugs – diuretics, beta blockers, calcium channel blockers, ACE inhibitors, Central acting alpha agonists, peripheral alpha agonists, direct acting vasodilators. Antiarrhythmic drugs.
2. Drugs used for treatment of vascular disease – lipid lowering agents, anti-thrombotics, Anti-coagulants and thrombolytics.
3. Drugs used for treatment of ischemiac heart disease – nitrates, beta blockers, calcium channel blockers

UNIT IV**15 Hours**

Neuropharmacology

1. Sedative – hypnotic drugs: barbiturates, benzodiazepines.
2. Anti-Anxiety drugs – benzodiazepines, anxiolytics.
3. Drugs used for treatment of mood disorders – monoamine oxidase inhibitors, tricyclic antidepressants, A typical antidepressant.
4. Antipsychotic drugs.

Digestion and Metabolism

1. Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea
2. Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemic.

Transaction mode

Lecture, Seminar, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning, Video based teaching, Flipped learning, Team teaching

Suggested readings

- Tripathi, K. D. (2013). Essentials of medical pharmacology. JP Medical Ltd, Delhi.
- Satoskar, R. S. (1973). Pharmacology and pharmacotherapeutics (Vol. 1). Popular Prakashan, Bombay

Course Title: EXERCISE THERAPY –II LAB
Course Code: BPT304

L	T	P	Credits
0	0	2	2

Course Outcomes

Total Hours- 30

On successful completion of this course, the students will be able to:

1. Perform physical tests and measurements on patients.
2. Execute complete assessment and evaluation of a patient.
3. Become proficient in providing therapeutic exercises and soft tissue mobilization.
4. Develop capability of teaching yoga asanas.

Course Content

UNIT I

10 Hours

To practice the entire soft tissue manipulative techniques region wise

1. upper limb
2. lower limb
3. neck
4. back
5. face.

UNIT II

8 Hours

To practice assessment & evaluative procedures for

1. Motor
2. Sensory
3. neuromotor coordination
4. vital capacity
5. limb length

6. higher functions.

UNIT III

7 Hours

To practice the measurement of

1. ROM using goniometer for joints of upper limb, lower limb & trunk.
2. Grading of muscle strength region wise – upper limb, lower limb and trunk.

UNIT IV

5 Hours

1. To practice & experience effects of basic yoga “asanas”
2. To study & practice local & general relaxation techniques.

Transaction mode

Demonstration method, Case analysis, Video based learning

Suggested readings

- Kisner, C., Colby, L. A., & Borstad, J. (2017). Therapeutic exercise: foundations and techniques. Fa Davis. The Principle of Exercise Therapy -Gardiner (2005) - C.B.S.Delhi.
- Norkin, C. C., & White, D. J. (2016). Measurement of joint motion: a guide to goniometry. FA Davis.
- Gardiner, M. D. (1973). Principles of Exercise Therapy: M Dena Gardiner.

Course Title: ELECTROTHERAPY- II LAB

Course Code: BPT305

L	T	P	Credits
0	0	2	2

Course Outcomes

Total Hours- 30

On successful completion of this course, the students will be able to:

1. Differentiate between the types of therapeutic currents based on their frequency
2. Choose appropriate modality for treatment based on patient assessment
3. Apply therapeutic modalities clinically
4. conduct electro-diagnostic tests with proficiency

Course Content

UNIT I

10 Hours

1. To experience sensory and motor stimulation of nerves and muscles

by various types of low frequency currents oneself.

UNIT II**8 Hours**

1. To locate and stimulate different motor points region wise including the upper & lower limb, trunk and face.
2. To study a Biofeedback unit its operation and different methods of application region wise.

UNIT III**7 Hours**

1. Therapeutic application of different low frequency current
2. Faradic foot bath, faradism under pressure
3. Iontophoresis.

UNIT IV**5 Hours**

1. To plot strength duration curve
2. To study a TENS simulator, its operator and application region wise.

Transaction mode

Open learning, Case based teaching, Video based teaching

Suggested readings

- Robertson, V., Ward, A., Low, J., Reed, A., & MCSP, D. (2006). Electrotherapy explained: principles and practice. Elsevier Health Sciences. Claytons Electro therapy, Forster & Palastange (2005), CBS publishers.
- Watson, T. (Ed.). (2008). Electrotherapy: evidence-based practice. Elsevier Health Sciences.
- Singh, J. (2012). Textbook of electrotherapy. Jaypee Brothers Publishers.

**Course Title: FIRST AID AND EMERGENCY
MANAGEMENT**

Course Code: BPT306

L	T	P	Credits
2	0	0	2

Course Outcomes

Total Hours- 30

On successful completion of this course, the students will be able to:

1. Identify the organization and functioning of an emergency unit
2. Accomplish patient transfers efficiently
3. Provide resuscitation in case of emergencies
4. Examine the vital signs to establish the condition of the patient

Course Content

UNIT I

10 Hours

Functioning of an ideal emergency medicine department

1. Concept of triage a. Components of triage b. Triage officer c. Triage procedure
2. Multiple and mass casualties: Difference between multiple and mass casualties
3. Disaster preparedness
4. Basic principle, description, types, usage, calibration and maintenance of: Electrocardiograph, Multi-parameter monitors, Defibrillator, AED, ventilator

UNIT II

8 Hours

Ambulance services

1. Responding to a call
2. Emergency vehicle operations

Position and Transport of patient

1. Patient position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.
2. Lifting and transporting patients: lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.

UNIT III

7 Hours

Principles of resuscitation

1. Sudden cardiac death
2. Cardiac, respiratory arrest
3. Basic cardiopulmonary resuscitation in adults
4. Advanced cardiac life support
5. Resuscitation in neonates, pediatrics and resuscitation in pregnancy
6. Hand washing and hygiene.
7. Injuries and Personal protection, Insulation and safety procedures.

8. Aseptic techniques, sterilization and disinfection.

UNIT IV

5 Hours

Specific resuscitative procedures

1. Airway management
2. Breathing and ventilation management
3. Venous and intraosseous access
4. Defibrillation and cardioversion
5. Fluid and blood resuscitation
6. Vasoactive agents in resuscitation
7. Arrhythmias
8. Emergency surgical procedures including cricothyroidotomy, needle thoracocentesis, ICD tube insertion, pericardiocentesis, and tourniquet application

Transaction mode

Open learning, Problem solving, Task based teaching

Suggested reading

- Behara, R., Wears, R. L., Perry, S. J., Eisenberg, E., Murphy, L., Vanderhoef, M., ... & Cosby, K. (2005). A conceptual framework for studying the safety of transitions in emergency care.
- Caroline, N. L. (2007). Emergency care in the streets. Jones & Bartlett Learning.
- Watkinson, D., & Neal, V. (1998). First aid for finds. Rescue.

COURSE TITLE: NATUROPATHY

Course Code: BPT307

L	T	P	Credits
2	0	0	2

Course Outcomes

Total Hours- 30

On the completion of the course the students will be able to

1. Identify various disabilities based on standardized guidelines and classification.
2. Learn about different models of rehabilitation and the role of rehabilitation team members.
3. Design and implement a rehabilitation programme as per the needs of an individual.
4. Prescribe appropriate orthosis and prosthesis to the patients.

Course Content

UNIT I

10 Hours

1. Properties of Water, Mud, Air and Sunlight.
2. Health is Positive and Disease is Negative
3. Role of diet in Naturopathy and Yoga (Satvic, Tamsic, Rajsic)
4. Outline on a) Regular Habits for health b) Rest and Relaxation c) Live Food- Natural Raw diet d) Fasting e) Exercises.

UNIT II**5 Hours**

The Diagnostic Procedures in Naturopathy & their Diagnostic Values

1. Facial Diagnosis
2. Iris diagnosis
3. Chromo Diagnosis
4. Spinal Analysis
5. Panchatantras and their importance in Restoration, Maintenance of Health and Prevention of Diseases.

UNIT III**8 Hours**

Therapy

1. Mud Therapy i) Mud Packs ii) Mud Bath
2. Chromo therapy Color Treatment i) Heat, Light, Ultra-violet and infra-red rays
3. Chromothermolium
4. Heliotherapy i) Sun Bath ii) Athapasnana (Banana Leaf Bath)
5. Air-Therapy i) Air Bath ii) Ozone Bath
6. Magnetotherapy I. Massage Therapy
7. Aroma Therapy

UNIT IV**7 Hours**

Treatment Modalities in Nature Cure (in brief)

1. Enema
2. Colon Hydrotherapy
3. Hip Bath
4. Spinal Bath
5. Spinal Spray
6. Foot Bath & Arm Bath
7. Contrast Arm & Foot Bath
8. Steam Bath & Sauna Bath
9. Jacuzzi & Full immersion Bath
10. Under Water Massage
11. Douches & Cold Circular Jet Bath
12. Whirlpool Bath
13. Gastro Hepatic Pack & Kidney Pack
14. Oxygen Bath

Transaction Mode

Lecture, Seminar, e-Tutoring, Dialogue, Peer Group Discussion, Self-Learning and Cooperative Learning Flipped teaching, Demonstration method, Case based teaching.

Suggested Readings

- Benjamin, H. (2013). Everybody's guide to nature cure. Read Books Ltd.
- Mabey, R. (2011). Nature cure. Random House.

Course Title: NURSING CARE**Course Code: BPT308**

L	T	P	Credits
2	0	0	2

Course Outcomes**Total Hours- 30**

On successful completion of this course, the students will be able to:

1. Gain skills for providing basic nursing care to patients
2. Perform various nursing care procedures in specialized units
3. Develop skills for providing nursing care in post-surgical cases
4. Plan out strategies for community health nursing

Course Content**UNIT I****10 Hours****BASIC SCIENCES**

1. Identify and take appropriate measures including disinfection and sterilization for the prevention of diseases in the hospital and community
2. Collect and handle specimens for various diagnostic tests
3. Enumerate weights and measures and demonstrate skill in calculation of dosage and preparation of solutions
4. Read and interpret prescriptions and care for drugs according to the regulations
5. Describe various groups of drugs acting on different systems of the body

UNIT II**5****Hours****FUNDAMENTALS OF NURSING**

1. Provide first aid treatments
2. To provide congenial and safe environment to the patient
3. Carry out basic nursing procedures for the care of the patients with an understanding of the scientific principles involved

4. Make accurate observations and records.

UNIT III

8 Hours

MEDICAL AND SURGICAL NURSING

1. Provide patient centered nursing care to patients with common medical and surgical conditions affecting various systems of the body
2. Prepare operation theatre for surgery and assist in operative procedures
3. Identify common equipment used in operation theatre
4. Explain the anesthesia used, with their effects and dangers, and care for an anesthetized patient until such time as he recovers from the effect of anesthesia
5. Recognize and provide first aid in case of common emergencies using the resuscitation equipment including intubation
6. Care for critically ill patients who required support for maintaining vital functions.

UNIT IV

7 Hours

Principles and concepts of public health nursing

1. Community diagnosis
2. family nursing process Individual
3. family and community as a unit of service
4. Principles of home visiting Establishing working relationship with the family
5. Working with families in relation to prevention of disease
6. Promotion of health Care of the sick in the home, physically handicapped and mentally retarded

Transactional modes

Demonstration method, Case analysis, Video based teaching

Suggested readings

- Burke, K. M., LeMone, P., & Mohn-Brown, E. (2003). *Medical-surgical nursing care*. Englewood Cliffs (NJ): Prentice Hall.
- Potter, P. A., & Perry, A. G. (2001). *Fundamentals of nursing* (Vol. 7). St. Louis: Mosby.

