GURU KASHI UNIVERSITY

Bachelor of Physiotherapy
Session: 2023-24

Department of Physiotherapy

GRADUATE OUTCOMES OF THE PROGRAMME

The graduates will be able to apply their knowledge in multidisciplinary or multi professional contexts, forging mutually supportive and enriching relationship with their colleagues and communities; they will be able to access new knowledge from all sources, to analyze it in a critical manner and apply treatment options keeping in mind then ethical values of conduct in patient care enabling them to be self-directed learners and thinkers allowing them to work independently.

PROGRAMME LEARNING OUTCOMES

After the completion of this programme the learner will be able to:

- Apply the knowledge of basic medical science, human anatomy, physiology, exercise therapy, and electrotherapy to the solution of complex medical conditions as well as 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.
- Apply research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 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.
- Evaluate learning needs related to the use technology in physiotherapy including new diagnostic, intervention and documentation tools**.**
- 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
BPT109	Biochemistry-I	Core course	4	0	0	4
BPT110	Physiotherapy Ethics	Compulsory Foundation	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
BPT111	Basics of Exercise Therapy Lab	Skill Based	0	0	4	2
BPT199	XXXX	MOOC	--	--	--	2
Total			**16**	**0**	**12**	**24**

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
BPT209	Biochemistry-II	Core Course	4	0	0	4
BPT206	Clinical Psychology & Sociology	Compulsory Foundation	4	0	0	4
BPT204	Human Anatomy-II Lab	Skill Based	0	0	4	2
BPT205	Human Physiology-II Lab	Skill Based	0	0	4	2
BPT210	Biomedical Physics	Skill Based	0	0	4	2
BPT211	English Communication and Soft Skills	Value Added Course	2	0	0	2
Total			**18**	**0**	**12**	**24**

Semester-III						
Course Code	**Course Title**	**Course Type**	**L**	**T**	**P**	**Credit**
BPT301	Exercise Therapy-I	Core Course	4	0	0	4
BPT302	Electro Therapy-I	Core Course	4	0	0	4
BPT310	Pathology & Microbiology	Core Course	4	0	0	4
BPT311	Exercise Therapy-I Lab	Skill Based	0	0	4	2
BPT312	Electro Therapy-I Lab	Skill Based	0	0	4	2
BPT313	Basics of Radiology Lab	Skill Based	0	0	4	2
BPT399	XXX	MOOC	--	--	--	2
Open Elective Course						
XXXX	XXX	OEC	2	0	0	2
Total			**14**	**0**	**12**	**22**
Open Elective Course (For other departments)						
OEC003	Basics of Emergency Management	OEC	2	0	0	2

Semester-IV						
Course Code	**Course Title**	**Course Type**	**L**	**T**	**P**	**Credit**
BPT401	Exercise Therapy-II	Core Course	4	0	0	4
BPT408	Electro Therapy –II	Core Course	4	0	0	4
BPT409	Biomechanics	Core Course	4	0	0	4
BPT410	Exercise Therapy-II Lab	Skill Based	0	0	4	2
BPT411	Electro Therapy-II Lab	Skill Based	0	0	4	2
BPT412	Biomechanics Lab	Skill Based	0	0	4	2
BPT413	Pharmacology	Value Added Course	2	0	0	2
Discipline Elective (Any one of the following)						
BPT414	Diagnostic Imaging	Discipline Elective	4	0	0	4
BPT415	Nutrition & Diet					
Total			**18**	**0**	**12**	**24**

Semester-V						
Course Code	**Course Title**	**Course Type**	**L**	**T**	**P**	**Credit**
BPT509	Orthopedics	Core Course	4	0	0	4
BPT510	General Medicine	Core Course	4	0	0	4
BPT503	Research Methodology	Core Course	4	0	0	4
BPT511	Orthopedics Lab	Skill Based	0	0	4	2
BPT512	Ergonomics	Skill Based	0	0	4	2
BPT513	Computer Lab	Skill Based	0	0	4	2
BPT599	XXX	MOOC	--	--	--	2
Discipline Elective (Any one of the following)						
BPT514	Hospital Management	Discipline Elective	4	0	0	4
BPT515	Exercise Physiology					
Total			**16**	**0**	**12**	**24**

Semester-VI						
Course Code	**Course Title**	**CourseType**	**L**	**T**	**P**	**Credit**
BPT608	Physiotherapy in Orthopedic Conditions	Core Course	4	0	0	4
BPT602	Physiotherapy in Cardiopulmonary Conditions	Core Course	4	0	0	4
BPT603	Biostatistics	Compulsory Foundation	4	0	0	4
BPT605	Physiotherapy in Cardiopulmonary Conditions Lab	Skill Based	0	0	4	2
BPT609	Physiotherapy in Orthopedic Conditions Lab	Skill Based	0	0	4	2
Discipline Elective (Any one of the following)						
BPT610	Physiotherapy in Community Based Rehabilitation	Discipline Elective	4	0	0	4
BPT611	Orthotics & Prosthetics					
Total			**16**	**0**	**08**	**20**

Semester-VII						
Course Code	**Course Title**	**Course Type**	**L**	**T**	**P**	**Credit**
BPT710	Neurology	Core Course	4	0	0	4
BPT711	General Surgery	Core Course	4	0	0	4
BPT712	Neurology Lab	Skill Based	0	0	4	2
BPT713	Surgery Lab	Skill Based	0	0	4	2
BPT714	Mobility aids and Gait Training	Skill Based	0	0	4	2
BPT799	XXX	MOOC	-	-	-	2
Discipline Elective (Any one of the following)						
BPT715	Patient assessment and evaluation in Neurological Conditions	Discipline Elective	4	0	0	4
BPT716	Patient assessment and evaluation in Surgical Conditions					
Discipline Elective (Any one of the following)						
BPT717	Obstetrics & Gynecology	Discipline Elective	4	0	0	4
BPT718	Sports Physiotherapy on field management					
Total			**16**	**0**	**12**	**24**

Semester-VIII						
Course Code	**Course Title**	**Course Type**	**L**	**T**	**P**	**Credit**
BPT809	Physiotherapy in Neurological Conditions	Core Course	4	0	0	4
BPT810	Physiotherapy in Surgical Conditions	Core Course	4	0	0	4
BPT811	Rehabilitation	Core Course	4	0	0	4
BPT812	Physiotherapy in Neurological Conditions Lab	Skill Based	0	0	4	2
BPT813	Physiotherapy in Surgical Conditions Lab	Skill Based	0	0	4	2
BPT814	Rehabilitation Lab	Skill Based	0	0	2	1
Discipline Elective (Any one of the following)						
BPT815	Pediatrics	Discipline Elective	4	0	0	4
BPT816	Geriatrics					
BPT817	Neuro-developmental Techniques	Discipline Elective	4	0	0	4
BPT818	ICU Management					
Total			**20**	**0**	**10**	**25**

Semester-IX						
Course Code	**Course Title**	**Course Type**	**L**	**T**	**P**	**Credit**
BPT901	Internship Training (6 Months)	Skill development	0	0	0	20
Grand Total			**132**	**0**	**90**	**205**

Internship Guidelines

After completion of BPT Semester 8, 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 in charge at the hospital every week and the same will be submitted to the university on completion of internship. Students will also present a single detailed case presentation treated during internship.

Evaluation Criteria for Theory Courses

A. Continuous Assessment: [25 marks]
   CA1-Surprise Test (Two best out of three)- (10 Marks)
   CA2-Assignment(s)- (10 Marks)
   CA3-Term Paper/Quiz/Presentations- (05 Marks)
B. Attendance: [05 Marks]
C. Mid Semester Test: [30 Marks]
D. End Semester Exam: [40 Marks]

SEMESTER-I

Course Title: HUMAN ANATOMY- I
Course Code: BPT101

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning Outcomes

After the completion of this course the learner will be able to:

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

Course Content

UNIT I **16 Hours**

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.)
Upper Limb Anatomy- Arm, Forearm, Wrist, Hand (Joints, muscles, nerve supply)

UNITII **15 Hours**

Lower Limb Anatomy- Pelvis, Hip, and Knee, Ankle (Joints, muscles, and nerve supply)

UNIT III

14 Hours

Regional Anatomy (Trunk, Thorax and Abdomen)

UNIT IV

15 Hours

Systems of the human body (Respiratory System), Anatomy of vertebral column

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, Jaypee Brother*
- *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.*

Web Sources

- *https://www.healthdirect.gov.au/bones-muscles-and-joints*
- *https://www.kenhub.com/en/library/anatomy/human-body-systems*

Course Title: HUMAN PHYSIOLOGY- I
Course Code: BPT102

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner 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 spirometer 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 **15Hours**

Cell – morphology, structure and function of organelles, Transport mechanism across cell membrane, Blood, Body fluids (composition and distribution), 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, Immunity Hemostatic mechanisms – blood Coagulation – factors and mechanism, Bleeding and Clotting time. Blood groups and their significance, determination, Rh factor, Blood transfusion – cross matching, indications, complications, Lymph – composition, formation circulation and functions.

UNIT II **15 Hours**

Cardiovascular System, Introduction: Organization of CVS. Properties of Cardiac muscles, Ionic basis of action potential and pacemaker potential, conducting system, Components, Impulse conduction. Cardiac Cycle: Definition. Phases of cardiac cycle, Heart sounds – causes, character, 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, Heart rate and its regulation, Arterial Blood Pressure: Definition Normal values and its variations, Determinants, Peripheral resistance, Regulation of BP Arterial pulse,

Regional Circulation: Coronary, Cerebral and Cutaneous circulation, Cardiovascular changes during exercise.

UNIT III **14 Hours**

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

UNIT IV **16 Hours**

Endocrine System:Outline of various hormones, mechanism of action and functions of Excretory System,Nephrons – cortical and juxtamedullary, Juxta-glomerular apparatus, Glomerular membrane, Renal blood flow and its regulation, Mechanism of Urine Formation: Glomerular Filtration: Mechanism of glomerular filtration, GFR – normal value and factors affecting, Renal clearance. Inulin clearance, Creatinine clearance. Tubular Reabsorption: Reabsorption of Na+, glucose, HCO3-, urea and water, Renal tubular transport maximum, Tubular Secretion: Secretion of H+ and K+, Mechanism of concentrating and diluting the Urine: Counter-current mechanism, Regulation of water excretion, Diuresis, Diuretics, Micturition: Mechanism of micturition, Skin and temperature regulation, Respiratory System-Introduction: Functions of respiratory system. Respiratory muscles, Mechanics of breathing: Intra-pleural and Intrapulmonary pressure changes during respiration, Chest expansion, Lung compliance: Normal value, factors affecting compliance and its variations, Lung Volumes and capacities, Ventilation – Types, Ventilation-perfusion ratio and its importance, Dead Space: Types and their definition, Transport of respiratory gases: Diffusion across the respiratory membrane, Oxygen transport – Different forms, oxygen-hemoglobin dissociation curve, Factors affecting it, Carbon dioxide transport: Different forms, Regulation of Respiration: Neural Regulation, Chemical Regulation, Hypoxia: Effects of hypoxia. Types of hypoxia. Hyperbaric oxygen therapy, Acclimatization, Hypercapnia, Asphyxia, Cyanosis – types and features, Disorders of Respiration: Dyspnea, Orthopnea, Hyperpnoea, hyperventilation, apnoea, tachypnea, Periodic breathing – types, Artificial respiration. Respiratory changes during exercise.