Course Title: HOSPITAL MANAGEMENT**Course Code: BPT309**

L	T	P	Credits
2	0	0	2

Course Outcomes**Total Hours- 30**

On the completion of the course the students will be able to

1. Undertake financial planning for a hospital
2. Plan marketing strategies for a hospital
3. Outline policies for purchase of material resources
4. Manage discarding of biomedical waste

Course Content**UNIT I****10 Hours**

1. Principles of material management
2. Inventory management and analysis
3. Import formalities relating to Medical Equipment Letter of credit, service contracts.
4. Purchase style, need assessment
5. Concepts & Evolution of personnel Management in Hospital

UNIT II**5 Hours**

1. Definition of Biomedical Waste
2. BMW – Segregation, collection, transportation, disposal Liquid BMW
3. Radioactive waste
4. Metals / Chemicals / Drug waste
5. BMW Management & methods of disinfection
6. Modern technology for handling BMW

UNIT III**8 Hours**

1. Financial Statement & its analysis
2. Fund allocation & department performance reports
3. Concept of business plan, project plan
4. Elements of cost and costing methods
5. Hospital Rate setting – Managerial cost and Break-even analysis
6. Cost control and cost reduction
7. Budgeting – Revenue and Capital Budgeting

UNIT IV**7 Hours**

1. Advertisement and Branding
2. Marketing promotional activities
3. Corporate marketing
4. Marketing for TPA and Cash Patients

5. Marketing and medical ethics
6. Understanding functioning of Corporate multi-specialty hospital
7. Managerial activities for effective hospital functioning
8. Duties and responsibilities of Hospital Managers

Transaction Mode

Open learning, Group discussions, Flipped teaching, Lecture, Seminar, e-Tutoring, Dialogue, Peer Group Discussion, Self-Learning and Cooperative Learning

Suggested Readings

- Schulz, R., & Johnson, A. C. (2003). Management of hospitals and health services: strategic issues and performance. Beard Books.
- Handayani, P. W., Hidayanto, A. N., Pinem, A. A., Hapsari, I. C., Sandhyaduhita, P. I., & Budi, I. (2017). Acceptance model of a hospital information system. International journal of medical informatics, 99, 11-28.
- Griffith, J. R., & White, K. R. (2005). The revolution in hospital management. Journal of Healthcare Management, 50(3).

SEMESTER-IV

Course Title: EXERCISE THERAPY- III

Course Code: BPT401

L	T	P	Credits
4	0	0	4

Course Outcomes

Total Hours- 60

On the completion of the course the students will be able to

1. Proficiency in performing complete assessment and evaluation of a patient.
2. Develop skills for providing manual therapy interventions to the patients.
3. Treating patients with loss of function.
4. Train the patients regarding optimal posture and balance control.

Course Content

UNIT I

16 Hours

1. Therapeutic Exercises: Principle, classification and techniques. Physiological & therapeutic effects. Indications & contraindications of therapeutic exercises. Assessment & evaluation of a patient (region wise) to plan a therapeutic exercise program.
2. Joint Mobility: Etiogenesis of Joint stiffness. General techniques of mobilization. Effects, indications, contraindications & precautions.
3. Stretching: Definition of terms related to stretching; tissue response towards immobilization and elongation. Determinants of stretching exercises. Effects of stretching. Inhibition and relaxation procedures. Precautions and contraindications of stretching. Techniques of stretching.

UNIT II**15 Hours**

1. Muscle Insufficiency: Etiogenesis of muscle insufficiency (strength, tone, power, endurance & volume) General techniques of strengthening. Effects, indication, contraindications & precautions.
2. Suspension Therapy: Definition, principles, equipment's & accessories. Indications & contraindications. Benefits of suspension therapy. Types of suspension therapy – axial, vertical, pendulum. Techniques of suspension therapy for upper limb & lower limb.
3. Functional re-education: General therapeutics techniques to re-educate ADLs functions. Lying to sitting - Mat activities. Sitting activities and gait. Lower limb and upper limb activities.

UNIT III**14 Hours**

1. Breathing Mechanism: Review normal breathing; types, techniques, indications, contraindications, therapeutic effects and precautions of breathing exercises, Chest expansion measurement and evaluation, Postural drainage.
2. Neuromuscular In co-ordination: Definition of co-ordination and in-coordination. Review of normal neuromuscular coordination. Etiogenesis of neuromuscular in co-ordination. Test for co-ordination – equilibrium and non-equilibrium test. Frenkel exercise – principles, uses, technique, progression and home exercise. Advantages and Disadvantages.
3. Group Exercises: Organization of Group exercises. Recreational Activities and Sports.

UNIT IV**15 Hours**

1. Posture: Normal Posture – active and inactive postures, postural mechanism. Abnormal Posture – Assessment, Types, etiogenesis, principles of re-education – corrective methods and techniques, patient re-education.
2. Balance: Definition and physiology of balance. Components of balance (sensory, musculoskeletal, biomechanical). Causes of impaired balance, examination of impaired balance. Static and Dynamic Balance – Assessment & management including therapeutic exercises. Activities to treat impaired balance – mode, posture, movement, precautions and contraindications, types of balance retraining.

Transaction Mode

Lecture, Seminar, e-Tutoring, Dialogue, Peer Group Discussion, Self-Learning and Cooperative Learning

Suggested Readings

- Kisner, C., Colby, L. A., & Borstad, J. (2017). Therapeutic exercise: foundations and techniques. Fa Davis. The Principle of Exercise Therapy -Gardiner (2005) - C.B.S.Delhi.
- Norkin, C. C., & White, D. J. (2016). Measurement of joint motion: a

guide to goniometry. FA Davis.

- Gardiner, M. D. (1973). Principles Of Exercise Therapy: M Dena Gardiner.

Course Title: BIOMECHANICS AND KINESIOLOGY- I

L	T	P	Credits
4	0	0	4

Course Code: BPT402

Course Outcomes

Total Hours- 60

1. Identify and comprehend the components of biomechanics.
2. Classify human joints based on structure, design and function.
3. Describe the structure, kinetics and kinematics of the human vertebral column.
4. Undertake corrective biomechanics lessons.

Course Content

UNIT I

16 Hours

Basic Concepts of Biomechanics

1. Motion – Type, location, direction, duration, action and magnitude of motion
2. Force – definition, reaction force, equilibrium, objects in motion, force of friction, parallel force system, concurrent force system, work, moment arm of force, force components
3. Levers – types of levers and equilibrium of levers.
4. Centre of gravity, line of gravity, stability and equilibrium.

Introduction to Bio-Mechanics and kinesiology

1. Introduction to the techniques of biomechanical analysis.

UNIT II

15 Hours

Joint Structure and Function

1. Basic principles of Joint design and material used in human joint
2. General properties of connective tissues
3. Joint function
4. Joint motion - Kinematics chains and range of motion.

UNIT III

14 Hours

Muscle Structure and function

1. Mobility and stability functions of muscle
2. Elements of muscle structure and its properties
3. Types of muscle contractions and muscle work.
4. Muscle functions.

UNIT IV

15 Hours

Biomechanics of vertebral column (Spine)

1. General structure and function
2. Regional structure and function – cervical, thoracic, lumbar and sacral regions
3. Muscles of vertebral column.

Transaction Mode

Lecture, Seminar, e-Team Teaching, Peer Group Discussion, Self-Learning and Collaborative Learning.

Suggested Readings

- Joint Structure and Function – A Comprehensive Analysis - Norkins & Levangie(2011) - F.A. Davis.
- Measurement of Joint Motion – A Guide to Goniometry - Norkins & White (2009) - F.A. Davis.

Course Title: PATHOLOGY AND MICROBIOLOGY**Course Code: BPT403**

L	T	P	Credits
4	0	0	4

Course Outcomes**Total Hours- 60**

1. Understand various mechanisms causing injury.
2. Understanding the functioning of immune system.
3. To learn about various disorders affecting human body.
4. Understanding and differentiating infections caused by variety of microbes.

Course Content**UNIT I****16 Hours**

General Pathology

1. Cell injury-causes, mechanism & toxic injuries with special reference to Physical, Chemical, & ionizing radiation
2. Reversible injury (degeneration)- types-morphology- swelling, hyaline, fatty changes
3. Intra-cellular accumulation-hyaline mucin
4. Irreversible cell injury-types of necrosis- apoptosis – calcification dystrophic & metastasis
5. Extra-cellular accumulation-amyloidosis, calcification- Pathogenesis- morphology.

Inflammation & Repair

1. Acute inflammation – features, causes, vascular & cellular events
2. Morphologic variations
3. Inflammatory cells & mediators
4. Chronic inflammation: - causes, types, non-specific & granulomatous – with examples

5. Wound healing by primary & secondary union factors promoting & delaying healing process
6. Healing at various sites including-bones, nerve & muscle
7. Regeneration & repair

Immuno – pathology – (basic concepts)

1. Immune system: - organization-cells- antibodies- regulation of immune responses
2. Hyper-sensitivity
3. Secondary immuno-deficiency including HIV
4. Organ transplantation

UNIT II

15 Hours

Circulatory disturbances

1. Edema - pathogenesis - types - transudates / exudates
2. Chronic venous congestion- lung, liver, spleen
3. Thrombosis – formation – fate – effects
4. Embolism – types- clinical effects
5. Infarction – types – common sites
6. Gangrenes – types – action, pathogenesis
7. Shock - Pathogenesis, types, morphologic changes

Growth Disturbance

1. Atrophy-malformation, agenesis, dysplasia
2. Neoplasia classification, histogenesis, biologic behaviour, difference between benign & malignant tumour
3. Malignant neoplasms- grades-stages-local & distal spread
4. Carcinogenesis – environmental carcinogens
5. Chemical, Occupational, heredity, viral
6. Tumor & host interactions – systemic effects-metastatic or direct spread of tumors affecting bones, spinal cord, leading to paraplegia, etc.

UNIT III

14 Hours

General Microbiology

1. Definitions: infections, parasite, host, vector, fomite, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate
2. Normal flora of the human body
3. Routes of infection and spread; endogenous and exogenous infections; source at reservoir of infections.
4. Bacterial cell. Morphology limited to recognizing bacteria in clinical samples Shape, motility and arrangement.
5. Structures, which are virulence, associated.
6. Physiology: Essentials of bacterial growth requirements.
7. Sterilization, disinfection and universal precautions in relation to patient care and disease prevention.
8. Definition of asepsis, sterilization, disinfection.
9. Hospital acquired infections, Basic methods of sterilization.

UNIT IV**15 Hours**

Basic principles of immunity immunobiology: lymphoid organs and tissues.