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.*

Web Sources

- *https://www.sciencedirect.com/topics/engineering/cell-morphology*
- *https://utswmed.org/conditions-treatments/respiratory-disorders*

Course Title: BIOCHEMISTRY-I
Course Code: BPT109

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. Analyse 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 **15 Hours**

Carbohydrates: Concepts of pH and buffers, acid base equilibrium osmotic pressure and its physiological application. Definition, structure, functions, sources, monosaccharaides, Disaccharides, Polysaccharides, muco polysaccharide and its importance, Carbohydrate Metabolism**:** Glycolysis, citric acid cycle, glycogenesis, glycogenolysis, Glucogenesis, Cori cycle, Maintenance of Blood glucose.

UNIT II **15 Hours**

Lipids: Definition, function, sources, classification and properties of fatty acids, triacylglycerol, phospholipids, cholesterol and lipoproteins. Essential fatty acids and their importance, Lipid Metabolism**:** Lipolysis, Fatty acid oxidation, lipogenesis, fatty acid synthesis, Metabolism of cholesterol, Ketone body metabolism, Atherosclerosis, fatty liver.

UNIT III **15 Hours**

Proteins:Definition, sources, Classification and functions of proteins, Protein Metabolism: Transamination, Deamination, Fate of ammonia and urea cycle.

UNIT IV **15 Hours**

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.

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) - Jaypee Brothers.*
- *Marshall, W. J., Lapsley, M., Day, A., & Ayling, R. (2014). Clinical Biochemistry: Metabolic and Clinical Aspects. Elsevier Health Sciences.*
- *Murray [Robert Kk], Harper's Bio Chemistry Ed 24, Prentice Hall. 1996*

Web Sources

- *https://mi01000971.schoolwires.net/cms/lib/MI01000971/Centricity/Domain/442/Chapter%205%20lipid%20proteins%20carbohydrates*
- *https://www.kenhub.com/en/library/anatomy/introduction-to-tissues-epithelial-connective-muscle-and-nervous-tissue*

Course Title: PHYSIOTHERAPY ETHICS
Course Code: BPT110

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner 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. Application of ethical guidelines while dealing with patients.

Course Content

UNIT I **15 Hours**

History of physiotherapy, Ethical principles in health care, Ethical principles related to physiotherapy, Scope of practice.

UNIT II **15 Hours**

Enforcing standards in health profession-promoting quality care, Professional ethics in research, Education and patient care delivery, Informed consent issues, Medical ethics and Economics in clinical decision-making.

UNIT III **15 Hours**

Ethical issues in physiotherapy, Ethical issues in clinical practice, Ethical issues in private practice, Professional ethics, Palliative care.

UNIT IV **15 Hours**

Rules of professional conduct, Physiotherapy as a profession, Relationship with patients, Relationship with medical and other professional, Confidentiality and Responsibility, Malpractice and negligence, Resolution of conflicts, Role of physiotherapy, Role of PT in health care, Ethical responsibilities of a PT, Core values, Decision making process

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*

Web Sources

- *https://www.ipcb.pt/sites/default/files/upload/rh/files/concursos/WCPT%20-%20Ethical%20responsibilities%20of%20physical%20therapists_0.pdf*
- *https://www.hueglifraserlaw.com/blog/portland-oregon-medical-malpractice/2016/03/11/physical-therapy-malpractice/*
- *https://manavrachna.edu.in/blog/scope-of-physiotherapy/*

Course Title: HUMAN ANATOMY- I LAB
Course Code: BPT104

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

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

Course Content

Surface Anatomy: To study, identify and mark the surface landmarks on human body, To study the bones and muscles of face, cranium, thorax and abdomen on human body models, Embryology using models and charts, To study the gross anatomy of Respiratory, Digestive, Endocrine, Urinary and Genital system on models, charts.

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.*

Web Sources

- *https://mvmedu.org/education/what-is-surface-anatomy/*
- *https://www.visiblebody.com/learn/skeleton/types-of-bones*

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

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner 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 haematological parameters.

Course Content

To study the following Physiological Phenomenon-Identification of blood cells and different counts, W.B.C. Count, R.B.C. Count, To study the following Physiological Phenomenon: -Cardio - Respiratory efficiency tests, Spirometry, Lung volumes and Capacities assessment, Artificial respiration and C.P.R, Pulse rate, Heart rate and measurement of Blood Pressure.

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.*

Web Sources

- *https://www.slideserve.com/buzz/blood-pressure-measurement*
- *https://www.simplepharmanotes.com/2021/07/artificial-respiration-and.html*

Course Title: BASICS OF EXERCISE THERAPY LAB
Course Code: BPT111

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:
1. Describe the basic concepts of exercise therapy.
2. Demonstrate various starting positions.
3. Develop skills to examine Centre of gravity and line of gravity.
4. To identify levers in relation to human body.

Course Content

Demonstration of basic concept of movements of the body, Demonstration of starting and derived positions of the body, Assessment and examination of both center of gravity and line of gravity, Levers and their relation to human body with examples, Demonstration of active and passive movements of the body.

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

- *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.*

Web Sources

- *https://www.betterhealth.vic.gov.au/health/healthyliving/resistance-training-health-benefits*
- *https://www.physio-pedia.com/Principles_of_Exercise*

SEMESTER-II

Course Title: HUMAN ANATOMY- II
Course Code: BPT201

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. Identify the bony structures and the soft tissues present in scalp, face and cranium.
2. Understand the anatomy and clinical significance of neuroanatomical structures.
3. Develop skills to examine anatomical and physiological disorders of brain based on evidence.
4. Identify physical deformities.

Course Content

UNIT I **16 Hours**

Regional Anatomy- Head & Scalp, Gross anatomy of eyeball, nose.

UNIT II **15 Hours**

Muscles of the face and neck and their nerve and blood supply-extra ocular muscles, triangles of the neck, Gross anatomy of ears and tongue, Temporomandibular joint

UNIT III **14 Hours**

Cranial nerves, Sensory End Organs, Internal Capsule, Pyramidal systems, Extra – pyramidal systems.

UNIT IV **15 Hours**

Neuro – Anatomy, Spinal Cord Segments & Areas. CNS & PNS, Brainstem, Cerebellum, Inferior colliculi, Superior Colliculi, Hypothalamus, Thalamus, Cerebral hemispheres, Functional areas of brain, Corpus striatum, Ventricles of the brain, and Meninges.

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*

Web Sources

- *https://www.kenhub.com/en/library/anatomy/extrapyramidal-system*
- *https://my.clevelandclinic.org/health/body/21598-brainstem*

Course Title: HUMAN PHYSIOLOGY- II
Course Code: BPT202

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. Understand the functioning of human neurological system.
2. Analyse 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**

Neuromuscular Physiology, Nerve - structure and function of neurons, Classification, properties and impulse transmission of nerve fibres, Nerve injury - degeneration and regeneration, Neuroglia - types and functions, Muscle – classification, Skeletal muscle – structure, Neuromuscular junction – structure, Neuromuscular transmission, Introduction - Resting membrane potential, Action potential - ionic basis and properties.

UNIT II **15 Hours**

Nerve Physiology: Introduction - organization of Nervous System - central and peripheral system, Functions of nervous system, Neuron and classification of nerve fibers, Motor units, Structure of synapse and synaptic transmission, Types and properties of sensory Receptors, types of sensations, Sensory Tracts of Spinal cord - Ascending tracts - posterior column tract, lateral spinothalamic tract and anterior spinothalamic tract - their origin, course, termination and function, Somatic sensations - crude touch, fine touch, tactile localization, tactile discrimination, vibration sense, kinesthetic sensations and stereo gnosis, Pain sensation - mechanism of pain, Cutaneous pain -slow and fast pain, hyperalgesia, Deep pain - visceral pain - referred pain, Gate control theory of pain, Motor Mechanism - Motor pathway, descending tracts - Pyramidal and Extrapyramidal Tracts -origin, course, termination and function. UMN and LMN, Reflex action - component, Bell-magendie law, classification and properties. Monosynaptic and polysynaptic reflexes, superficial reflexes, deep reflexes, Stretch reflex -structure of muscle spindle, pathway, higher control and functions, Inverse stretch reflex, muscle

tone, definition and properties. Hypotonia, atonia and hypertonia, UMNL and LMNL, Hemi section and complete section of spinal cord, upper and lower motor neuron lesions, Cerebral Cortex - lobes and Brodmann's area and their functions. Higher functions of cerebral cortex- learning, memory and speech, Blood supply of brain, EEG - Waves and features, Posture and equilibrium - postural reflexes - spinal, medullary, midbrain and cerebral reflexes, Functions of Cerebellum Thalamus and Hypothalamus- functions, Basal ganglia- structure and function, CSF - formation, composition, circulation and functions, Automatic Nervous System - Functions and actions of parasympathetic and sympathetic.

UNIT III **14 Hours**

Special senses, 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, Refractive errors - myopia, hypermetropia, presbyopia, and astigmatism, Visual reflexes - accommodation - pupillary and light, Visual acuity and visual field, Light adaptation, Dark adaptation Color vision -color blindness, 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, Taste - taste buds, primary taste, gustatory pathway, Smell - Olfactory membrane, olfactory pathway.

UNIT IV **15 Hours**

Physiology of exercise and work: Effects of acute and chronic exercise on - O2 transport, Muscle strength/power/endurance, Cardiovascular system and Respiratory system, Body fluids and electrolyte, 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*

Web Sources

- *https://www.prepladder.com/neet-pg-study-material/physiology/nerve-muscle-physiology*
- *https://thebiotechnotes.com/2019/05/21/special-senses-taste/*

Course Title: BIOCHEMISTRY-II
Course Code: BPT209

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:
1. Identify the source of vitamins and their role in maintenance of good health.
2. Analyzethe structure and metabolism of basic nucleic acids and enzymes of human body.
3. Identify structures of biomolecules and their chemical reactions essential to life.
4. Apply knowledge of bio chemistry and conduct treatment accordingly.

Course Content

UNIT I **15 Hours**

Vitamins: Classification, fat soluble vitamins, A, D.E & K water soluble vitamin B complex & C, Daily Requirements Physiological functions and diseases of Vitamin deficiency.

UNIT II **16 Hours**

Nucleic acid: Structure and function of DNA and RNA, Nucleosides, nucleotides, Genetic code, biologically important nucleotides, Enzymes: Definitions, mode of action, factor affecting enzyme action, clinical importance of enzyme.

UNIT III **14 Hours**

Water and Electrolyte: Fluid compartment, daily intake and output sodium and potassium metabolism, Nutrition -Balanced diet, Diet for obese, chronically ill and terminally ill patients, BMR – normal values, metabolism in exercise and injury, Nutritional disorders.

UNIT IV **15 Hours**

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) - Jaypee Brothers.*
- *Marshall, W. J., Lapsley, M., Day, A., & Ayling, R. (2014). Clinical Biochemistry: Metabolic and Clinical Aspects. Elsevier Health*

Web Sources

- *https://www.technologynetworks.com/genomics/articles/what-are-the-key-differences-between-dna-and-rna-296719*
- *https://www.healthline.com/health/what-is-basal-metabolic-rate*

Course Title: CLINICAL PSYCHOLOGY & SOCIOLOGY
Course Code: BPT206

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. Develop Scientist-Practitioner approach and identify the economic, cultural and political factors affecting structure of society.
2. Comprehend the importance of gender inequalityand inculcate advanced clinical skills in the field of mental health.
3. Recognize the social norms, values and become proficient in-patient counseling and support.
4. Demonstrate the role of socialization in-patient rehabilitation process.