1. Antigen, Antibodies, antigen and antibody reactions with relevance to pathogenesis and serological diagnosis.
2. Humoral immunity and its role in immunity Cell mediated immunity and its role in immunity. Immunology of hypersensitivity, Measuring immune functions.
3. Streptococcal infections: Rheumatic fever and Rheumatic heart disease, Meningitis. Tuberculosis, Pyrexia of unknown origin, leprosy,
4. Sexually transmitted diseases,
5. Poliomyelitis, Hepatitis, Acute respiratory infections,
6. Central nervous System infections, Urinary tract infections, Pelvic inflammatory disease, Wound infection
7. Opportunistic infections, HIV infection, Malaria, Filariasis, Zoonotic diseases.

Transaction Mode

Lecture, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Milner, D. A. (2019). Diagnostic pathology: infectious diseases E-Book. Elsevier Health Sciences.
- Mohan, H. (2015). Textbook of pathology (pp. 474-482). New Delhi: Jaypee brothers Medical Publishers.
- Murray, P. R., Rosenthal, K. S., & Pfaller, M. A. (2020). Medical microbiology E-book. Elsevier Health Sciences.

Course Title: EXERCISE THERAPY- III LAB**Course Code: BPT404**

L	T	P	Credits
0	0	6	3

Course Outcomes**Total Hours- 30**

1. Perform complete assessment and evaluation of a patient.
2. Develop skills for providing manual therapy interventions to the patients.
3. Treating patients with loss of function.
4. Train the patients regarding optimal posture and balance control.

Course Content**UNIT I****10 Hours**

1. Therapeutic Exercises: Principle, classification and techniques. Physiological & therapeutic effects. Indications & contraindications of therapeutic exercises. Assessment & evaluation of a patient (region wise) to plan a therapeutic exercise program.

2. Joint Mobility: Etiogenesis of Joint stiffness. General techniques of mobilization. Effects, indications, contraindications & precautions.
3. Stretching: Definition of terms related to stretching; tissue response towards immobilization and elongation. Determinants of stretching exercises. Effects of stretching. Inhibition and relaxation procedures. Precautions and contraindications of stretching. Techniques of stretching.

UNIT II**8 Hours**

1. Muscle Insufficiency: Etiogenesis of muscle insufficiency (strength, tone, power, endurance & volume) General techniques of strengthening. Effects, indication, contraindications & precautions.
2. Suspension Therapy: Definition, principles, equipment's & accessories. Indications & contraindications. Benefits of suspension therapy. Types of suspension therapy – axial, vertical, pendulum. Techniques of suspension therapy for upper limb & lower limb.
3. Functional re-education: General therapeutics techniques to re-educate ADLs functions. Lying to sitting - Mat activities. Sitting activities and gait. Lower limb and upper limb activities.

UNIT III**7 Hours**

1. Breathing Mechanism: Review normal breathing; types, techniques, indications, contraindications, therapeutic effects and precautions of breathing exercises, Chest expansion measurement and evaluation, Postural drainage.
2. Neuromuscular In co-ordination: Definition of co-ordination and in-coordination. Review of normal neuromuscular coordination. Etiogenesis of neuromuscular in co-ordination. Test for co-ordination – equilibrium and non-equilibrium test. Frenkel exercise – principles, uses, technique, progression and home exercise. Advantages and Disadvantages.
3. Group Exercises: Organization of Group exercises. Recreational Activities and Sports.

UNIT IV**5 Hours**

1. Posture: Normal Posture – active and inactive postures, postural mechanism. Abnormal Posture – Assessment, Types, etiogenesis, principles of re-education – corrective methods and techniques, patient re-education.
2. Balance: Definition and physiology of balance. Components of balance (sensory, musculoskeletal, biomechanical). Causes of impaired balance, examination of impaired balance. Static and Dynamic Balance – Assessment & management including therapeutic exercises. Activities to treat impaired balance – mode, posture, movement, precautions and contraindications, types of balance retraining.

Transaction Mode

Lecture, Seminar, Peer Group Discussion, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

1. Kisner, C., Colby, L. A., & Borstad, J. (2017). Therapeutic exercise: foundations and techniques. Fa Davis. The Principle of Exercise Therapy -Gardiner (2005) - C.B.S.Delhi.
2. Norkin, C. C., & White, D. J. (2016). Measurement of joint motion: a guide to goniometry. FA Davis.
3. Gardiner, M. D. (1973). Principles Of Exercise Therapy: M Dena Gardiner.

**Course Title: BIOMECHANICS AND KINESIOLOGY- I
LAB**

Course Code: BPT405

L	T	P	Credits
0	0	2	2

Course Outcomes

Total Hours- 30

1. Analyze the planes and axis for various joint movements.
2. Describe individual and group action of different human muscles.
3. Gain competence to identify abnormal movements and deformities.
4. Proficiently undertake corrective biomechanics lessons.

Course Content

UNIT I

15 Hours

1. To study the effects of forces on objects. To find out the C.G. of an object. To study anatomical levers.

UNIT II

15 Hours

1. To name and sketch the anatomical movements of vertebral column in various planes, as observed.
2. To study different types of muscle contraction, muscle work, group action of muscles, resolution of muscular forces at different joints, coordinated movements.

Transaction Mode

Lecture, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Joint Structure and Function – A Comprehensive Analysis - Norkins & Levangie (2011) - F.A. Davis.
- Measurement of Joint Motion – A Guide to Goniometry - Norkins & White (2009) - F.A. Davis

Course Title: SYSTEMIC PATHOLOGY**Course Code: BPT406**

L	T	P	Credits
3	0	0	3

Course Outcomes**Total Hours- 30**

1. Identify the pathogenesis of inflammation and comprehend its association with disease.
2. Acquaint knowledge about various pathogenic organisms.
3. Record, interpret and report clinical microbiology results as per the protocol.
4. Impart awareness about prevention and precautions for diseases

Course Content**UNIT I****10 Hours**

1. Nutritional disorders: Deficiency disorders (protein deficiency, vitamin deficiency A, B, C, D, and E), causes and features.
2. Infectious diseases: Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis Bacterial diseases: Pyogenic, Diphtheria, gram negative infection, bacillary dysentery. Viral diseases: Poliomyelitis, herpes, rabies, measles. Fungal diseases. Parasitic diseases: Malaria, filaria, amoebiasis, kala-azar.

UNIT II**5 Hours**

1. Hematology: Anemia: Classification, clinical features & lab diagnosis. Hemostatic disorders, Vascular and Platelet disorders & lab diagnosis, Coagulopathies –Inherited and Acquired with lab diagnosis.
2. Leukocytic disorders: Leukocytosis, Leukopenia, Leukemoid reaction.
3. Leukemia: Classification, clinical manifestation, pathology and Diagnosis. Multiple myeloma and disproteinemias.

UNIT III**8 Hours**

1. Etiology, pathogenesis and general features of disease –atherosclerosis, thromboangitis obliterance, varicose vein, DVT, thrombophlebitis, lymphoedema.
2. Cardiovascular system: congestive cardiac failure, ischemic heart disease, rheumatic heart disease, congenital heart disease.
3. Respiratory System: etiology, pathogenesis and general features of Pneumonia, Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases

UNIT IV**7 Hours**

1. Diseases of Nervous system: Etiology, pathogenesis and general features of meningitis, encephalitis, tuberculosis.

2. Diseases of endocrine system: Etiology, pathogenesis and general features of Diabetes Mellitus, Thyroiditis, Thyrotoxicosis, myxedema. Hashimoto's thyroiditis

Transaction Mode

Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue and Peer Group Discussion.

Suggested Readings

- Mohan, H. (2018). Textbook of pathology. Jaypee Brothers Medical Publishers, Delhi.
- Sastry, A. S., & Bhat, S. (2018). Essentials of medical microbiology. JP Medical Ltd, Delhi.

Course Title: INFECTION PREVENTION AND CONTROL

Course Code: BPT407

L	T	P	Credits
3	0	0	3

Course Outcomes

Total Hours- 30

1. Recognize the benefit to patients and healthcare workers of adhering to scientifically accepted principles and practices of infection prevention and control
2. Become well oriented with professional's responsibility to adhere to scientifically accepted infection prevention and control practices in all healthcare settings and the consequences of failing to comply; and
3. Identify the professional's responsibility to monitor infection prevention and control practices of those medical and ancillary personnel for whom he or she is responsible and intervene as necessary to assure compliance and safety.
4. Describe how infection control concepts are applied in professional practice.

Course Content

UNIT I

10 Hours

Methods to prevent the spread of pathogenic organisms in healthcare settings.

1. Standard precautions:
 2. Respiratory hygiene/cough etiquette
 3. Safe injection practices
 4. Use of masks during spinal/epidural access procedures.
- For patients infected with organisms other than blood borne pathogens:
1. Early identification
 2. Prompt isolation
 3. Appropriate treatment

UNIT II**5 Hours**

Control of routes of transmission:

1. Hand hygiene: a. Appropriate selection and use of agents (e.g., soap and water, alcohol-based hand sanitizers); b. Factors influencing hand hygiene efficacy; c. Sources of potential contamination or cross-contamination of hand hygiene materials.
2. Use of appropriate barriers: a. appropriate selection, donning, doffing, and disposal of personal protective equipment (PPE).
3. Appropriate isolation/cohorting of patients infected with communicable diseases: a. Standard precautions for all patients; b. Transmission based precautions for other pathogens: 1) Contact (direct, indirect); 2) Droplet; 3) Airborne.

UNIT III**8 Hours**

Host support and protection:

1. Vaccination
2. Pre-and post-exposure prophylaxis
3. Protecting skin and immune system integrity
4. Environmental control measures: 1) Cleaning, disinfection, and sterilization of patient care equipment 2) Environmental cleaning (housekeeping); 3) Appropriate ventilation; 4) Waste management; 5) Linen and laundry management; 6) Food services.

UNIT IV**7 Hours**

Proper infection control technique requires that healthcare providers must:

1. Maintain aseptic technique throughout all aspects of injection preparation and administration Medications should be drawn up in a designated "clean" medication area that is not adjacent to areas where potentially contaminated items are placed.
2. Use a new sterile syringe and needle to draw up medications while preventing contact between the injection materials and the non-sterile environment.
3. Ensure proper hand hygiene (i.e., hand sanitizing or hand washing if hands are visibly soiled) before handling medications

Transaction Mode

Lecture, Seminar, Dialogue, Peer Group Discussion, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Grasso, P. (2002). Essentials of pathology for toxicologists. CRC Press.
- Castle, M. (1980). Hospital infection control: principles and practice. John Wiley & Sons Limited, Baffins Lane, Chichester, West Sussex PO19 1UD.

Course Title: PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS-I
Course Code: BPT501

L	T	P	Credits
4	0	0	4

Learning Outcomes

Total Hours- 60

On the completion of the course the students will be able to

1. Develop skills to assess various orthopaedic conditions.
2. Draw out a provisional diagnosis based on patient history and evaluation.
3. Gain proficiency in planning physiotherapy treatment for various bone and joint deformities.
4. Learn about the principles of physiotherapy management of fractures.

Course Content

UNIT I

16 Hours

1. PT assessment for Orthopaedic conditions
 - SOAP format Selection and application of physiotherapeutic techniques, manoeuvres, modalities for preventive, curative and rehabilitation means in all conditions.
2. Traumatology:
 - General Physiotherapy approach for following conditions - Fractures and Dislocations: Classification and type of displacement, principles of fracture management, method of immobilisation, factors affecting union, non-union, delayed union, Aims of PT management in fracture cases – short- and long-term goals.
 - Physiotherapy assessment in fracture cases. Principles of PT management in fracture cases – guidelines for treatment during immobilization and after immobilization period. PT management in complications (early and late).