Course Content

UNIT I **15 Hours**

Theories of psychology, Classification systems in psychopathology, Early diagnostic classification systems, ICD DSM, Approaches to psychopathology: Biological, psychodynamic, Behavioral, cognitive, socio- cultural, Introduction - Meaning, definition and scope of sociology, Its relation to social psychology, Socialization - Meaning, process and agencies, Primary, Secondary and Anticipatory socialization, 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 **15 Hours**

Anxiety disorders: Approaches and etiology of generalized anxiety disorder Panic disorder, Phobia, Obsessive-compulsive disorder and Post-traumatic stress disorder, Somatoform disorders: Approaches and etiology of Somatization, Hypochondriasis, Pain disorder and Conversion disorder, Family - Meaning, definition, types, features and functions, Social factors in health and disease situations**:** Meaning of social factors. Role of social factors.

UNIT III **14 Hours**

Outcome measures to assess psychological status of patient, Psychotic disorders: Approaches and etiology of Schizophrenia, Paranoid and Mood disorders, Community - Rural community – meaning and features – health

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

UNIT IV **16 Hours**

Child Psychopathology: Historical overview, Models: Medical, Behavioral, psychodynamic, cognitive, and developmental, Neurotic disorders: Childhood compulsive, obsessive and phobic reactions, Childhood psychosis: childhood schizophrenia: Symptoms and causes, Specific Disorders in Children: Attention deficit hyperactivity disorder, Learning disability and Intellectual Disability
Autism: Symptoms and causes, Social Problems - Meaning, definition and characteristics, 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

- *Carson, R.C., Butcher, J.N., &Mineka, S. (2001). Abnormal psychology in modern life (11th ed). New York. Allynand 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.*
- *Kupuswamy - Social Changes in India – (2006) - Vikas, Delhi.*
- *Ahuja - Social Problems – (2014) - Bookhive, Delhi.*

Web Sources

- *https://www.webmd.com/anxiety-panic/guide/anxiety-disorders*
- *https://www.sciencedirect.com/topics/medicine-and-dentistry/child-psychopathology*

- *https://www.merriam-webster.com/dictionary/family*
- *https://www.thoughtco.com/socialization-in-sociology-4104466*

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

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

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

Course Content

Surface Anatomy: To study, identify and mark the surface landmarks on human body, To study the muscles of face, upper and lower extremities on a dissected human body, To study the bones of human body including cranium, Temporomandibular joint with special emphasis on origin on a dissected human muscles and ligaments, To study the anatomy of joints of upper and lower extremities, face and cranium on models, charts and CDs, To study motor areas of brain, 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.*

Web Sources

- *https://courses.lumenlearning.com/wm-biology2/chapter/the-central-and-peripheral-nervous-systems/*
- *https://www.kenhub.com/en/library/anatomy/upper-extremity-anatomy*

Course Title: HUMAN PHYSIOLOGY - II LAB
Course Code: BPT205

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. Examine hemoglobin percentage draw inference on their basis.
2. Identify bleeding and clotting time.
3. Identify values of ESR and to study different types of blood group.
4. Develop skills to examine auscultation and ECG.

Course Content

Hemoglobin percentage and color index, Bleeding time and clotting time, E.S.R. and Blood groups, To study the following Physiological Phenomenon: -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.*

Web Sources

- *https://www.medicine.mcgill.ca/physio/vlab/bloodlab/hemostasis_n.htm*
- *https://www.testing.com/tests/erythrocyte-sedimentation-rate-esr/*

Course Title: BIOMEDICAL PHYSICS
Course Code: BPT210

L	T	P	Credits
0	0	4	2

Total Hours- 30

Learning outcomes

After the completion of this course the learner will be able to:

1. Recall the physics principles & Laws of Electricity.
2. Describe the main electrical supply, electric shock – precautions.
3. Acquire various types of electrodes used in therapeutic.
4. To analyze the electrical skin resistance & significance of various media used to reduce skin resistance.

Course Content

Fundamentals of Low frequency currents: Production of electricity, mains supply, A.C. currents & Faradic type current, D.C. currents – Types, Fundamentals of electrical charges, static electricity, Ohm's law, Conductors, Capacitors, Types of electrodes, galvanic skin resistance, electrode, gels, types & significance Fundamentals of High frequency currents: Magnetism, E.M.F. Conduction, Lenz's Law, transformers, types, Thermionic valves, Semi–conductors: types, transistors, Electronic circuits– oscillators, pulse generators, Safety precautions and management of electric shock.

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

- *Clayton's Electro therapy – 3rd & 10th Ed,*
- *Electrotherapy explained – by Low & Read*
- *Electro Therapy – by Kahn*
- *Basics of Electrotherapy – Dr. Subhash Khatri*
- *Kinesiology - Katharine F.*
- *Clinical Electrotherapy – by Nelson & Currier.*

Web Sources

- *https://phys.libretexts.org/Bookshelves/University_Physics/Book%3A_Physics_(Boundless)/1%3A_The_Basics_of_Physics/1.1%3A_The_Basics_of_Physics*

- *https://www.iea.org/reports/electricity-information-overview/electricity-production*

SEMESTER-III

Course Title: EXERCISE THERAPY- I
Course Code: BPT301

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. Describe the basic concepts of therapeutic exercises.
2. Design a protocol including 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, Aims, techniques of exercise therapy and general areas of its application, Group action of muscles, Angle of pull, Mechanical efficiency of muscles, Muscle fibre type, motor unit, Causes of decreased muscle performance, Causes of immobility.

UNIT II **15 Hours**

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, and Hanging, Derived Positions, Introduction to Movements Analysis of joint motion, Muscle work, Neuro – muscular coordination.

UNIT III **14 Hours**

Free exercise, and: Classification, principles, techniques, indications, contraindications, effects and uses, Principles, techniques, indications, contraindications, effects and uses, Active Movements: Classification, principles, techniques, indications, contraindications, effects and uses, Principles, techniques, indications, contraindications, effects and uses, Active assisted exercises- Definition, principles, techniques, indications, contraindications, precautions, effects and uses Classification of Passive movements: Principles of giving passive movements, Indications, contraindications, effects and uses, Techniques of giving passive movements.

UNIT IV **15 Hours**

Definition of strength, power & work, endurance, muscle actions, Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction &relaxation, Physiologic adaptation to training: Strength & Power, Endurance, 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. FaDavis.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.*

Web Sources

- *https://www.vedantu.com/evs/muscle-fibre*
- *https://mgumst.org/pdf/naac/Final_Nsg.PPT_PDF/Medical/Physiotherapy/DR%20CHANDAN/Resisted%20exercises.pdf*

Course Title: ELECTRO THERAPY- I
Course Code: BPT302

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner 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**

Superficial Heating modalities, Moist heat - Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications, Paraffin wax bath - Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers, Electrical heatingpads.

UNIT II **15 Hours**

Low Frequency Currents: Basic types of current – Direct Current: types, physiological &therapeutic effects, Alternating Current, Types of Current used in Therapeutics. Modified D.C - Faradic Current and Galvanic Current Modified A.C - Sinusoidal Current, 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, Faradic foot bath, Faradism under pressure.

UNIT III **14 Hours**

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, Iontophoresis: Techniques of Application of Iontophoresis, Indications, Selection of Current, commonly used Ions (Drugs) for pain, hyperhidrosis, would healing, 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): Theories of Pain, Define TENS:Types of TENS - Conventional TENS, Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS, Theories of pain relief by TENS, Principles of clinical application, Dosage parameters, Physiological & Therapeutic effects, Indications & Contraindications, Ultrasound: Piezoelectric Effect, Definitions, Methods of application Principles of clinical application, Dosage parameters, Physiological& Therapeutic effects, Indications & Contraindications.

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

- *Electrotherapy Explained: Principles&Practice Low& Reed, Butterworth Heinemann.*
- *Claytons Electro therapy, Forster & Palastange (2005), CBS publishers*
- *Therapeutic Heat & Cold, Lehmann, Willians &Wilkins.*
- *Textbook of Electrotherapy, Jagmohan Singh (2012), Jay pee publishers.*
- *Principles & Practice of Electrotherapy, Joseph Kahn(2000) ChurchillLivingstone.*

Web Sources

- *https://mobilephysiotherapyclinic.in/strength-duration-curvesdc/*
- *https://uihc.org/health-topics/transcutaneous-electrical-nerve-stimulator-tens*
- *https://recover.centre.uq.edu.au/treatment/galvanic-current*

Course Title: PATHOLOGY AND MICROBIOLOGY

Course Code: BPT310

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning Outcomes

After the completion of this course the learner will be able to:

- Understand various mechanisms causing injury.
- Apply the knowledge of functioning of immune system while dealing with patients.
- To learn about various disorders affecting human body.
- Understanding and differentiating infections caused by variety of microbes.

Course Content

UNIT I **16 Hours**

General Pathology-Cell injury-causes, mechanism & toxic injuries with special reference to Physical, Chemical, & ionizing radiation, Reversible injury (degeneration)- types-morphology- swelling, hyaline, fatty changes, Intra-cellular accumulation-hyaline mucin, Irreversible cell injury-types of necrosis-apoptosis – calcification dystrophic & metastasis, Extra-cellular accumulation-amyloidosis, calcification-Pathogenesis- morphology, Inflammation & Repair, Acute inflammation – features, causes, vascular & cellular events, Morphologic variations, Inflammatory cells & mediators, Chronic inflammation: - causes, types, non-specific & granulomatous – with examples, Wound healing by primary & secondary union factors promoting & delaying healing process, Healing at various sites including-bones, nerve & muscle, Regeneration & repair, Immuno – pathology – (basic concepts), Immune system: - organization-cells- antibodies- regulation of immune responses, Hyper-sensitivity, Secondary immuno-deficiency including HIV, Organ transplantation

UNIT II **15 Hours**

Circulatory disturbances, Edema - pathogenesis - types - transudates / exudates, Chronic venous congestion- lung, lever, spleen, Thrombosis – formation – fate – effects, Embolism – types- clinical effects, Infarction – types – common sites, Gangrenes – types – action, pathogenesis, Shock - Pathogenesis, types, morphologic changes, Growth Disturbance, Atrophy-malformation, agenesis, dysplasia, Neoplasia classification, histogenesis, biologic behaviors, difference between benign & malignant tumor, Malignant neoplasms- grades-stages-local & distal spread, Carcinogenesis – environmental carcinogens, Chemical, Occupational, heredity, viral, 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, Definitions: infections, parasite, host, vector, fomite, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate, Normal flora of the human body, Routes of infection and spread; endogenous and exogenous infections; source at reservoir of infections, Bacterial cell. Morphology limited to recognizing bacteria in clinical samples Shape, motility and arrangement.

Structures, which are virulence, associated, Physiology: Essentials of bacterial growth requirements, Sterilization, disinfection and universal precautions in relation to patient care and disease prevention, Definition of asepsis, sterilization, disinfection,
Hospital acquired infections, Basic methods of sterilization.

UNIT IV **15 Hours**

Basic principles of immunity immunobiology: lymphoid organs and tissues, Antigen, Antibodies, antigen and antibody reactions with relevance to pathogenesis and serological diagnosis, Humoral immunity and its role in immunity Cell mediated immunity and its role in immunity. Immunology of hypersensitivity, measuring immune functions, Streptococcal infections: Rheumatic fever and Rheumatic heart disease, Meningitis, Tuberculosis, Pyrexia of unknown origin, leprosy,
Sexually transmitted diseases, Poliomyelitis, Hepatitis, Acute respiratory infections,
Central nervous System infections, Urinary tract infections, Pelvic inflammatory disease, Wound infection Opportunistic infections, HlV 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.*

Web Sources

- *https://thrombosis.org/patients/what-is-thrombosis/*
- *https://www.oregon.gov/oha/ph/diseasesconditions/communicabledisease/pages/transmission.aspx*
- *https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-*
- *https://www.sciencedirect.com/topics/medicine-and-dentistry/central-nervous-system-infection*

Course Title: EXERCISE THERAPY - I LAB
Course Code: BPT311

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. Classify various types of exercises.
2. Identify the fundamental positions of various joints of the body.
3. Analyse different types of muscle work and muscle contraction.
4. Identify group action of muscles.