UNIT II

15 Hours

1. Specific fractures and Deformities: Complete physiotherapy assessment and management of fractures of -
2. Upper limb – Clavicle, humerus, radius, ulna, crush injuries of hand.
3. Lower limb – neck of femur, shaft of femur, patella, tibia, fibula, pott's fracture, fracture of tarsals and metatarsals.
4. Spine – Fracture and dislocations of cervical, thoracic and lumbar vertebrae with and without neurological deficits.

UNIT III

14 Hours

Physiotherapy assessment, goals, precautions and PT management in following deformities:

1. Congenital disorders or Deformities
2. Congenital Torticollis, Cervical rib, Sprengels shoulder
3. Coxa vara & valga, CTEV, Pes Planus, Pes cavus

4. Acquired Deformities: Scoliosis, Kyphosis, Lordosis, Coxa vara,
5. Genu valgum, Genu varum and Recurvatum

UNIT IV**15 Hours**

Orthopaedic Surgeries:

1. Pre and post operative physiotherapy assessment, goals, precautions and PT management for Arthrodesis, Osteotomy, Tendon transplantation
2. Soft tissue release – tenotomy, myotomy, lengthening. Bone grafting. Arthroplasty – partial and total.
3. External fixators. Synovectomy. Leprosy: Common deformities
4. Clinical Features, PT assessment, aims and management after surgical procedures.
5. Poliomyelitis - Common deformities, Clinical Features, PT assessment, aims and management after surgical corrections and reconstructive surgeries.

Transaction Mode

Lecture, Seminar, e-Team Teaching, e-Tutoring, Mobile Teaching, Self-Learning and Cooperative Learning

Suggested Readings

- Thompson, A. (2013). Tidy's Physiotherapy. Varghese publishing House.
- Sullivan, S. (2013). Physical Rehabilitation Assessment and Treatment. Jaypee brothers, Delhi.

Course Title: PHYSIOTHERAPY IN GENERAL MEDICAL CONDITIONS

Course Code: BPT502

L	T	P	Credits
4	0	0	4

Course Outcomes**Total Hours- 60**

On the completion of the course the students will be able to

1. Learn about deficiency related disorders and their physiotherapy management.
2. Develop proficiency in providing rehabilitation for vestibular disorders.
3. Gain expertise in treating dermatological conditions using electrotherapy.
4. Gain knowledge about obesity management.

Course Content**UNIT I****16 Hours**

Physiotherapy management in general medical conditions:

1. Types of oedema-Traumatic, Obstructive, Paralytic, oedema due to poor muscle and laxity of fascia.
2. Vestibular Rehabilitation: Exercise Prescription in Vertigo.
3. Physiotherapy in management of burns, skin grafting and reconstructive procedures. Physiotherapy management in wounds, ulcers and pressure sores – care of ulcers and wounds, electrotherapy in healing of wounds, different types of scars, pain relief during scar mobilization, prevention of hyper-granulated scars keloids.

UNIT II**15 Hours**

Physiotherapy in dermatology

1. UVR therapy in various skin conditions (Acne, Psoriasis, Alopecia)
2. Faradic foot bath for hyperhidrosis; care of anaesthetic hand and foot, evaluation and management of leprosy.
3. Deficiency Diseases – Rickets, Diabetes, Osteoporosis, Osteomalacia, osteopenia, Obesity.

UNIT III**14 Hours**

Pediatrics

1. Review of the examination & assessment of a pediatric patient.
2. Review of pathological changes and principle of management by physiotherapy of the following conditions- Congenital & acquired musculo-skeletal disorders.
3. Congenital & acquired Cardio - pulmonary disorders. Congenital & acquired neurological disorders (CNS & PNS), Hereditary disorders.
4. Nutritional Vitamins Deficiency & Development Disorders

UNIT IV**15 Hours**

Geriatrics

1. Review of the examination & assessment of a geriatric patient.
2. Review of pathological changes and principle of management by physiotherapy of the following conditions – Musculoskeletal disorders
3. Cardio - pulmonary disorders
4. Neurological disorders (CNS & PNS)
5. Dementia – types and principles of management

Transaction Mode

Lecture, Seminar, e-Team Teaching, e-Tutoring, Mobile Teaching, Self-Learning and Cooperative Learning

Suggested Readings

- Porter, S. (2013). Tidy's Physiotherapy E-Book. Elsevier Health Sciences.

- Cash, J. E. (1951). A Textbook of Medical Conditions for Physiotherapists. American Journal of Physical Medicine & Rehabilitation, 30(6), 388.

Course Title: RESEARCH METHODOLOGY
Course Code: BPT503

L	T	P	Credits
4	0	0	4

Course Outcomes

Total Hours- 60

On the completion of the course the students will be able to

1. Learn about basic principles and techniques of research methodology.
2. Gain knowledge about types and techniques of sampling.
3. Develop skills to use various data collection methods.
4. Become trained in testing the hypothesis.

UNIT I

16 Hours

1. Research - Definition, history, objectives, scope, research methods versus methodology, criteria for good research.
2. Hypothesis -definition, tests of hypothesis and limitations of the tests.
3. Research problem - Statement of research problem, its purpose and objectives.
4. Research design – meaning and need of design, features of good design, types and basic principles of design

UNIT II

15 Hours

1. Sampling design: Criteria for selecting sampling procedure, steps in sampling design, types of sampling (probability and non-probability method), characteristics of good sample design.
2. Measurement and scaling techniques – measurement scale, source of error in measurement, technique of developing measurement tool, meaning of scaling, its importance and different types of scaling.

UNIT III

14 Hours

1. Methods of data collection – collection of primary data, collection of data through schedules and questionnaire. Schedules – Definition, purpose, essentials of good schedule, advantages and limitations. Questionnaire – Types, problem of response, reliability and validity of questionnaire, advantages and limitations, difference between questionnaire and schedule.
2. Sampling fundamentals, need for sampling, important sampling distributions.
3. Processing and analysis of data – processing operations, problems in processing, types of analysis.

UNIT IV

15 Hours

1. Stats in research, measures of central tendency, dispersion, asymmetry, relationship.

2. Testing of hypothesis – basic concepts of testing, procedure of hypothesis testing, measuring the power of hypothesis test, tests of hypothesis, limitations of the tests.
3. Case study – Definitions, sources, characteristics, evolution and scope, advantages, limitations and improvements.

Transaction Mode

Lecture, Seminar, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Kothari, C. R. (2004). Research methodology: Methods and techniques. New Age International.
- Hicks, C. M. (2009). Research Methods for Clinical Therapists E-Book: Applied Project Design and Analysis. Elsevier Health Sciences, London

Course Title: PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS- I LAB
Course Code: BPT504

L	T	P	Credits
0	0	4	2

Learning Outcomes

Total Hours- 30

On the completion of the course the students will be able to

1. Become adept in conducting subjective and objective assessment.
2. Gain expertise in muscle strength and range of motion charting.
3. Develop skills to reach a diagnosis based on patient assessment.
4. Present and discuss case history.

Course Content

UNIT I

10 Hours

Various physiotherapy modalities and treatment techniques for the following conditions:

1. Fractures and Dislocations
2. Aims of PT management in fracture cases – short- and long-term goals.
3. PT management in complications (early and late).

UNIT II

8 Hours

Various physiotherapy modalities and treatment techniques for the following conditions:

1. Specific fractures and Deformities: Complete physiotherapy assessment and management of fractures of –
2. Upper limb – Clavicle, humerus, radius, ulna, crush injuries of hand.

3. Lower limb – neck of femur, shaft of femur, patella, tibia, fibula, pott's fracture, fracture of tarsals and metatarsals.
4. Spine – Fracture and dislocations of cervical, thoracic and lumbar vertebrae with and without neurological deficits.

UNIT III**5 Hours**

Various physiotherapy modalities and treatment techniques for the following conditions:

1. Congenital disorders or Deformities
2. Congenital Torticollis, Cervical rib, Sprengels shoulder
3. Coxa vara & valga, CTEV, Pes Planus, Pes cavus
4. Acquired Deformities: Scoliosis, Kyphosis, Lordosis, Coxa vra,
5. Genu valgum, Genu varum and Recurvatum

UNIT IV**7 Hours**

Various physiotherapy modalities and treatment techniques for the following conditions:

1. Arthrodesis, Osteotomy, Tendon transplantation
2. Soft tissue release – tenotomy, myotomy, lengthening. Bone grafting. Arthroplasty – partial and total.
3. Leprosy
4. Poliomyelitis.

Transaction Mode

Lecture, Seminar, e-Team Teaching, e-Tutoring, Mobile Teaching, Self-Learning and Cooperative Learning

Suggested Readings

- Porter, S. (2013). Tidy's Physiotherapy E-Book. Elsevier Health Sciences.

**Course Title: PHYSIOTHERAPY IN GENERAL
MEDICAL CONDITIONS LAB
Course Code: BPT505**

L	T	P	Credits
0	0	4	2

Course Outcomes**Total Hours- 30**

On the completion of the course the students will be able to

1. Become proficient in pulmonary and cardiac assessment.
2. Draw provisional diagnosis on the basis of patient assessment.
3. Provide post-operative physiotherapy.
4. Gain expertise in cardiopulmonary physiotherapy management.

Course Content**UNIT I****8 Hours**

1. Various physiotherapy modalities and treatment techniques for the following conditions:
 - Oedema
 - Vertigo
 - Burns

UNIT II**7 Hours**

1. Various physiotherapy modalities and treatment techniques for the following conditions:
 - Acne
 - Alopecia
 - Rickets
 - Psoriasis
 - Osteoporosis
 - Osteomalacia

UNIT III**10 Hours**

1. Various physiotherapy modalities and treatment techniques for the following paediatric conditions:
 - Congenital & acquired musculo-skeletal disorders.
 - Congenital & acquired Cardio - pulmonary disorders.
 - Congenital & acquired neurological disorders (CNS & PNS)

UNIT IV**5 Hours**

1. Various physiotherapy modalities and treatment techniques for the following geriatrics conditions:
 - Congenital & acquired musculo-skeletal disorders.
 - Congenital & acquired Cardio - pulmonary disorders.
 - Congenital & acquired neurological disorders (CNS & PNS)

Transaction Mode

Lecture, Seminar, e-Team Teaching, e-Tutoring, Mobile Teaching, Self-Learning and Cooperative Learning

Suggested Readings

- Porter, S. (2013). Tidy's Physiotherapy E-Book. Elsevier Health Sciences.
- Cash, J. E. (1951). A Textbook of Medical Conditions for Physiotherapists. American Journal of Physical Medicine & Rehabilitation, 30(6), 388.

Course Title: YOGA THERAPY
Course Code: BPT506

L	T	P	Credits
2	0	0	2

Course Outcomes**Total Hours- 30**

On the completion of the course the students will be able to

1. Understand the various concepts of yogic practice.
2. Demonstrate yoga asanas and explain its benefits.
3. Undertake teaching practice and research in the field of yoga.
4. Understand the basics and benefits of Yoga

UNIT I**5 Hours**

Introduction to Yoga

1. Meaning, Definition, types, aims and objectives of yoga.
2. Importance of yoga in education & other fields of life.
3. Historical development of yoga from ancient to modern times.
4. Meaning and definition of yoga astanga yoga: Yama, niyama, asana, pranayama, prathyahara, dharana, dhyana, Samadhi.

UNIT II**8 Hours**

Nadis, Asanas and Pranayam

1. Loosening exercise: Techniques and benefits.
2. Pranayam: Types, techniques and benefits, surya namaskar, methods and benefits.
3. Nadis: Meaning, methods and benefits
4. Asanas: Their benefits, types of Asanas, preparation & technique of different asanas and their effects on the body.
5. Chakras: Major chakras- Benefits of clearing and balancing chakras.

UNIT III**7 Hours**

Kriyas

1. Shat Kriyas: Meaning, techniques and benefits of neti, dharti, kapalapathi, trataka, nauli, basti.
2. Bandhas: Meaning, techniques and benefits of jalendrabandha, jihvabandha, uddiyanabandha, mulabandha.

UNIT IV**10 Hours**

Mudras

1. Meaning, techniques and benefits of hasta mudras, asamyuktahastam, samyuktahastam, mana mudra, kaya mudra, banda mudra, adhara mudra.
2. Meditation Meaning, Techniques and benefits of meditation, Passive and active meditation, saguna meditation and nirguna meditation

Transaction Mode

Lecture, Seminar, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Feuerstein, G. (1975).Text Book of Yoga. MotilalBansaridassPublishers (P)Ltd., London.
- Gore (1990).Anatomy and Physiology of Yogac Practices. Kanchan Prakashan, Lonavata.
- Purperhart, H. (2004).The Yoga Adventure for Children. A Hunter House book, Netherlands.
- Iyengar, B.K.S. (2000).LightonYoga. Harper Collins Publishers, New Delhi.

Course Title: PILATES EXERCISE

Course Code: BPT507

L	T	P	Credits
2	0	0	2

Course Outcomes

Total Hours- 30

On the completion of the course the students will be able to

1. Identify the benefits and indications of pilates exercises
2. Demonstrate pilates exercises as per the requirements.
3. Prescribe pilates based exercises for various health conditions.
4. Design rehabilitation protocol based on pilates techniques

UNIT I

10 Hours

Pilates as preventative exercise: foundations

1. Principles of pilates method
2. Movement categories
3. Functional group, anatomy and biomechanics
4. Clinical disorders and contraindications
5. Progression and regression
6. Pilates assessment techniques
7. Typical errors during pilates training

UNIT II

8 Hours

Pilates exercises

1. Pre pilates exercises – Warm-Up and Stretching Before your workout
2. Pointers for safe exercising
3. The structure of the exercise program
4. Pilates program for progression
5. Transitions and stretches

UNIT III

7 Hours

Pilates Programming

1. The beginner, intermediate and advanced pilates mat program

2. The pilates exercise using foam roller
3. Pilates mat program for a b back
4. Pilates program for men
5. Prenatal pilates mat program
6. Pilates mat program for osteoporosis
7. Pilates exercise and functional groups
8. Pilates exercise for lower back pain and weak abdominals

UNIT IV

5 Hours

Fundamental principles for therapeutic pilates program

1. Pilates program for rehabilitation
2. Pilates program, strength and flexibility
3. Neutral zone and dynamic stability

Transaction Mode

Lecture, Seminar, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Isacowitz, R., & Clippinger, K. (2019). Pilates anatomy. Human Kinetics.
- Ungaro, A., & Sadur, R. (2002). Pilates: Body in motion (p. 176). London: Dorling Kindersley.
- Alpers, A. T. (2011). Everything Pilates. Simon and Schuster.

Course Title: DIAGNOSTIC IMAGING FOR PHYSIOTHERAPIST
Course Code: BPT508

L	T	P	Credits
2	0	0	2

Course Outcomes

Total Hours- 30

On the completion of the course the students will be able to

1. Gain comprehensive theoretical and practical knowledge about diagnostic imaging.
2. Independently conduct and interpret all, routine and special radiological and imaging investigations.
3. Provide radiological services in acute emergency and trauma.
4. Understanding the medico legal aspects.

Course Content

UNIT I

8 Hours

Image interpretation

1. Radiography (x-rays)

2. Fluoroscopy
3. Computed Tomography (CT)
4. Magnetic Resonance Imaging (MRI)
5. Ultrasound
6. Endoscopy

UNIT II

5 Hours

Radiography and mammography

1. Equipment components
2. Procedures for Radiography & Mammography
3. Benefits versus Risks and Costs
4. Indications and contraindications.

Fluoroscopy

1. Equipment used for fluoroscopy
2. Indications and Contra indications
3. How it helps in diagnosis
4. The Findings in Fluoroscopy
5. Benefits versus Risks and Costs.

UNIT III

10 Hours

Computed tomography (CT)

1. Equipment used for Computed Tomography
2. Indications and Contra indications
3. How it helps in diagnosis
4. The Findings in Computed Tomography
5. Benefits versus Risks and Costs

Magnetic resonance imaging (MRI)

1. Equipment used for MRI
2. Indications and Contra indications
3. How it helps in diagnosis
4. The Findings in MRI
5. Benefits versus Risks and Costs
6. Functional MRI.

UNIT IV

7 Hours

Ultrasound

1. Equipment used for Ultrasound
2. Indications and Contra indications
3. How it helps in diagnosis
4. The Findings in Ultrasound
5. Benefits versus Risks and Costs.

Endoscopy

1. Equipment used for Endoscopy
2. Indications and Contra indications
3. How it helps in diagnosis
4. The Findings in Endoscopy
5. Benefits versus Risks and Costs.

Transaction Mode

Lecture, Seminar, e-Team Teaching, e-Tutoring, Mobile Teaching, Self-Learning and Cooperative Learning

Suggested Readings

- Sutton, D. (1987). A textbook of radiology and imaging.
- Donner, M. W. (1976). Textbook of Radiology: David Sutton and Ronald G. Grainger, eds. New York, Churchill Livingstone

SEMESTER VI

Course Title: PHYSIOTHERAPY IN ORTHOPEDIC CONDITIONS II

Course Code: BPT601

L	T	P	Credits
4	0	0	4

Course Outcomes

Total Hours- 60

On successful completion of this course, the students will be able to:

1. Perform subjective and objective assessment of the patient.
2. Gain expertise in palpation and auscultation.
3. Become competent in post-surgical rehabilitation
4. Plan and administer appropriate physiotherapy treatment on the basis of condition.

Course Content

UNIT I

16 Hours

1. Physiotherapy management for Soft Tissue injuries and inflammatory condition of upper and lower limb:
Capsulitis, Tendinitis, Synovitis, Volkmann's ischemic contracture, Compartment syndrome, Bursitis, Ligament injuries around shoulder, elbow, wrist knee and ankle.

2. Amputation- level of amputation of upper limb and lower limb, PT assessment, aims, pre and postoperative PT management, stump care, stump bandaging, pre and post prosthetic management including check out of prosthesis, training, complications and its management.

UNIT II**15 Hours**

Infective conditions

1. Review sign and symptoms, radiological features, pathology, common deformities and medial surgical management
2. PT assessment and management for, Osteomyelitis – acute and chronic, Septic arthritis, Pyogenic arthritis,
3. TB spine and major joints (knee and hip)

UNIT III**15 Hours**

Degenerative and inflammatory conditions

1. Review sign and symptoms, radiological features, pathology, common deformities and medial surgical management
2. PT assessment and management in acute and chronic stage and detailed home programme for Rheumatic Arthritis Osteoarthritis – emphasis on hip, knee and hand. Ankylosing spondylitis Periarthritic shoulder, Gout, Perthes disease.

UNIT IV**14 Hours**

1. Spinal Conditions - Outline PT assessment, PT aims, management and home program for Cervical and lumbar spondylosis, Spondylitis, Spondylolisthesis, Spinal canal Stenosis Spinal postural abnormalities, SI joint dysfunction, Sacralisation, Lumbarisation Intervertebral disc prolapsed, Coccydynia, Spina bifida. Treatment guidelines for soft tissue injuries – acute, sub-acute and chronic stages, Repair of soft tissues – rupture of muscle, tendon and ligamentous tear,
2. Principles of sports physiotherapy-soft tissue injuries – prevention and rehabilitation of lateral ligament sprain of ankle, rotator cuff injuries, collateral and cruciate injuries of knee, meniscal injuries of knee, supraspinatus and bicipital tendinitis, tennis and golfers' elbow, hamstring strain, quadriceps contusion, TA rupture, dequervains tenosynovitis, trigger finger, mallet finger, plantar fasciitis.

Transaction mode

Demonstration method, Flipped learning, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- Thompson, A. (2013). Tidy's Physiotherapy. Varghese publishing House.
- Sullivan, S. (2013). Physical Rehabilitation Assessment and Treatment. Jaypee brothers, Delhi.

**Course Title: PHYSIOTHERAPY
CARDIOPULMONARY CONDITIONS**

IN			
L	T	P	Credits
4	0	0	4

Course Code: BPT602

Course Outcomes

Total Hours- 60

On successful completion of this course, the students will be able to:

1. Learn about anatomy and physiology of pulmonary and circulatory system.
2. Gain knowledge about the lung volumes and capacities
3. Develop skills to differentiate normal and abnormal heart and lung sounds based on auscultation.
4. Plan and provide cardiac and pulmonary rehabilitation programme.

UNIT I

16 Hours

1. Review of Anatomy and Physiology of the Cardio Respiratory System
Patient assessment – Bedside assessment of patient.
2. Investigations and tests – exercise tolerance test, radiographs, ECG, ABG, Haematological and biochemical tests.

UNIT II

15 Hours

1. Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, incentive spirometry.
2. To decrease work of breathing – positioning, breathing re-education, breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP.
3. To clear secretions – hydration, humidification and nebulisation, mobilization and breathing exercises, postural drainage, manual techniques – percussion, vibration and shaking, autogenic drainage, mechanical aids – PEP, IPPB, facilitation of cuff and huff, nasopharyngeal suctioning. Physiotherapy management in breathlessness.
4. Review of pathological changes and principle of management by physiotherapy in following conditions – Thrombosis, Embolism, Arteriosclerosis, Thrombophlebitis, Gangrene, Congestive cardiac failure, Hypertension, Hypotension.

UNIT III

15 Hours

Physiotherapy in Obstructive Lung Diseases

1. Treatment techniques for Asthma, Bronchiectasis, Chronic Bronchitis and Emphysema
2. Relaxation posture and techniques, reassurance and education about disease
3. Controlled breathing, breathing exercise, postural drainage, vibratory shaking, huffing and coughing, graduated exercise programme and posture correction.

UNIT IV

14 Hours

Physiotherapy in Restrictive lung disorders

1. Treatment techniques for Restrictive lung dysfunction including Pneumonia, Bronchogenic Carcinoma, Pleura Effusion
2. Occupational Lung diseases - mobilizing exercise to thorax and spine breathing exercise to increase ventilation
3. Exercise for posture correction, graduated exercise to increase tolerance.
4. Pulmonary rehabilitation and cardiac rehabilitation.