Course Content

To practice the relaxed passive movement, assisted movements and resisted movements region wise, To study the position of joints, muscle work, and stability of various fundamental and derived positions, To study the different types of muscle contraction, muscle work, 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. FaDavis.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*

Web Sources

- *https://www.webmd.com/fitness-exercise/difference-between-passive-range-of-motion-and-active-range-of-motion*
- *https://link.springer.com/referenceworkentry/10.1007/978-0-387-30440-3_341*

Course Title: ELECTRO THERAPY-I LAB
Course Code: BPT312

L	T	P	Credits
0	0	4	2

Total Hours- 30

Learning outcomes

After the completion of this course the learner 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

To experience sensory and motor stimulation of nerves and muscles by various types of low frequency currents oneself, To locate and stimulate different motor points region wise including the upper & lower limb, trunk and face, To study a Biofeedback unit its operation and different methods of application region wise,Therapeutic application of different low frequency current, Faradic foot bath, faradism under pressure, Iontophoresis, To plot strength duration curve, 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.*

- **Web Sources**
- *https://www.yourphysio.in/blogs/how-faradic-foot-bath-helps-people-with-flat-foot*
- *https://www.verywellhealth.com/iontophoresis-in-physical-therapy-2696534*

Course Title: BASICS OF RADIOLOGY

Course Code: BPT313

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. Develop skills to read and interpret X- rays
2. Formulate diagnosis based on identification of upper and lower limb radiology
3. Gain Skills to read head and neck radiology
4. Gain skills to read spine X-rays

Course Content

Reading and interpretation of x-rays, Upper limb and Lower limb Radiology- Normal, Head and Neck Radiology- Normal, Thorax and Spine Radiology- Normal.

Transaction Mode

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

Suggested Readings

- *Clinical Radiology for Medical Students, 3Ed- G Roberts, J Hughes, M. D. Hourihan*
- *Essential Physics for Radiology and Imaging- Dr. Akash Ganguly*
- *Radiology Fundamentals - Introduction to imaging and technology- Harjit Singh, Janet Neutze*

Web Sources

- *https://www.acr.org/Practice-Management-Quality-Informatics/Practice-Toolkit/Patient-Resources/About-Radiology*
- *https://www.verywellhealth.com/what-is-radiology-5085100*
- *https://emedicine.medscape.com/radiology*

Course Title: BASICS OF EMERGENCY MANAGEMENT

Course Code: OEC003

L	T	P	Credits
2	0	0	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner 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, Concept of triage a. Components of triage b. Triage officer c. Triage procedure, Multiple and mass casualties: Difference between multiple and mass casualties, Disaster preparedness, Basic principle, description, types, usage, calibration and maintenance of: Electrocardiograph, Multi-parameter monitors, Defibrillator, AED, ventilator.

UNIT II **8 Hours**

Ambulance services, responding to a call, Emergency vehicle operations, Position and Transport of patient, Patient position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep, 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, Sudden cardiac death, Cardiac, respiratory arrest, Basic cardiopulmonary resuscitation in adults, Advanced cardiac life support, Resuscitation in neonates, pediatrics and resuscitation in pregnancy, Hand washing and hygiene, Injuries and Personal protection, Insulation and safety procedures, Aseptic techniques, sterilization and disinfection.

UNIT IV **5 Hours**

Specific resuscitative procedures, Airway management, Breathing and ventilation management, Venous and intraosseous access, Defibrillation and cardio version, Fluid and blood resuscitation, Vasoactive agents in resuscitation, Arrhythmias.

Transaction mode

Open learning, Problem solving, Task based teaching

Suggested readings

- *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.*

Web Sources

- *https://www.medicalnewstoday.com/articles/153849*
- *https://www.verywellhealth.com/basic-first-aid-procedures-1298578*
- *https://www.healthline.com/health/first-aid*

SEMESTER-IV

Course Title: EXERCISE THERAPY- II

Course Code: BPT401

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner 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**

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, Joint Mobility: Etiogenesis of Joint stiffness. General techniques of mobilization, Effects, indications, contraindications & precautions, 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. Continuous Passive Motion (CPM)

UNIT II **15 Hours**

Muscle Insufficiency: Etiogenesis of muscle insufficiency (strength, tone, power, endurance & volume) General techniques of strengthening. Effects, indication, contraindications & precautions, 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, 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**

Breathing Mechanism: Review normal breathing; types, techniques, indications, contraindications, therapeutic effects and precautions of breathing exercises, Chest expansion measurement and evaluation, Postural drainage, 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,

Group Exercises: Organization of Group exercises, Recreational Activities and Sports,

Hydrotherapy –Definition, types, indication, contraindications, Methods of application,

Whirl Pool Bath: Construction, Method of Application, Therapeutic Uses, Indications & Contraindications, Contrast Bath - Method of Application, Therapeutic Uses, Indications & Contraindications.

UNIT IV **15 Hours**

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, 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. FaDavis.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.*

Web Sources

- *https://www.physio-pedia.com/Balance_Training*
- *https://www.physiotherapy-treatment.com/physiotherapy-links.html*

Course Title: ELECTRO THERAPY- II

Course Code: BPT408

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. To gain operational skills of EMG and NCV studies.
2. To gain knowledge about high frequency currents.
3. To gain knowledge about medium frequency currents.
4. To identify the clinical relevance of Cryotherapy and Radiation therapy.

Course Content

UNIT I **16 Hours**

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

UNIT II **14 Hours**

LASER-Definition, physical principles of production, types, physiological and therapeutic effects, techniques of applications, dosage, indications, contraindications , safety precautions, operational skills and patient preparation, MWD -Definition, physical principles of production, types, physiological and therapeutic effects, techniques of applications, dosage, indications, contraindications , safety precautions, operational skills and patient preparation, SWD- Definition, physical principles of production, types, physiological and therapeutic effects, techniques of applications, dosage, indications, contraindications , safety precautions, operational skills and patient preparation

UNIT III **15 Hours**

Interferential therapy – Definition, Principles of production, Static Interference System, Dynamic Interference system, Dosage Parameters for IFT, patient preparation and Electrode placement in IFT, Physiological & Therapeutic effects, Indications & Contraindications, Russian current, Rebox Currents
Di dynamic, Traction: Cervical and Lumbar: Definition, types, physiological and therapeutic effects, techniques of applications, dosage, indications, contraindications, safety precautions, operational skills and patient preparation

UNIT IV **15 Hours**

Cryotherapy - Definition, Principle- Latent heat of fusion, Physiological & Therapeutic effects, Techniques of Applications, Indications & Contraindications, Dangers, Methods of application with dosages, IRR-Definition, physical principles of production, types, physiological and therapeutic effects, techniques of applications, dosage, indications, contraindications , safety precautions, operational skills and patient preparation, UVR -Definition, physical principles of production, types, physiological and therapeutic effects, techniques of applications, dosage, indications, contraindications , safety precautions, operational skills and patient preparation, ICT- Definition, physical principles of production, types, physiological and therapeutic effects, techniques of applications, dosage, indications, contraindications , safety precautions, operational skills and patient preparation

Transaction Mode

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

Suggested Readings

- *Electrotherapy Explained:Principles &Practice Low& Reed, ButterworthHeinemann.*
- *Claytons Electro therapy, Forster & Palastange (2005), CBS publishers*
- *Therapeutic Heat & Cold, Lehmann, Willians &Wilkins.*
- *Textbook of Electrotherapy, Jagmohan Singh (2012), Jay pee publishers.*
- *Principles & Practice of Electrotherapy, Joseph Kahn(2000) ChurchillLivingstone.*

Web Sources

- *https://www.physio-pedia.com*
- *http://www.physiotherapynotes.com*

Course Title: BIOMECHANICS

Course Code: BPT409

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

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. Apply the concepts of biomechanics while rehabilitation.

Course Content

UNIT I **16 Hours**

Basic Concepts of Biomechanics-Motion – Type, location, direction, duration, action and magnitude of motion, Force – definition, reaction force, equilibrium, objects in motion, force of friction, parallel force system, concurrent force system, work, moment arm of force, force components, Levers – types of levers and equilibrium of levers, Centre of gravity, line of gravity, stability and equilibrium, Joint Structure and Function, Basic principles of Joint design and material used in human joint, General properties of connective tissues, Joint function, Joint motion - Kinematics chains and range of motion, Muscle Structure and function, Mobility and stability functions of muscle, Elements of muscle structure and its properties, Types of muscle contractions and muscle work, Muscle functions.

UNIT II **15 Hours**

The Biomechanics of peripheral joints of upper limb, Shoulder complex – structure and components of shoulder complex and their integrated functions, Elbow complex -structure and functions of elbow joint – humeroulnar and humeroradial articulations, superior and inferior radioulnar joints; mobility and stability of elbow complex, Wrist & Hand complex – structural components and functions of wrist complex, structure of hand complex, functional position of wrist and hand.

UNIT III **14 Hours**

The Biomechanics of peripheral joints of lower limb, Hip complex - structure and functions of hip joint, Knee complex - structure and functions of knee joint – tibiofemoral and patellofemoral joint, Ankle and foot complex- structure and functions of ankle joint, subtalar joint, talonavicular joint, transverse tarsal joint, tarsometatarsal joint, metatarsophalangeal joint, interphalangeal joint, structure and function of plantar arches, muscles of ankle and foot.

UNIT IV **15 Hours**

Biomechanics of vertebral column (Spine), General structure and function, Regional structure and function – cervical, thoracic, lumbar and sacral regions, Muscles of vertebral column, General features of Normal gait, gait initiation, kinetics and kinematics of gait and abnormal gait. Equipments and tools to analyse gait, Definition, kinetics and kinematics of posture, postural control.Static and dynamic posture, ideal posture analysis.

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.*

Web Sources

1. *https://www.sciencedirect.com/science/article/pii/S0720048X1200455X*
2. *https://www.bbc.co.uk/bitesize/guides/zxkr82p/revision/*

Course Title: EXERCISE THERAPY –II LAB
Course Code: BPT410

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner 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

To practice the entire soft tissue manipulative techniques region wise-Upper limb, Lower limb, Neck, Back, Face, To practice assessment & evaluative procedures for ,Motor, Sensory, Neuromotorcoordination, Vital capacity, Limb length, Higher functions, To practice the measurement of ROM using goniometer for joints of upper limb, lower limb &trunk, Grading of muscle strength region wise – upper limb, lower limb and trunk, To practice & experience effects of basic yoga “asanas”, 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. FaDavis.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.*

Web Sources

- *https://www.thephysiotherapyplace.com/resources/treatment-techniques/manual-therapy-and-manipulation#:~:text=Manipulation%20is%20a%20highly%20skilled,a%20manipulation%20is%20performed%20well.*
- *https://www.researchgate.net/publication/283376239_Neuromotor_coordination_of_multisegmental_muscle_during_a_change_in_movement_direction*

Course Title: ELECTRO THERAPY-II LAB
Course Code: BPT411

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. To give orientation about various electrotherapy modalities.
2. To gain skill of application of these modalities in various conditions.
3. To gain knowledge for indications and contraindications for using different modalities which helps in employability.
4. To memorise precautions before applying any modality to the patient.