Transaction mode

Demonstration method, Flipped learning, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings

- Downie, A. (1979). Cash's Textbook of Chest, Heart and Vascular Disorders for Physiotherapists. Faber & Faber, Budapest (1979).
- Porter, S. (2013). Tidy's Physiotherapy E-Book. Elsevier Health Sciences.

Course Title: BIOSTATISTICS

Course Code: BPT603

L	T	P	Credits
4	0	0	4

Course Outcomes

Total Hours- 60

On successful completion of this course, the students will be able to:

1. Learn about the role of statistics in the field of rehabilitation.
2. Develop skills to calculate central tendencies and plot graph.
3. Differentiate between parametric and non-parametric tests and use them appropriately.
4. Gain expertise in data analysis to obtain result of the undertaken research.

Course Content**UNIT I****16 Hours**

1. Statistics - Definition, characteristics, importance of study of stats, branches of statistics, applications in physiotherapy,
2. Presentation of data -Descriptive and inferential statistics, variables and their types, measurement scales. basic principles of presentation, Types of diagrams, techniques of construction of graph, graphs of frequency distribution, histograms, frequency polygons, limitations of diagrams and graphs.

UNIT II**15 Hours**

1. Central tendencies - Definition and need for measures of central values, meaning and calculation of mean, mode, median, limitations.
2. Probability and standard distributions - meaning, the normal distribution, divergence from normality - skewness and kurtosis.

UNIT III**15 Hours**

1. Correlation analysis - Types of correlation, methods of correlation, scatter diagram
2. Karl Pearson's coefficient of correlation, Rank correlation coefficient.

UNIT IV**14 Hours**

1. Sampling techniques: need and criteria for good sample, procedures of sampling and sampling design errors, sampling variation and test of significance.
2. Analysis of variance & covariance – basic principle of ANOVA and ANACOVA.

Transaction mode

Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- Hogg, R. V., McKean, J., & Craig, A. T. (2005). Introduction to mathematical statistics. Pearson Education.
- Gupta, S. P. (1978). Statistical Methods. Sultan Chand and sons Publishers, New Delhi.

Course Title: PHYSIOTHERAPY IN ORTHOPEDIC CONDITIONS- II LAB

L	T	P	Credits
0	0	6	3

Course Code: BPT604**Course Outcomes****Total Hours- 30**

On successful completion of this course, the students will be able to:

1. Become proficient in conducting of special tests.
2. Read and interpret radiographic films.
3. Learn about the red and yellow flags of physiotherapy.
4. Plan out short- and long-term goals of physiotherapy treatment.

Course Content**UNIT I****20 Hours**

Various physiotherapy modalities and treatment techniques for the conditions mentioned in “Physiotherapy in Orthopaedic Conditions-II” to be demonstrated and practiced by the students in clinical setup.

UNIT II**10 Hours**

Case presentations and Case discussions.

Transaction mode

Demonstration method, Video based teaching, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- Loudon, J. K., Swift, M., & Bell, S. (2008). The clinical orthopedic assessment guide. Human Kinetics.
- Joshi, J. (1999). Essentials of orthopaedics & applied physiotherapy. Elsevier India.

Course Title: PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS LAB

L	T	P	Credits
0	0	2	2

Course Code: BPT605**Course Outcomes****Total Hours- 30**

On successful completion of this course, the students will be able to:

1. Learn about the thoracic surface marking and important landmarks.
2. Read and interpret chest X-Ray.
3. Gain expertise in recording and interpreting ECG.
4. Outline a plan for providing cardiac and pulmonary rehabilitation.

Course content

UNIT I

20 Hours

Include Clinical Hours on patient examination and Physiotherapy intervention under supervision on the various conditions as outlined in “Physiotherapy in Cardiopulmonary Conditions”.

UNIT II

10 Hours

Includes case presentations emphasizing on differential diagnosis and clinical reasoning skills.

Transaction mode

Demonstration method, Video based teaching, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- Downie, A. (1979). Cash's Textbook of Chest, Heart and Vascular Disorders for Physiotherapists. Faber & Faber, Budapest (1979).
- Porter, S. (2013). Tidy's Physiotherapy E-Book. Elsevier Health Sciences.

Course Title: CLINICAL BIOMECHANICS

Course Code: BPT606

L	T	P	Credits
3	0	0	3

Course Outcomes

Total Hours- 30

On successful completion of this course, the students will be able to:

1. Identify the biomechanics utilized in various sports
2. Become oriented with the biomechanics of aerial movements.
3. Develop proficiency in diagnosing biomechanical abnormalities associated to sports injuries.
4. To apply clinical aspects of biomechanics during treatment.

Course Content**UNIT 1****10 Hours**

1. Muscle Action in Sport and Exercise
2. Biomechanical view Neural Contributions to Changes in Muscle Strength
3. Mechanical Properties and Performance in Skeletal Muscles
4. Muscle-Tendon Architecture and Athletic Performance - Eccentric Muscle Action in Sport and Exercise
5. Stretch-Shortening Cycle of Muscle Function - Biomechanical Foundations of Strength and Power Training
6. Locomotion Factors Affecting Preferred Rates of Movement in Cyclic Activities
7. The Dynamics of Running - Resistive Forces in Swimming - Propulsive Forces in Swimming -Performance-Determining Factors in Speed Skating - Cross-Country Skiing: Technique, Equipment and Environmental Factors Affecting Performance

UNIT 2**8 Hours**

1. Jumping and Aerial Movement - Aerial Movement - The High Jump - Jumping in Figure Skating - Springboard and Platform Diving
2. Determinants of Successful Ski-Jumping Performance Throwing and Hitting - Principles of Throwing
3. The Flight of Sports Projectiles - Javelin Throwing: An Approach to Performance Development - Shot Putting - Hammer Throwing: Problems and Prospects - Hitting and Kicking.

UNIT 3**7 Hours**

1. Injury Prevention and Rehabilitation - Mechanisms of Musculoskeletal Injury
2. Musculoskeletal Loading During Landing
3. Sport-Related Spinal Injuries and their Prevention - Impact Propagation and its Effects on the Human Body
4. Neuromechanics of the Initial Phase of Eccentric Contraction- Induced Muscle Injury. Special Olympic Sports - Manual Wheelchair Propulsion, Sports after Amputation.
5. Biomechanics of Dance Biomechanics of Martial arts

UNIT 4**5 Hours**

1. Biomechanics of YOGA Introduction
2. Definition of Yoga, Origin of the word Yoga -Yuj'
3. Meaning of the word Hatha
4. Stages of Yoga, Types of Yoga, Karma yoga,
5. Gnana Yoga, Bhakti Yoga, Kriya Yoga,
6. Buddhism and Yoga, Yoga as a Universally accepted term

Transaction mode

Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- Kisner, C., Colby, L. A., & Borstad, J. (2017). Therapeutic exercise: foundations and techniques. Fa Davis. The Principle of Exercise Therapy - Gardiner (2005) - C.B.S.Delhi.
- Norkin, C. C., & White, D. J. (2016). Measurement of joint motion: a guide to goniometry. FA Davis.
- Gardiner, M. D. (1973). Principles Of Exercise Therapy: M Dena Gardiner.

Course Title: VESTIBULAR REHABILITATION

Course Code: BPT607

L	T	P	Credits
3	0	0	3

Course Outcomes

Total Hours- 30

On successful completion of this course, the students will be able to:

1. To learn the functioning of vestibular system.
2. Design rehabilitation protocol for patients having vertigo.
3. Rehabilitate patients with psychogenic disorders.
4. Treat patients with migraine.

UNIT I

10 Hours

Migraine

1. Overview and Demographic
2. Pathophysiology of Migraine
3. Genetic/Familial Influence
4. Migraine Variants
5. Vestibular and balance manifestations
6. VRT/Other treatment modalities with migraine

UNIT I I

5 Hours

BPPV

1. Review of nystagmus patterns
2. Review of common variants of BPPV o Biochemistry and co-morbidities associated with BPPV
3. Atypical variants of BPPV

UNIT III

8 Hours

Apogeotropic and AC-BPPV

1. Complex Horizontal Canal
2. Advanced Technique and Management Complicating factors
3. Complex Diagnoses presenting with Dizziness and Management
4. Parkinson’s Disease / Multiple Sclerosis / Diabetes
5. Cerebellar Disease / POTS / Bilateral Vestibulopathies
6. Vestibulotoxicity

UNIT IV

7 Hours

Psychogenic dizziness

1. Overview of personality disorders and historical perspective of vestibular/psychiatric conditions Psychogenic Variants
2. Space and Motion Discomfort (SMD)
3. Mal de Debarquement Syndrome (MDDS)
4. Migraine Anxiety Related Dizziness (MARD)
5. Phobic Postural Vertigo (PPV)
6. Persistent Postural-Perceptual Dizziness (PPPD)
7. Motor Conversion

Transaction mode

Demonstration, Team teaching Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- Kisner, C., Colby, L. A., & Borstad, J. (2017). Therapeutic exercise: foundations and techniques. Fa Davis.The Principle of Exercise Therapy - Gardiner (2005) - C.B.S.Delhi.
- Norkin, C. C., & White, D. J. (2016). Measurement of joint motion: a guide to goniometry. FA Davis.
- Gardiner, M. D. (1973). Principles Of Exercise Therapy: M Dena Gardiner.

SEMESTER VII

Course Title: PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS- I

L	T	P	Credits

Course Code: BPT701

4	0	0	4
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Course Outcomes**Total Hours- 60**

On successful completion of this course, the students will be able to:

1. Learn about the basic principles of various treatment techniques used for neurological conditions.
2. Become skilled in planning physiotherapy treatment and rehabilitation for neurological diseases.
3. Develop an understanding of the yellow flags and red flags of neuro physiotherapy.
4. Gain expertise in prescribing appropriate orthosis.

Course content**UNIT I****16 Hours**

Neurological assessment

1. Higher mental functions
2. Motor examination
3. Reflexes Sensory
4. Examination
5. Special tests
6. Gait analysis, Functional analysis
7. Assessment tools and scales.

UNIT II**15 Hours**

Approaches of neurological physiotherapy –

Basic outline of principles of treatment techniques & approaches used in:

1. N.D.T. Therapy
2. Motor Relearning Programme
3. P.N.F.
4. Roods Approach
5. Sensory Re-education
6. Facilitatory & Inhibitory Techniques
7. Muscle re-education approach

UNIT III**14 Hours**

Review of pathological changes, assessment & Physiotherapy Management and Rehabilitation in following conditions:

1. Hemiplegia
2. Paraplegia
3. Tabes Dorsalis

4. Syringomyelia
5. Infections
6. Poliomyelitis
7. Meningitis
8. Encephalitis
9. Polyneuritis
10. Transverse Myelitis
11. Parkinsonism
12. Multiple sclerosis
13. Cerebellar Ataxia.

UNIT IV**15 Hours**

Physiotherapy in Psychiatric Conditions: How to handle a patient.

Transaction mode

Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning, Demonstration method, Group Discussion

Suggested readings

- Thompson, A. (2013). Tidy's Physiotherapy. Varghese publishing House.
- Sullivan, S. (2013). Physical Rehabilitation Assessment and Treatment. Jaypee brothers, Delhi

Course title: PHYSIOTHERAPY IN SURGICAL CONDITIONS - I

Course Code: BPT702

L	T	P	Credits
4	0	0	4

Course Outcomes**Total Hours- 60**

On successful completion of this course, the students will be able to:

1. Learn about the incision lines used in different surgeries.
2. Gain expertise in providing relaxation techniques.
3. Develop skills to administer pre- and post-operative physiotherapy intervention
4. Become competent in scar and burn management

Course content**UNIT I****16 Hours**

Review of pathological changes and principles of pre- and post-operative management by physiotherapy of the following conditions:

Wounds, Burns & Plastic Surgery –

1. Wounds, ulcers, pressure sores.
2. Burns & their complications.
3. Common reconstructive surgical proceedings of the management of wounds, ulcers, burns & consequent contractures & deformities.

UNIT II

15 Hours

Abdominal and transplant surgeries

1. Common abdominal surgeries, including GIT, liver, spleen, kidney, bladder etc.
2. Common organ transplant surgeries – heart, liver, bone marrow etc.

UNIT III

29 Hours

1. Principles of Intensive Care Physiotherapy
2. Knowledge of the following equipments: Endotracheal tubes, tracheostomy tube, Humidifier, Different Ventilators, Suction Pump, Electrocardiogram, Pressure monitors (arterial, central venous pressure), Pulmonary Wedge, intracranial and temperature monitors.
3. Evaluation of the patient in the intensive care Unit including Glasgow Coma Scale
4. Outline the history of mechanical Respiration.
5. Define the terms: (a) Respirator (b) Lung Ventilator (c) Resuscitators (d) IPPB (e) PEEP (f) CPAP (g) SIMV.
6. Outline the principles of Aerosol Therapy. Humidification therapy
7. Describe techniques of sterile nasopharyngeal and endotracheal sectioning.

Transaction mode

Demonstration method, Group Discussion, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning, Demonstration method, Group Discussion

Suggested readings

- Thompson, A. (2013). Tidy's Physiotherapy. Varghese publishingHouse.

Course Title: DISABILITY PREVENTION AND REHABILITATION-I

Course Code: BPT703

L	T	P	Credits
4	0	0	4

Course Outcomes

Total Hours- 60

1. Learn the basic principles, role and models of rehabilitation
2. Gain knowledge about prevention of disability and rehabilitation of disabled persons in community
3. Study about the role of NGOs in rehabilitation
4. Develop expertise in prescribing orthotics and prosthetics

Course content

UNIT I

16 Hours

1. Conceptual framework of rehabilitation - roles of rehabilitation, team members, definitions and various models of rehabilitation
2. Epidemiology of disability with emphasis on locomotor disability - its implications-individual, family, social, economic and the state.

UNIT II

15 Hours

1. Preventive aspects of disability and organizational skills to manage it.
2. Community based rehabilitation (CBR) – Principles, WHO policies about rural health care. Role of physiotherapy in CBR – Screening for disabilities, Prescribing exercise programme, Disability prevention, strategies to improve ADL.
3. Statutory provisions - Schemes of assistance to persons with disabilities.

UNIT III

14 Hours

1. Role of NGOs in rehabilitation of persons with disabilities
2. Principles of Orthotics – types, indications, contra indications assessment (check out), Biomechanical principles of orthosis application. Uses and fitting- region wise, Fabrication of simple splints and self-help devices for upper and lower extremity – indications and applications.

UNIT IV

15 Hours

1. **Principles of Prosthetics** – types, indications, contraindications, assessment check out, uses and fitting – region wise
2. Psychological aspect of orthotic and prosthetic application.

Transaction mode

Demonstration method, Group Discussion, Lecture, Seminar, e-Team Teaching, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- Sullivan, S. & Schmitz (2013). Physical Rehabilitation – Assessment and Treatment. F. A. Davis.
- Lusardi, M. M., Jorge, M., & Nielsen, C. C. (2013). Orthotics and prosthetics in rehabilitation. Elsevier Health Sciences.

**Course Title: PHYSIOTHERAPY
NEUROLOGICAL CONDITIONS -I LAB**

Course Code: BPT704

IN			
L	T	P	Credits
0	0	4	2

Course Outcomes

Total Hours- 30

1. Become skilled in assessment and evaluation of patient suffering from neurological conditions.
2. Develop proficiency in case presentation and discussion.
3. Gain knowledge about the clinical characteristic of neurological conditions
4. Identify gait abnormalities

Course content

UNIT I

15 Hours

Clinical assessment of neurological function by:

1. Basic history taking to determine whether the brain, spinal cord or peripheral nerve is involved.
2. Assessment of higher mental function such as Orientation, Memory, Attention, Speech and Language.
3. Assessment of Cranial Nerves. Assessment of Motor System.

4. Assessment of Sensory function, Touch, Pain and Position.

UNIT II**15 Hours**

1. Assessment of Tone-Spasticity, Rigidity and Hypotonia. Assessment of Cerebral Function.
2. Assessment of Balance & Coordination. Assessment of Gait Abnormalities

Transaction mode

Demonstration method, Group Discussion, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning

Suggested Readings:

- Lindsay, K. W., Bone, I., & Fuller, G. (2010). Neurology and neurosurgery illustrated e-book. Elsevier Health Sciences.
- Walker, B. R., & Colledge, N. R. (2013). Davidson's principles and practice of medicine. Elsevier Health Sciences.

Course Title: PHYSIOTHERAPY IN SURGICAL CONDITIONS -I LAB

Course Code: BPT705

L	T	P	Credits
0	0	4	2

Course Outcomes**Total Hours- 30**

1. Become aware of technique of anaesthesia and wound dressing
2. Develop competency in administering CPR.
3. Learn about the possible post-surgical complications.
4. Plan assessment and evaluation of post-surgical cases.

Course content

Practical shall be conducted for all relevant topics discussed in theory in the following forms:

UNIT I**15 Hours**

1. Demonstration of procedure of anaesthesia,
2. Dressing of wounds,
3. Practicing technique of CPR,
4. Demonstration of procedure of skin grafting

UNIT II**15 Hours**

1. Clinical examination of incisions of abdominal surgeries
2. Exercise tolerance tests,
3. Bedside case presentations and case discussions,
4. Lab sessions consisting of evaluation and assessment methods on student models
5. Treatment techniques and practice sessions.

Transaction mode

Demonstration method, Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested Readings:

- Williams, N., & O'Connell, P. R. (Eds.). (2008). Bailey & Love's short practice of surgery. CRC press.
- Townsend, C. M. (2021). Sabiston textbook of surgery: the biological basis of modern surgical practice. Elsevier Health Sciences.

Course Title: SPORTS PHYSIOTHERAPY

Course Code: BPT706

L	T	P	Credits
2	0	0	2

Course Outcomes

Total Hours- 30

On completion of this course, the successful students should be able to:

1. To understand the need & importance assessment in sports injuries
2. To be skilled assessing and evaluating an injury both in and off field.
3. To be skilled in performing special tests to reach appropriate diagnosis.
4. To be skilled in interpretation of the results of the tests.

Course Content

UNIT I

10 Hours

1. Principles and methods of assessment & evaluation
2. Clinical Examination, Investigative Procedures and documentation of sports injuries
3. Etiology & Mechanism of Sports Injuries

UNIT II

5 Hours

1. Prevention of Sports injuries
2. Principle of management of sports injuries

UNIT III

8 Hours

1. Evaluation of Physical Fitness

2. Assessment of components of physical fitness including functional tests: muscle strength, flexibility, agility, balance, co-ordination, sensory deficits, cardio-pulmonary endurance
3. Sports-Specific evaluation and criteria for return to sport

UNIT IV**7 Hours**

1. Examination of lower extremities
2. Common and acute overuse injuries of lower extremities
3. Examination of upper extremities
4. Common and acute overuse injuries of upper extremities

Transaction mode

Demonstration method, Group Discussion, Lecture, Seminar, e-Team Teaching

Suggested readings

- Morris B. Mellion: Office Sports Medicine, Hanley & Belfus.
- Richard B. Birrer: Sports Medicine for the primary care Physician, CRC Press.
- Torg, Welsh & Shephard: Current Therapy in Sports Medicine III - Mosby.
- Zulunga et al: Sports Physiotherapy, W.B. Saunders.

Course Title: EXERCISE PHYSIOLOGY**Course Code: BPT707**

L	T	P	Credits
2	0	0	2

Course Outcomes**Total Hours- 30**

On completion of this course, the successful students should be able to:

1. To gain knowledge of bioenergetics and metabolic rate
2. To gain knowledge about the metabolism process in the human body
3. To gain knowledge about exercise testing and prescription
4. To gain knowledge about nutrition and its effect on exercise

Course Content**Unit I****8 Hours**

1. Bioenergetics of exercises
2. Basal metabolic rate, resting metabolic rate, factors affecting, energy cost of exercise

Unit II**7 Hours**

1. MET, Physical activity classification based on energy expenditure
2. Role of aerobic and anaerobic mechanism during exercises

Unit III**10 Hours**

1. Acute effects of high, burst and short duration exercises
2. Respiratory response to exercise
3. Cardiovascular response to exercise
4. Hormonal response to exercise

Unit IV**5 Hours**

1. Exercise and acid base balance
2. Nutrition and nutrition in exercise
3. Metabolism of carbohydrate, fat, protein, vitamin, mineral and water
4. Body composition and Obesity exercises for weight reduction
5. Exercise testing planning and prescription
6. Conditioning exercise for strength, duration and flexibility
7. Body temperature regulation

Transaction mode

Demonstration method, Group Discussion, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning.

Suggested readings

- Essentials of Exercise Physiology: McArdle, WD, Katch, FI, and Katch, VL. 2nd edn, Lippincott Williams and Wilkins (2000).
- Fundamentals of Exercise Physiology: For Fitness Performance and Health, Robergs RA, and Roberts, S.O. McGraw Hill (2000)
- Exercise Physiology: Powers, SK and Howley ET. 4th edn; Mc Graw Hill (2001)

Course Title: PHYSIOTHERAPY IN ICU**Course Code: BPT708**

L	T	P	Credits
2	0	0	2

Course Outcomes**Total Hours- 30**

On completion of this course, the successful students should be able to:

1. Reduce the patient's stay in the ICU and overall hospital stay.
2. Prevent ICU related complications.
3. To improve function and quality of life in the long term.
4. To make patients functionally independent.

Course Content

Unit I

10 Hours

1. Positioning
2. Education
3. Manual and ventilator hyperinflation

Unit II

13 Hours

1. Weaning from mechanical ventilation
2. Non-invasive ventilation
3. Percussion, vibration, suctioning

Unit III

7 Hours

1. Respiratory muscle strengthening
2. Breathing exercises and mobilization

Transaction mode

Demonstration method, Group Discussion, Collaborative Learning and Cooperative Learning

Suggested readings

Donna Frownfelter, Tidy’s Physiotherapy, Colby Kisner

Course Title: NEURODEVELOPMENTAL TECHNIQUES

Course Code: BPT709

L	T	P	Credits
2	0	0	2

Course Outcomes

Total Hours- 30

On completion of this course, the successful students should be able to:

- Assess patient with neurological disorder.
- Perform special tests for neurological conditions.
- Provide rehabilitation based on neurodevelopmental techniques.
- Learn to apply appropriate neurological intervention techniques.