Course Content

To study a short wave diathermy unit, its operation unit, its operation and different methods of application region wise, To study a microwave diathermy unit its operation and different methods of application region wise, To study ultrasound unit, its operation and different methods of application region wise, To study the various types of IR lamps and their application to body region wise, To study the different types of UV unit, their operation assessment of test does and application of UVR region wise.

Transaction mode

Open learning, Case based teaching, Video based teaching

Suggested Readings:

- *Electrotherapy Explained: Principles&Practice Low& Reed, ButterworthHeinemann.*
- *Claytons Electro therapy, Forster & Palastange (2005), CBS publishers*
- *Therapeutic Heat & Cold, Lehmann, Willians &Wilkins.*
- *Textbook of Electrotherapy, Jagmohan Singh (2012), Jay pee publishers.*
- *Principles & Practice of Electrotherapy, Joseph Kahn(2000) ChurchillLivingstone.*

Web Sources

- https://www.yourphysio.in/blogs/how-faradic-foot-bath-helps-people-with-flat-foot
- https://www.verywellhealth.com/iontophoresis-in-physical-therapy-2696534
- https://www.physio-pedia.com
- http://www.physiotherapynotes.com

Course Title: BIOMECHANICS LAB

Course Code: BPT412

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

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 muscle action and movements.
4. Proficiently undertake postural and gait analysis.

Course Content

To study the effects of forces on objects. To find out the C.G. of an object. To study anatomical levers, To name and sketch the anatomical movements of vertebral column in various planes, as observed, To study different types of muscle contraction, muscle work, group action of muscles, resolution of muscular forces at different joints, coordinated movements, Postural and gait analysis.

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*

Web Sources

- *http://physioknowledgebd.blogspot.com/2016/03/group-action-of-muscles.html*
- *https://www.physio-pedia.com/Centre_of_Gravity*

Course Title: PHARMACOLOGY

Course Code: BPT413

L	T	P	Credits
2	0	0	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. To identify the pharmacological actions of different categories of drugs.
2. 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. Analyse the ill effects of over dosage

Course Content

UNIT I **5 Hours**

General Pharmacology: Definitions, classification of drugs, Sources of drugs, Routes of drug administration, Distribution, metabolism and excretion of drugs, Pharmacokinetics and Pharmacodynamics, Factors modifying drug response. Adverse effects.

UNIT II **10 Hours**

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

UNIT III **8 Hours**

Cardio-vascular Pharmacology: 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, Drugs used for treatment of vascular disease – lipid lowering agents, anti-thrombotics, Anti-coagulants and thrombolytic.

Drugs used for treatment of ischemic heart disease – nitrates, beta blockers, calcium channel blockers

UNIT IV **7 Hours**

Neuropharmacology-Sedative – hypnotic drugs: barbiturates, benzodiazepines, Anti-Anxiety drugs – benzodiazepines, anxiolytics, Drugs used for treatment of mood disorders – monoamine oxidase inhibitors, tricyclic antidepressants, A typical antidepressant, Antipsychotic drugs, NSAIDS- Non Steroidal Anti Inflammatory Drugs

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*

Web Sources

- *https://www.drugs.com/drug-class/central-nervous-system-agents.html*
- *https://nmu.ua/wp-content/uploads/2016/06/Pharmacology_-Pharmacology_en.pdf*

Course Title: DIAGNOSTIC IMAGING
Course Code: BPT414

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to::

1. Gain comprehensive theoretical and practical knowledge about diagnostic imaging.
2. Independently interpret all, routine and special radiological and imaging investigations.
3. Provide radiological services in acute emergency and trauma.
4. Gain comprehensive theoretical and practical knowledge to work in collaboration with rehabilitation team.

Course Content

UNIT I **14 Hours**

Image interpretation -Radiography (x-rays), Fluoroscopy, Ultrasound, Endoscopy

UNIT II **15 Hours**

Radiography and mammography, Equipment components, Procedures for Radiography & Mammography, Benefits versus Risks and Costs, Indications and contraindications. Fluoroscopy, Equipment used for fluoroscopy, Indications and Contra indications, How it helps in diagnosis, The Findings in Fluoroscopy, Benefits versus Risks and Costs.

UNIT III **16 Hours**

Computed tomography (CT), Equipment used for Computed Tomography, Indications and Contra indications, How it helps in diagnosis, The Findings in Computed Tomography, Benefits versus Risks and Costs, Magnetic resonance imaging (MRI), Equipment used for MRI, Indications, Contra indications and How it helps in diagnosis The Findings in MRI, Benefits versus Risks and Costs, Functional MRI.

UNIT IV **15 Hours**

Ultrasound-Equipment used for Ultrasound, Indications and Contra indications, How it helps in diagnosis, The Findings in Ultrasound, Benefits versus Risks and Costs, Endoscopy, Equipment used for Endoscopy, Indications and Contra indications, How it helps in diagnosis, The Findings in Endoscopy, 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, ChurchchillLevingstone*

Web Sources

- *https://radiologykey.com/x-ray-imaging-mammography/*
- *https://radiology.ucsf.edu/patient-care/prepare/mri*

Course Title: NUTRITION & DIET

Course Code: BPT415

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. To gain basic concepts regarding nutrition and its constituents.
2. To gain knowledge about dietary fibres.
3. Evaluate the daily requirement of vitamins.
4. Analyze nutritional needs during pregnancy and infancy.

Course Content

UNIT I **15 Hours**

Nutrition: Balanced diet, BMR – normal values, metabolism in exercise and injury. Diet for chronically ill and terminally ill patients, Water and Electrolyte: Fluid compartment, daily intake and output sodium and potassium metabolism.

UNIT II **16 Hours**

Dietary Fibre -Classification, sources, composition, properties & nutritional significance, Minerals & Trace Elements, Sources, deficiency & excess (Calcium, Sodium, Potassium Phosphorus, Iron, Fluoride, Zinc, Iodine)

UNIT III **15 Hours**

Vitamins: Classification, fat soluble vitamins, A, D,E& K water soluble vit. B complex & C, Daily Requirements Physiological functions and diseases of Vitamin deficiency.

UNIT IV **14 Hours**

Nutrition during Pregnancy, Nutrition during Lactation, Nutrition during Infancy

Transaction Mode

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

Suggested Readings

- *Normal and Therapeutic Nutrition Corinne H. Robison et al; (1990)Mac Millian Publish Company.*
- *Prescription for Nutritional Healing- The A-Z guide to supplements- Phyllis A. Balch*

Web Sources

- *https://www.niddk.nih.gov/health-information/diet-nutrition*
- *https://pubmed.ncbi.nlm.nih.gov/31940634/*

SEMESTER-V

Course Title: ORTHOPEDICS

Course Code: BPT509

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. To gain knowledge about basic principles of various orthopaedic surgeries.
2. To gain knowledge about clinical symptoms of various bone injuries.
3. Formulate the diagnosis by correlating clinical signs and symptoms with chief complaints of patients.
4. Identify various deformities in human body and their cause.

Course Content-

UNIT I16 Hours

Introduction: To Orthopaedics, Clinical examination in an Orthopaedic patient, Common investigative procedures, Radiological and Imaging techniques in Orthopeadics, Orthopedic Surgeries Indications, Classification, Types, Principles of management of the following Surgeries: Arthrodesis, Arthroplasty (partial and total replacement), Osteotomy, Bone Grafting, Spinal stabilization surgeries, Arthroscopy

UNIT II15 Hours

Traumatology - Fracture: definition, types, signs and symptoms. Fracture healing. Complications of fractures, conservative and surgical approaches, Principles of management – reduction (open, closed, immobilization etc), Subluxation/ dislocations – definition, signs and symptoms, principles of management (conservative and operative), Upper Limb Fractures and Dislocations: Causes, clinical features, mechanism of injury, complications, conservative and surgical management of the major long bone fractures and joint injuries, Lower Limb Fractures and Dislocations: Causes, clinical features, mechanism of injury, complications, conservative and surgical management of the major long bone fractures and joint injuries.

UNIT III15Hours

Deformities - clinical features, complications, medical and surgical management of the following: Congenital Deformities: CTEV, CDH, Torticollis,

Scoliosis, Flatfoot, Vertical talus, Ankylosing spondylitis, Hand anomalies: syndactyly, polydactyly and ectrodactly, Arthrogryposis multiplex congenital (amyoplasiacongenita), Cervical rib, Limb deficiencies: Amelia and Phocomelia, Klippelfeil syndrome, Osteogenesis imperfect, Acquired Deformities: Acquired Torticollis, Scoliosis, Kyphosis, Lordosis, Genu varum, Genu valgum, Genu recurvatum, Coxa vara, Pes cavus, Hallux rigidus, Hallux valgus, Hammer toe, Neuromuscular disorders – Definition, causes, clinical features, patho-physiology, investigations and management for the following: Cerebral palsy, Poliomyelitis, Leprosy

UNIT 1V **14 Hours**

Spinal Fractures and Dislocations: Mechanism of injury, clinical features, complications (quadriplegia) and management of Spinal injuries and rib cage fractures (collar, cast, brace, traction), management of complication (bladder and bowel, quadriplegia), Hand Injuries***:*** Mechanism of injury, clinical features, and management of the following: Crush injuries, Flexor and extensor injuries, Burn Injuries of hand.

Transaction Mode

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

Suggested Readings

- *Outline of Fracture-Adams – 2007 - Churchill Livingstone.*
- *Outline of Orthopaedics - Adams -2009 - Churchill Livingstone.*
- *Watson – Zones, Fractures and Joint Injuries – Wilson – 2009- Churchill Livingstone.*
- *Clinical Orthopaedic Examination – Mcrae – 2016 - Churchill Livingstone.*
- *Physical Examination in Orthopaedics – Apley – 1997- Butterworth Heinmann.*
- *Cambells Operative Orthopaedics - Frederick M Azar MD – 2017 - Mosby*
- *Textbook of orthopaedics- Maheshwari – 2015 – JPB Publications.*

Web Sources

- *https://www.hopkinsmedicine.org/health/treatment-tests-and-therapies/arthroplasty*
- *https://emedicine.medscape.com/article/1265365-overview*

Course Title: GENERAL MEDICINE

L	T	P	Credits
4	0	0	4

Course Code: BPT510

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. To be aware of various metabolic, viral and bacterial diseases, their clinical appearance and their treatment.
2. To be aware of diseases of children and old age people.
3. Examine the significance of balanced diet and consequences of its deficiencies.
4. To be aware of human endocrine system and hormone imbalances.

Course Content

UNIT I **16 Hours**

Introduction of modes of transfer of communicable diseases & general preventive measures, Infection: Effect of infection on human body, pathology, source and spread of infection, vaccinations, Generalized infections - Tuberculosis, Leprosy, Tetanus, Typhoid fever, Diphtheria, Pneumonia, and Bacillary Dysentery. Herpes – simplex and zoster, Varicella, Measles, Mumps, Hepatitis B & C, AIDS & influenza.

UNIT II **14 Hours**

Poisoning –clinical features, general management, common agents in poisoning, pharmaceutical agents, drugs of misuse, chemical pesticides, envenomation, Food and nutrition: Deficiency diseases – clinical features and treatment, Obesity and its related disorders – causes, complications, benefits of weight loss, management of obesity(diet, exercise and medications), Protein-energy malnutrition, Anemia – signs, symptoms, types and management, Diseases of the endocrine glands (diabetes mellitus) – etiology, clinical manifestations, management and complications.

UNIT III **15 Hours**

Pediatrics*:* Review normal fetal development & child birth, including assessment of a neonate, Tools and scales for assessment in paediatrics, Development of a normal child – neuromotor, physical growth, cognitive, intellectual, social etc, The examination & assessment of a pediatric patient,

Prenatal problems and management, Cerebral palsy – causes, complications, clinical manifestations and treatment, Spinal Bifida – management and treatment, Epilepsies – types, diagnosis and treatment, Recognizing developmental delay and common Causes of delay , Congenital & acquired Orthopaedic and neuro-muscular disorders in childhood–clinical manifestation & principles of management.

UNIT IV **15 Hours**

Geriatrics: Normal aging – definition, the anatomical, physiological and cognitive changes related to aging, Scales and tools used in geriatrics, Epidemiology and socio- economic impact of aging, Diet & Nutritional requirement of the elderly. Nutritional disorders & their management, Musculo skeletal disorders – etiogenesis, clinical manifestation & principles of management, Cardio – pulmonary disorders – etiogenesis, clinical manifestation & principles of management, Neurological disorders (CNS & PNS) – etiogenesis, clinical manifestation & principles of management, Falls in elderly. Prevention and management

Suggested Readings

- *Davidson's principles and Practices of Medicine – Edward – 2014 – Churchill Livingstone.*
- *Hutchinson's Clinical Methods – Swash – 2012 – Bailliere Tindall*
- *A Short Text book of Medicine – Krishna Rao – 2011 – Jaypee Brothers.*
- *A Short Text book of Psychiatry – Ahuja Niraj – 2011 – Jaypee Brothers.*

Web Sources

- *https://www.cdc.gov/leprosy/index.html*
- *https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/presentation/wcms_232617.pdf*

Course Title: RESEARCH METHODLOGY

Course Code: BPT503

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. To gain skills about basic ethical principles and techniques of conducting research.
2. To know about types and techniques of sampling.
3. To know about various experimental methods.
4. To analyse and process data various data.

Course Content

UNIT I **16 Hours**

Research- Definition, history, objectives, scope, research methods versus methodology, criteria for good research, Research problem and research design Research problem - statement of research problem, its purpose and objectives, Research design – meaning and need of design, features of good design, types and basic principles of design, Informed Consent, Research Proposal, funding and its significance, Biasness, Ethical Principles while conducting research.

UNIT II **15 Hours**

Sampling design – criteria for selecting sampling procedure, steps in sampling design, types of sampling (probability and non-probability method), characteristics of good sample design, 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 **15 Hours**

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, Review of

Literature, Interview, Reliability, Validity, Variables in research, Sampling fundamentals, need for sampling, important sampling distributions.

UNIT IV **14 Hours**

Processing and analysis of data – processing operations, problems in processing, types of analysis, stats in research, measures of central tendency, dispersion, asymmetry, relationship, Hypothesis – definition, tests of hypothesis and limitations of the tests. Testing of hypothesis – basic concepts of testing, procedure of hypothesis testing, measuring the power of hypothesis test, tests of hypothesis, and limitations of the tests, Case study – Definitions, sources, characteristics, evolution and scope, advantages, limitations and improvements.

Transaction Mode

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

Suggested Readings

- *Research methods in Behavioral Sciences. Mohsin S.M. – 2011 - Orient publications, New Delhi.*
- *Methods of Social Survey and Research, Bajpai S.R. – 2010 - Kitab Ghar, Kanpur.*
- *First course in Methodology of Research. Meenakshi –2015 - Kalia Prakashan, Patiala.*
- *Research Methodology. Kumar R. – 2017 - Pearson Education, Australia.*
- *Research Methods for Clinical Therapists, by Carolyn M. Hicks : Applied Project Design and Analysis Paperback – Illustrated, 7 August 2009*

Web Sources

- *https://www.scribbr.com/methodology/sampling-methods*
- *https://www.scribbr.com/methodology/hypothesis/*

Course Title: ORTHOPEDICS LAB

Course Code: BPT511

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. To be skilled in Orthopaedic evaluation and clinical reasoning.
2. To be skilled in assessment and examination techniques.
3. To be able to conduct various clinical tests of major joints of human body.
4. To be aware of various operative and non-operative treatment methods in orthopedics.

Course Content

Practical shall be conducted for all relevant topics discussed in theory in the following forms: Evaluation and clinical reasoning in orthopedics, Examination of upper extremity: Shoulder, Elbow, Forearm, Wrist and Hand, Examination of lower extremity: Hip, Knee, Ankle and Foot, Examination of spine: Cervical spine, Thoracic Spine, Lumbar Spine, Case presentations and Case discussions, Discussion on various Orthopaedic treatment techniques.

Transaction Mode

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

Suggested Readings:

- *Outline of Fracture-Adams – 2007 - Churchill Livingstone.*
- *Outline of Orthopaedics - Adams -2009 - Churchill Livingstone.*
- *Watson – Zones, Fractures and Joint Injuries – Wilson – 2009- Churchill Livingstone.*
- *Clinical Orthopaedic Examination – Mcrae – 2016 - Churchill Livingstone.*
- *Physical Examination in Orthopaedics – Apley – 1997- Butterworth Heinmann.*
- *Textbook of orthopaedics- Maheshwari – 2015 – JPB Publications.Textbook of orthopaedics- Maheshwari*

Web Sources

- *https://www.sciencedirect.com/topics/nursing-and-health-professions/joint-examination*
- *https://jssphysiotherapy.edu.in/assets/documents/departments/Back_Examination.pdf*

Course Title: ERGONOMICS

Course Code: BPT512

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. To be skilled in basic concepts of ergonomics.
2. Examine the importance of ergonomics at workplace.
3. Evaluate the design of ergonomics.
4. Identify ergonomics in various professions.

Course Content

Basic concepts of ergonomics, Ergonomics at workplace, Ergonomics and design, Job Analysis and work site programme, Ergonomics in various professions

Transaction Mode

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

Suggested Readings

- *Ergonomics and physiotherapy Paperback – Nagar Satya Bhushan*
- *Ergonomics- The physiotherapist in the workplace- MargaretI. Bullock*
- *Ergonomics for Rehabilitation Professionals- Shrawan Kumar*
- *Ergonomics for Therapist- Karen Jacobb*

Web Sources

- *https://www.advantagephysiotherapy.com/Work-Activities/Ergonomic-Principles*
- *https://www.physio-pedia.com/Ergonomics*
- *https://www.physicaltherapy.best/ergonomics-in-physiotherapy/*

Course Title: COMPUTER LAB

Course Code: BPT513

L	T	P	Credits
0	0	4	2

Total Hours- 30

Learning outcomes

After the completion of this course the learner will be able to:

1. To gain the knowledge of hardware and software.
2. To analyses the working of operating system.
3. To identify common computer applications.
4. To gain skills about web surfing.

Course Content

To study the various components of a personal computer, To have working knowledge of various hardware and software, To have working knowledge of common operating systems, To practice the operational skills of common computer applications including work, processing and spreadsheet software, To have basic knowledge of utility of multimedia, To learn the skills of web surfing- for literature, researches, relevant to the field of physiotherapy.

Transaction Mode

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

Suggested Readings

- *Computer Fundamentals - P.K. Sinha – 2004 – BPB Publications*
- *Computer fundamental and PC Softwares - Rachpal Singh &Gurinder Singh – 2015 – Kalyani Publishers.*
- *R.K. Texali - PC Softwares – 2017 – Mc Graw hill.*
- *Internet to Go - Alan Simpson – 1999 – Sybax Inc.*

Web Sources

- *https://opentextbc.ca/computerstudies/chapter/computer-hardware-and-software/*
- *https://www.chtips.com/computer-fundamentals/uses-of-multimedia-in-different-fields/*

Course Title: HOSPITAL MANAGEMENT

Course Code: BPT514

L	T	P	Credits
4	0	0	4

Total Hours:60

Learning outcomes

After the completion of this course the learner 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 **14 Hours**

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

UNIT II **15 Hours**

Definition of Biomedical Waste, BMW – Segregation, collection, transportation, disposal Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste , BMW Management & methods of disinfection, Modern technology for handling BMW

UNIT III **15 Hours**

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

UNIT IV **16 Hours**

Advertisement and Branding, Marketing promotional activities, Corporate marketing, Marketing for TPA and Cash Patients, Marketing and medical ethics, Understanding functioning of Corporate multi-specialty hospital,

Managerial activities for effective hospital functioning, Duties and responsibilities of Hospital Managers

Transaction Mode

Open learning, Group discussions, 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).*

Web Sources

- *https://clutch-health.in/biomedical-wastebmw-management-role-of-hospitals/*
- *https://resources.workable.com/hospital-administration-manager-job-description*

Course Title: EXERCISE PHYSIOLOGY

Course Code: BPT515

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will 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 examine exercise testing and prescription
4. To gain knowledge about nutrition and its effect on exercise

Course Content

UNIT I **14 Hours**

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

UNIT II **15 Hours**

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

UNIT III **15 Hours**

Acute effects of high, burst and short duration exercises, Respiratory response to exercise, Cardiovascular response to exercise, Hormonal response to exercise

UNIT IV **16 Hours**

Exercise and acid base balance, Nutrition and nutrition in exercise, Metabolism of carbohydrate, fat, protein, vitamin, mineral and water, Body composition and Obesity exercises for weight reduction, Exercise testing planning and prescription, Conditioning exercise for strength, duration and flexibility, 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; McGraw Hill (2001)*

Web Sources

- *https://www.ptdirect.com/training-design/anatomy-and-physiology/acute-respiratory-responses*
- *https://www.garnethealth.org/news/basal-metabolic-rate*
- *https://www.physio-pedia.com/Cardiopulmonary_Exercise_Testing_(CPET)_In_Adults*

SEMESTER-VI

Course Title: PHYSIOTHERAPY IN ORTHOPEDIC CONDITIONS

Course Code: BPT608

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner 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 **14 Hours**

PT assessment for Orthopaedic conditions-SOAP format Selection and application of physiotherapeutic techniques, manoeuvres, modalities for preventive, curative and rehabilitation means in all conditions, Traumatology: Physiotherapy assessment in fracture cases (Upper limb, Lower Limb and spine) 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**

Physiotherapy assessment, goals, precautions and PT management in following deformities**:** Congenital disorders or Deformities, Congenital Torticollis, Cervical rib, Sprengels shoulder, Coxavara&valga, CTEV, PesPlanus, Pescavus, Acquired Deformities: Scoliosis, Kyphosis, Lordosis, Coxavara, Genu valgum, Genu varum and Recurvatum, Physiotherapy management for Soft Tissue injuries and inflammatory condition of upper and lower limb

UNIT III **15 Hours**

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

UNIT IV **16 Hours**

Infective conditions- Review sign and symptoms, radiological features, pathology, common deformities and medial surgical management, PT assessment and management for, Osteomyelitis – acute and chronic, Septic arthritis, Pyogenic arthritis,

TB spine and major joints (knee and hip),Degenerative and inflammatory conditions**,** Review sign and symptoms, radiological features, pathology, common deformities and medial surgical management, 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 Periarthriticshoulder, Gout, Perthes disease, 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.

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.*

Web Sources

- *https://www.physio-pedia.com/SOAP_Notes*
- *https://www.versusarthritis.org/about-arthritis/conditions/ankylosing-spondylitis/*

Course Title: PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS

Course Code: BPT602

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. Gain knowledge 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.