Course Content

UNIT I**8 Hours**

Neurological Assessment:

1. Required materials for examination
2. Chief complaints
3. History taking – Present, Past, medical, familial, personal histories, Observation
4. Palpation
5. Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, left right confusion, Reasoning, and Judgment
6. Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes

UNIT II**10 Hours**

1. Developmental reflexes, deep tendon reflexes, Superficial reflexes, Sensory examination – Superficial, Deep and Cortical sensations
2. Special tests – Romberg's, Kernig's sign, Brudzki sign, Tinel's sign, Slum test, Lhermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc.,
3. Balance examination,
4. Coordination examination,
5. Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis)

UNIT III**5 Hours**

1. Functional Analysis, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading.
2. Differential diagnosis.
3. Neuro physiological Techniques – Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNF

UNIT IV**7 Hours**

1. Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy, Motor relearning program, Contemporary task-oriented approach, Muscle re-education approach and Constraint induced movement therapy
2. Paediatric Neurology: Pediatric Examination, Developmental milestones, developmental reflexes
3. Neuro developmental screening tests.
4. Evaluation & Management - History, Observation, Palpation, Milestone Examination, developmental reflex Examination

Transaction mode

Demonstration method, Group Discussion, e-Tutoring, Dialogue, Peer Group Discussion, Mobile Teaching, Self-Learning

Suggested Readings:

- Lindsay, K. W., Bone, I., & Fuller, G. (2010). Neurology and neurosurgery illustrated e-book. Elsevier Health Sciences.
- Walker, B. R., & Colledge, N. R. (2013). Davidson's principles and practice of medicine. Elsevier Health Sciences.

SEMESTER VIII

Course Title: PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS- II

Course Code: BPT801

L	T	P	Credits
4	0	0	4

Course Outcomes

Total Hours- 60

1. Learn about basic principles of various treatment techniques used for neurological conditions.
2. Develop skill in planning physiotherapy treatment and rehabilitation in neurological diseases.
3. Become competent to handle a psychiatric patient.
4. Gain expertise in providing post neuro surgery rehabilitation.

Course content

UNIT I

14 Hours

1. Pediatric neurology, Motor Development, Milestones, Neo-natal & Primitive Reflexes.
2. Evaluation and management in Cerebral Palsy, developmental disorders, autism, hydrocephalus, Spina Bifida and syringomyelia.

UNIT II

30 Hours

1. Review of pathological changes, assessment & Physiotherapy Management and Rehabilitation of the following conditions -
2. Reflex Sympathetic Dystrophy, Polyneuropathies (classification, types, and pathophysiology): Alcoholic, Diabetic, and Sensory.
3. Guillain Barre syndrome, Myopathies and Muscular Dystrophies, Motor Neuron Disorder, Disseminated Sclerosis, Amyotrophic Lateral Sclerosis, Spinal cord lesions & infections

4. Traumatic Spinal cord injuries and head injuries, Physiotherapy Rehabilitation in Surgeries of Nerve

UNIT III**16 Hours**

Peripheral and Cranial nerve injuries –

1. Evaluation and management of Brachial Plexus Injuries
2. Lumbosacral plexus lesion
3. Axillary nerve palsy
4. Sciatic nerve palsy
5. Neuritis, Neuralgia
6. Injuries of nerves of upper & lower extremities
7. Facial Nerve Palsy.

Transaction mode

Demonstration methods, Group discussion, Peer Group Discussion, Mobile Teaching, Self-Learning, Collaborative Learning and Cooperative Learning

Suggested readings

- Thompson, A. (2013). Tidy's Physiotherapy. Varghese publishing House.
- Sullivan, S. (2013). Physical Rehabilitation Assessment and Treatment. Jaypee brothers, Delhi

Course Title: DISABILITY PREVENTION AND REHABILITATION-II

Course Code BPT803

L	T	P	Credits
4	0	0	4

Course Outcomes**Total Hours- 60**

1. Learn about various disorders of speech.
2. Gain knowledge about principles of vocational rehabilitation.
3. Grasp the facts regarding role and principles of occupational therapy.
4. Develop skills to provide disability rehabilitation programme.

Course content**UNIT I****10 Hours**

1. Communication - Principles & mechanisms including speech & hearing,
2. Commons disorders of speech & hearing -etiogenesis, clinical features assessment & principles of management

UNIT II**15 Hours**

1. Vocational problems - Principles of vocational problems, including evaluation & vocational goals for people with disability.
2. Mentally subnormal - Identification, assessment and classification. Etiogenesis and principles of management including prevention. Rehabilitation of the mentally subnormal, including vocational training & home education programme

UNIT III**15 Hours**

1. Occupational therapy - Introduction
2. Activities of Daily Living (ADLs) - definition, scope and importance.
3. Teaching and training of wheel chair activities, bed activities transfer activities, locomotor activities, self-care activities, such as toilet, eating, dressing etc.

UNIT IV**10 Hours**

1. Architectural Barriers, Describe architectural barriers and possible modifications with Text Books to Rheumatoid Arthritis, CVA, Spinal Cord Injury and other disabling conditions,
2. Disability evaluation -Outline the principles of disability evaluation

Suggested Readings:

- Sullivan, S. & Schmitz (2013). Physical Rehabilitation – Assessment and Treatment. F. A. Davis.
- Lusardi, M. M., Jorge, M., & Nielsen, C. C. (2013). Orthotics and prosthetics in rehabilitation. Elsevier Health Sciences.

Course Title: PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS-II LAB**Course Code BPT804**

L	T	P	Credits
0	0	6	3

Course Outcomes**Total Hours- 30**

1. Become adapt in assessment and evaluation of patient suffering from neurological conditions.
2. Develop skill to draw a provisional diagnosis based on evaluation.
3. Identify the contraindications and precautions related to a specific condition.
4. Develop knowledge about investigation procedures undertaken for nervous system.

Course content**UNIT I****30 Hours**

Evaluation, clinical diagnosis and treatment for the conditions covered in “Neurology II”.

Suggested Readings:

- Lindsay, K. W., Bone, I., & Fuller, G. (2010). Neurology and neurosurgery illustrated e-book. Elsevier Health Sciences.
- Walker, B. R., & Colledge, N. R. (2013). Davidson's principles and practice of medicine. Elsevier Health Sciences.

Course Title: PHYSIOTHERAPY IN SURGICAL CONDITIONS-II LAB

Course Code: BPT805

L	T	P	Credits
0	0	4	2

Course Outcomes

Total Hours- 30

1. Learn about the incisions and procedures used for thoracic and cardiac surgeries.
2. Gain knowledge about normal and surgical procedure involved in child birth.
3. Develop skills to present and discuss the history and management of a surgical case.
4. Present as well as discuss case studies.

Course content

Practical shall be conducted for all relevant topics discussed in theory in the following forms:

UNIT I

15 Hours

1. Post-operative examination of thoracic and cardiac surgeries
2. Antenatal examination
3. Demonstration of normal as well as surgical procedures involved in child birth.

UNIT II

15 Hours

1. Exercise tolerance tests,
2. Bedside case presentations and case discussions,
3. Lab sessions consisting of evaluation and assessment methods on student models
4. Treatment techniques and practice sessions.

Suggested Readings:

- Williams, N., & O'Connell, P. R. (Eds.). (2008). Bailey & Love's short practice of surgery. CRC press.
- Townsend, C. M. (2021). Sabiston textbook of surgery: the biological basis of modern surgical practice. Elsevier Health Sciences.

Course Title: HAND REHABILITATION**Course Code: BPT806**

L	T	P	Credits
3	0	0	3

Course Outcomes**Total Hours- 30**

1. To understand anatomy and physiology of hand and wrist.
2. Apply advanced knowledge of clinical skills in problem solving.
3. Gather and interpret information within a holistic framework pertaining to health.
4. Design, implement and monitor appropriate therapeutic interventions.

Course Content**Unit I****10 Hours**

1. Anatomy of the wrist and fingers
2. Diseases associated with tendons
3. Arthritis
4. Trapped nerves
5. Fractures in the hand and wrist, tendon repair
6. Functional anatomy of the wrist and hand

Unit II**8 Hours**

1. Principles of muscle strengthening
2. Planning an intervention program
3. Kinesio tape
4. Introduction to use and rationales occupational therapy assessment: using the ICF model.

Unit III**7 Hours**

1. Therapy for nerve injury assessment and intervention for trigger finger
2. Upper limb tension testing

Unit IV**5 Hours**

1. Physiological impact of techniques using hot and cold
2. Use of hot and cold instruments in hand rehabilitation

Suggested Readings:

- Sullivan, S. & Schmitz (2013). Physical Rehabilitation – Assessment and Treatment. F. A. Davis.
- Lusardi, M. M., Jorge, M., & Nielsen, C. C. (2013). Orthotics and prosthetics in rehabilitation. Elsevier Health Sciences.

Course Title: FOOT REHABILITATION**Course Code: BPT807**

L	T	P	Credits
3	0	0	3

Course Outcomes**Total Hours- 30**

1. To understand anatomy and physiology of hand and wrist.
2. Apply advanced knowledge of clinical skills in problem solving.
3. Gather and interpret information within a holistic framework pertaining to health.
4. Design, implement and monitor appropriate therapeutic interventions.

Course Content:**Unit I****10 Hours**

1. Anatomy of the foot and ankle
2. Diseases associated with tendons, arthritis and trapped nerves
3. Fractures in the hand and wrist
4. Tendon repair
5. Functional anatomy of the wrist and hand

Unit II**8 Hours**

1. Principles of muscle strengthening
2. Planning an intervention program
3. Kinesio tape: introduction to use and rationales
4. Occupational therapy assessment: using the ICF model

Unit III**5 Hours**

1. Therapy for nerve injury
2. Assessment and intervention for trigger finger
3. Upper limb tension testing

Unit IV**7 Hours**

Physiological impact of techniques using hot and cold

Use of hot and cold instruments in hand rehabilitation

Suggested Readings:

- Sullivan, S. & Schmitz (2013). Physical Rehabilitation – Assessment and Treatment. F. A. Davis.

- Lusardi, M. M., Jorge, M., & Nielsen, C. C. (2013). Orthotics and prosthetics in rehabilitation. Elsevier Health Sciences.

Course Title: AQUATIC THERAPY

Course Code: BPT808

L	T	P	Credits
3	0	0	3

Course Outcomes

Total Hours- 30

1. To understand the physiological and therapeutic effects of water.
2. Apply advanced knowledge of clinical skills in problem solving.
3. Gather and interpret information within a holistic framework pertaining to health.
4. Design, implement and monitor appropriate therapeutic interventions.

Course Content:

Unit I

10 Hours

1. Physiological effects of water
2. Properties of water

Unit II

7 Hours

1. Pool exercises
2. Relaxation technique in hydrotherapy pool

Unit III

5 Hours

1. Equipments used for hydrotherapy

Unit IV

8 Hours

1. Sports rehabilitation with hydrotherapy

Suggested Readings:

- Sullivan, S. & Schmitz (2013). Physical Rehabilitation – Assessment and Treatment. F. A. Davis.
- Lusardi, M. M., Jorge, M., & Nielsen, C. C. (2013). Orthotics and prosthetics in rehabilitation. Elsevier Health Sciences.