Course Content

UNIT I **16 Hours**

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

UNIT II **15 Hours**

Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, incentive spirometry, To decrease work of breathing – positioning, breathing re-education, breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP, 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, 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: Treatment techniques for Asthma, Bronchiectasis, Chronic Bronchitis and Emphysema, Relaxation posture and techniques, reassurance and education about disease, 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-Treatment techniques for Restrictive lung dysfunction including Pneumonia, Bronchogenic Carcinoma, Pleura Effusion, Occupational Lung diseases - mobilizing exercise to thorax and spine breathing exercise to increase ventilation, Exercise for posture correction, graduated exercise to increase tolerance, 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.*

Web Sources

- *https://www.lung.org/lung-health-diseases/lung-procedures-and-tests/spirometry*
- *https://www.nhlbi.nih.gov/health/pulmonary-rehabilitation*

Course Title: BIOSTATISTICS

Course Code: BPT603

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

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

Course Content

UNIT I **16 Hours**

Statistics - Definition, characteristics, importance of study of stats, branches of statistics, applications in physiotherapy, 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**

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

UNIT III **15 Hours**

Correlation analysis - Types of correlation, methods of correlation, scatter diagram

Karl Pearson's coefficient of correlation, Rank correlation coefficient, Parametric Test, SPSS.

UNIT IV **14 Hours**

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

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.*

Web Sources

- *https://statistics.laerd.com/statistical-guides/measures-central-tendency-mean-mode-median.ph*
- *https://towardsdatascience.com/sampling-techniques-a4e34111d808*

Course Title: PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS LAB

Course Code: BPT605

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. To gain skills 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

Include Clinical Hours on patient examination under supervision on the various conditions as outlined in "Physiotherapy in Cardiopulmonary Conditions", Physiotherapy intervention under supervision on the various conditions as outlined in "Physiotherapy in Cardiopulmonary Conditions", Includes case presentations emphasizing on differential diagnosis and clinical reasoning skills, To reach the diagnosis and making of plan of care of the disorder.

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.*

Web Source

- *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6490271/*
- *https://www.hopkinsmedicine.org/health/conditions-and-diseases/restrictive-lung-disease*

Course Title: PHYSIOTHERAPY IN ORTHOPEDIC CONDITIONS-LAB

Course Code: BPT609

L	T	P	Credits
0	0	4	2

Total Hours:30

Learning outcomes

After the completion of this course the learner will be able to:

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

Course Content

General Physiotherapy approach for following conditions - Fractures and Dislocations, Various physiotherapy modalities and treatment techniques for the conditions mentioned in "Physiotherapy in Orthopaedic Conditions" to be demonstrated and practiced by the students in clinical setup, PT management of various congenital disorders or Deformities, 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.*

Web Sources

- *https://www.physio-pedia.com/Fracture*
- *https://*calgaryyouthphysio.com/orthopaedic-congenital-conditions/

Course Title: PHYSIOTHERAPY IN COMMUNITY BASED REHABILITATION

Course Code: BPT610

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. To explain the principles and strategies of CBR
2. To differentiate the various components and programmes of CBR
3. To be e of disability and development
4. Acquire knowledge on vocational rehabilitation and schemes provided by the government to prevent disabilities.

Course content:

UNIT I **15 Hours**

Introduction, Principles and Strategies of CBR, Meaning, scope, basic principles and strategies of Community Based Rehabilitation, Difference between Community Based Rehabilitation and Institutional Based Rehabilitation, Existing poverty alleviation/developmental programs and inclusion of Community.

UNIT II **15 Hours**

Community Based Rehabilitation as a context specific program as in different socio cultural and economic conditions such as urban, rural, tribal, hilly regions, Different team approaches in Community Based Rehabilitation, Building and use of existing resources of the community in sustaining Community Based Rehabilitation such as primary health, primary education, rural development and corporate sectors and development of referral and resource directory.

UNIT III **16 Hours**

Disability and Development, Human growth & development across life span – pre-natal, infancy, early childhood and adults, Theories & principles Milestones in different domains (gross & fine motor, cognition, vision, hearing, Social-emotional and daily living skills) Basic anatomy & physiology of human body, Concept of disability (including mental illness), definitions and classification, Poverty, disability and developmental programs Global, National, State and

Local legislations concerning disability and development, Schemes & concessions for persons with disabilities.
Advocacy and rights of persons with disabilities, History of disability rehabilitation**.**

UNIT IV **16 Hours**

Programmes implemented by the Government for the prevention of disabilities, Association between nutrition, health care and disability, Factors contributing to disability such as maternal care, accidents, ageing and others, Role of community in the prevention of disabilities, Guidance & counseling to persons with disabilities and their family (need for early Detection and intervention), Identification of behavioral problems and application of appropriate teaching and learning, Independence / management of daily living skills and mobility, Identifying trades and need for vocational training, Planning for placements, developing marketing linkages.

Transaction Mode

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

Suggested Readings

- *Physiotherapy in Community Health and Rehabilitation-Waqar Naqvi- Jaypee*
- *Essentials of Community-based Rehabilitation By Nagar Satya Bhushan-Jaypee*
- *Essentials of community physiotherapy & ethics by Prof (Dr)Rajendra Rajput*
- *Textbook of Rehabilitation by S Sunder*

Web Sources

- *https://apps.who.int/iris/bitstream/handle/10665/279966/WPR-2017-DNH-005-factsheet-03-cbr-eng.pdf?sequence=4&isAllowed*
- *https://www.ncbi.nlm.nih.gov/books/NBK310933/*
- *https://www.3ieimpact.org/sites/default/files/2019-05/srs4-commbasedrehab_0.pdf*

Course Title: ORTHOTICS & PROSTHETICS

Course Code: BPT611

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. Recognize the principles and fabrications of orthosis.
2. Assess and examine the level of amputation.
3. To be able to learn principles and fabrications of prosthesis.
4. To be able to rehabilitate person with amputation.

Course content:

UNIT I **16 Hours**

Principles of Orthotics- Types, indications, contraindications, Assessment uses and fitting – region wise, Fabrication of simple splints and self-help devices for upper and lower extremity- indications and application.

UNIT II **15 Hours**

Amputation – Causes, Types, Surgical Principles, Complications, Levels of amputation in upper limb and lower limb, Prevention of post-operative complications, Stump bandaging and care.

UNIT III **15 Hours**

Principles of Prosthetics- Types, indications, contraindications, Assessment uses and fitting – region wise of upper and lower limb.

UNIT IV **14 Hours**

Gait training using mobility aids, Gait training of amputee, Wheelchair modifications and transfers.

Transaction mode

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

Suggested Readings

- *Physical Rehabilitation – Assessment and Treatment – Sullivan & Schmitz – 2013 - F. A. Davis.*
- *Textbook of Rehabilitation – Sunder – 2005 – Jaypee publishers*
- *Occupational Therapy and Physical Dysfunction. Principles, Skills and Practices – Hand Splinting - Tuner, Forster & Johnson –2009 - Churchill Livingstone*
- *Orthotics in Rehabilitation : Mckee and Morgan – 1998 - F. A. Davis*
- *Atlas of Limb Orthotics and Limb Prosthetics American Academy of Orthopedic Surgeons – Mosby.*
- *Krusens Handbook of Physical Medicine and Rehabilitation – 1992 - Saunders*

Web Sources

- *https://www.who.int/publications/i/item/9789241512480*
- *https://www.uofmhealth.org/conditions-treatments/rehabilitation/orthotics-and-prosthetics*
- *https://www.touchstonerehabilitation.com/blog/whats-the-difference-between-orthotics-and-prosthetics*

SEMESTER-VII

Course Title: NEUROLOGY

Course Code: BPT710

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. To gain knowledge about structure and working of brain, spinal cord and nerves.
2. To be skilled in assessment and evaluation of various neurological conditions.
3. To investigate nervous system disorders.
4. To be aware of clinical features and management of various diseases affecting brain and spinal cord.

Course content:

UNIT I **16 Hours**

Briefly outline the Etiology, Pathogenesis, clinical features, investigations, and differential diagnosis, medical and surgical management of the following Neurological disorders: Cerebrovascular disease: Define stroke, TIA and RIA, Types of stroke (Hemorrhagic, ischemic, venous infarct), Stroke syndromes (MCA, PCA, ACA, Vestibulobasilar), Risk factors, causes, differential diagnosis, medical and surgical management, Classification of hemorrhagic stroke, Head injury–Etiology, classification, clinical signs and symptoms, investigations differential diagnosis, medical management, surgical management and complications, Spinal cord disorders:

Spinal cord injury, Spinal epidural abscess, Transverse myelitis, Spina bifida, Sub-acute combined degeneration of cord, Conusmedullaris syndrome, Syringomyelia, Cervical and lumbar disc lesions, Spinal Tumors and Spinal arachnoiditis, Progressive encephalomyelitis, Psychiatry: Definition, defense mechanism, symptomatology, types & causes of mental disorders, psychosomatic disorders, Psychosis – Schizophrenia (including paranoid), maniac depressive psychosis.

UNIT II **15 Hours**

Demyelinating diseases (central and peripheral)- Guillain – Barre syndrome, Acute disseminated encephalomyelitis, Multiple sclerosis, Movement disorders- Parkinson's disease & Kinetic disorders, Dystonia, Myoclonus, Wilsons disease, Infections of brain & spinal cord: Poliomyelitis, Meningitis, Encephalitis, Brain Abscess, Tuberculosis infection of central nervous system, Complications of systemic infections on nervous system – rheumatic fever, AIDS, tetanus, pertussis, Psychoneurosis – Anxiety, hysteria, anxiety states, neurasthesis, reactive depression, obsessive compulsive neurosis, Organic reaction to – toxins, trauma & infection, Senile dementia

UNIT III **14 Hours**

Epilepsy- Definition, Classification, clinical features, investigations & Management, Intracranial Tumors- Broad Classification, Signs & Symptoms, investigations & Management, Briefly outline the Etiology, Pathogenesis, clinical features and management of the following Neurological disorders: Disorders of the muscle, neuromuscular junction and motor neuron: Muscle diseases – muscular dystrophy, myotonic dystrophy, myopathy, non-dystrophic myotonia, Disorders of neuromuscular junction - Myasthenia Gravis, botulism, Motor neuron disease – amyotrophic lateral sclerosis, spinal muscular dystrophy, neuromyotonia, Mental retardation– Definition, causes manifestation and management, Methods of Treatment in Psychiatry (A Brief out Line),Psychotherapy – Group therapy, Psychodrama, behaviour modification, family therapy, play therapy, CBT, REBT, psychoanalysis, hypnosis & NLP.

UNIT IV **15 Hours**

Peripheral & Cranial nerve disorders – Peripheral nerve injuries (Seddons'& Sunderland Classification), Peripheral Neuropathies & Plexus injuries, RSD &Causalgia, Cranial Nerve Disorders- Types of Disorders, clinical manifestation & management, Lower cranial nerve paralysis – facial palsy, Bell's palsy, hemi facial spasm, lesions in cranial nerves, Congenital and childhood disorders – Cerebral palsy

Hydrocephalus, Cerebral malformations, Down's syndrome, Klippel-feil syndrome, Personality disorders, Geriatric Psychiatry.

Transaction Mode

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

Suggested Readings

- *Guided to clinical Neurology - Mohn & Gaectier – 1995 - Churchill Livingstone.*
- *Davidson's Principles and practices of medicine - Edward – 2014 - Churchill Livingstone.*
- *Brain's Diseases of the Nervous System - Nalton – 2009 - ELBS.*
- *Principles of Neurology - Victor – 2014 - McGraw Hill International edition.*
- *A guide to mental health and Psychiatric Nursing- R Sreevani*
- *Essentials of Psychiatry and Mental Health Nursing*

Web Sources

- *https://www.sciencedirect.com/topics/medicine-and-dentistry/cerebrovascular-disease*
- *https://www.msdmanuals.com/en-in/home/brain,-spinal-cord,-and-nerve-disorders/cranial-nerve-disorders/overview-of-the-cranial-nerves*
- *https://www.physio.co.uk/what-we-treat/neurological/conditions/spinal-cord-injury.php*

Course Title: GENERAL SURGERY

Course Code: BPT711

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning Outcomes

After the completion of this course the learner will be able to:

1. To gain knowledge about various surgeries of lungs, heart, eyes, ear, nose, throat.
2. To be aware of principles of anesthesia.
3. To be aware of surgical techniques applied in obstetrics and gynaecology.
4. To be aware of complications during and after surgery and their treatment guidelines.

Course content

UNIT I **14 Hours**

Introduction to principles of surgery and its procedure, Shock: definition, types, clinical feature, pathology & management, Hemostasis –components, hemostatic disorders, factors affecting bleeding during surgery

UNIT II **15 Hours**

Anesthesia: Principles of anesthesia, types and its effects on patient, Wound healing – basic process of Tissue repair, phases of healing process, clinical management of wounds, factors affecting wound healing, Scars – types and treatment, Surgical oncology – cancer – definition, types, clinical manifestations of cancer, stages and surgical procedures involved in management.

UNIT III **16 Hours**

Thoracic surgery- Thoracotomy, Mastectomy – Definition, Types of Incisions with complications, Lung surgeries - Pneumonectomy, Lobectomy, segmentectomy – Indications, Physiological changes and Complications; Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung, Cardiac surgeries – An overview of the Cardio-Pulmonary Bypass Machine – Extra cardiac Operations, Closed Heart surgery, Open Heart surgery.

Valvotomy and Valve Replacement, Pacemaker surgery, Coronary Angioplasty, surgery for congenital heart disorders.

UNIT IV **15 Hours**

Abdominal Surgery – Types of Incisions, indications , pre-operative preparation , types of incision used and post-operative complications of Nephrectomy, Appendicactomy, herniorraphy, colostomy, adrenalectomy, cystectomy, hysterectomy, prostatectomy, cholecystectomy, ileostomy, Transplant Surgery: Heart, Lung and Kidney – Indications, Physiological changes and Complications, Burns**:** Causes, Classification, complications, Clinical features & Management.

Transaction Mode

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

Suggested Readings

- *Davidson's principles and Practices of Medicine - Edward – 2014 - Churchill Livingstone.*
- *Baily and Love - Short Practice of Surgery - Mann and Rains – 2018 - H.K. Levis Publications, London.*
  Harrisons Text book of internal medicine – Jameson and Fauci – 2018 – Mc Graw hill.
- *Textbook of Surgery - Gupta R.L. - 2003 - Jaypee.*
- *Principles and Practices of Trauma Care - Kocher – 2013 - Jaypee.*

Web Sources

- *https://www.healthline.com/health/shock*
- *https://www.rcseng.ac.uk/news-and-events/media-centre/media-background-briefings-and-statistics/cardiothoracic-surgery/*

Course Title: NEUROLOGY LAB

Course Code: BPT712

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. To be skilled in assessment of cranial nerves.
2. Evaluate the patient suffering from neurological conditions.
3. Summarize the case presentation.
4. To gain skill of differential diagnosis in front of class and teachers.

Course content

Basic history taking to determine whether the brain, spinal cord or peripheral nerve is involved, Assessment of higher mental function such as Orientation, Memory, Attention, Speech and Language, Assessment of Cranial Nerves, Assessment of Motor System, Assessment of Sensory function, Touch, Pain and Position, Assessment of Tone-Spasticity, Rigidity and Hypotonia, Assessment of Cerebral Function, Assessment of Balance & Coordination, Assessment of Gait Abnormalities.

Transaction Mode

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

Suggested Readings

- *Guided to clinical Neurology - Mohn & Gaectier – 1995 - Churchill Livingstone.*
- *Davidson's Principles and practices of medicine - Edward – 2014 - Churchill Livingstone.*
- *Brain's Diseases of the Nervous System - Nalton – 2009 - ELBS.*
- *Principles of Neurology - Victor – 2014 - McGraw Hill International edition.*
- *DeJong's The Neurologic Examination, William W. Campbell · 2012*

Web Sources

- *https://pediaa.com/what-is-the-difference-between-spasticity-and-rigidity/*
- *https://study.com/learn/lesson/muscle-tone-overview-disorders.html*
- *https://www.hopkinsmedicine.org/health/conditions-and-diseases/neurological-exam*

Course Title: SURGERY LAB

Course Code: BPT713

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. To be aware of technique of wound dressing.
2. To be skilled in technique of giving CPR.
3. To gain skill of case presentation and differential diagnosis in front of class and teachers.
4. To be aware of post-operative assessment of thoracic and cardiac surgeries and surgical procedure involved in child birth.

Course content

Dressing of wounds, Practicing technique of CPR, Demonstration of procedure of skin grafting, Clinical examination of incisions of abdominal surgeries, Bedside case presentations and case discussions, Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions, Post-operative examination of thoracic and cardiac surgeries, Antenatal examination, Demonstration of normal as well as surgical procedures. involved in child birth, Exercise tolerance tests, Bedside case presentations and case discussions, Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Transaction Mode

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

Suggested Readings:

- *Davidson's principles and Practices of Medicine - Edward – 2014 - Churchill Livingstone.*
- *Baily and Love - Short Practice of Surgery - Mann and Rains – 2018 - H.K. Levis Publications, London.*

- *Harrisons Text book of internal medicine – Jameson and Fauci – 2018 – Mc Graw hill.*
- *Textbook of Surgery - Gupta R.L. - 2003 - Jaypee.*
- *Principles and Practices of Trauma Care - Kocher – 2013 - Jaypee.*
- *Principles and Practices of Trauma Care - Kocher - Jaypee.*

Web Sources

- *https://www.sciencedirect.com/topics/medicine-and-dentistry/wound-dressings*
- *https://www.medistudents.com/osce-skills/pregnant-abdomen-examination*

Course Title: MOBILTY AIDS AND GAIT TRAINING

Course Code: BPT714

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. Overview of gait and its components.
2. Recognize the need for assistive devices.
3. Comprehend selection and application of various assistive devices.
4. Demonstrate proficiency in assessing and assisting a client.

Course Content

Gait- Overview of normal gait and its components, Gait deviations and abnormal gait, Types of walking aids and indications, Various training techniques, Training of wheel chair activities, bed activities, transfer activities, self-care activities.

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:

- *Physical Rehabilitation – Assessment and Treatment – Sullivan & Schmitz – 2013 - F. A. Davis.*
- *Textbook of Rehabilitation – Sunder – 2005 – Jaypee publishers*
- *Occupational Therapy and Physical Dysfunction. Principles, Skills and Practices – Hand Splinting - Tuner, Forster & Johnson –2009 - Churchill Livingstone*
- *Orthotics in Rehabilitation : Mckee and Morgan – 1998 - F. A. Davis*

- *Atlas of Limb Orthotics and Limb Prosthetics American Academy of Orthopedic Surgeons – Mosby.*
- *Krusens Handbook of Physical Medicine and Rehabilitation – 1992 - Saunders*

Web Sources

- *https://www.medicalnewstoday.com/articles/318463*
- *https://www.physio-pedia.com/Walking_Aids*
- *https://www.freewheelchairmission.org/wp-content/uploads/2019/08/Whole-Manual-061019.pdf*

Course Title: PATIENT ASSESSMENT AND EVALUATION IN NEUROLOGICAL CONDITIONS

Course Code: BPT715

L	T	P	Credits
4	0	0	4

Total Hours:60

Learning outcomes

After the completion of this course the learner will be able to:

1. To assess and evaluate patient with neurological disorder.
2. To be skilled in evaluating balance and coordination.
3. To gain skill of assessing unconscious patients.
4. Learn to apply measurement tools on neurological ill patients.

UNIT I **15 Hours**

Physical Therapy Assessment Procedures Used In Neurological Conditions, Neurological assessment, evaluation and correlation of findings with neurological dysfunction-History taking and examination of neurologically ill patient, Higher cerebral function examination, Cognitive and perceptual assessment, Cranial nerves examination, Motor System Assessment - Tone, voluntary movement control &abnormal involuntary movement.

UNIT II **14 Hours**

Assessment of reflex integrity, Assessment of gait (kinetic & kinematic), Sensory system assessment and examination, Balance and Co-ordination.

UNIT III **15 Hours**

Assessment evaluation of following and correlation of findings with neurological dysfunction, Balance, equilibrium and Coordination assessment, Assessment of Autonomic nervous system function, Vestibular Examination, Assessment of unconscious patient.

UNIT IV **16 Hours**

Neurological Assessment scales and measurement tools, Functional Assessment scales: Barthel index, Katz Index of ADL, FIM Scale, Sickness Impact Profile, Outcome & Assessment Information Set (OASIS), IADL, Functional balance and coordination scales: functional reach test, Timed up and go test, Get up and go test, Berg balance Scale, CTSIB, Scales used in

ataxia, Rehabilitation Outcome measure scales: Quality of life Measures, Scales used in Assessment of elderly.

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:

- *Neurological Physiotherapy - A problem solving approach - Susan Edwards - Churchill Livingstone.*
- *Neurological Rehabilitation - Umpherd - Mosby.*
- *Paediatric Physical Therapy - Teckling - Lippmcott*
- *Brain's Disease of the Nervous System - Nalton - ELBS.*
- *Guided to clinical Neurology - Mohn & Gaectier - Churchill Livingstone.*
- *Examination in Neurology examination- Dejong.*
- *Differential Diagnosis-John PatternNeurology in Clinical Practice – Bradley&Daroff*
- *Neurological Assessment-Blicker staff.*

Web Sources

- *https://www.albertahealthservices.ca/assets/about/scn/ahs-scn-bjh-hf-barthel-index-of-adls.pdf*
- *https://www.stgeorges.nhs.uk/service/audiology/vestibular-balance-and-dizziness-service/vestibular-function-tests/*

Course Title: PATIENT ASSESSMENT AND EVALUATION IN SURGICAL CONDITIONS

Course Code: BPT716

L	T	P	Credits
4	0	0	4

Total Hours:60

Learning outcomes

After the completion of this course the learner will be able to:

1. Assess patient for abdominal disorders.
2. Assessment and of patients with peripheral nerve injuries and organ transplant.
3. Evaluation of patients for spinal cord and brain injuries.
4. Analysis of patients for thoracic surgeries.

UNIT I **16 Hours**

Assessment and evaluation of common abdominal surgeries including GIT, Liver, Spleen, Kidney, Bladder, Endoscopy,

UNIT II **15 Hours**

Assessment and evaluation of common organ transplant surgeries- Heart, liver, Bone marrow, Assessment and evaluation of common surgeries of peripheral Nerves.

UNIT III **14 Hours**

Assessment and evaluation of common surgeries of ENT, Brain, Vertebral Column and spinal cord.

UNIT IV **15 Hours**

Assessment and evaluation of following surgeries: Lobectomy, Pneumonectomy, Thoracotomy, Thoracoplasty, Key Hole surgeries, Pre natal assessment

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:

- *Cash's Textbook of general medical and surgical conditions for physiotherapists-Downie- jaypee Brothers*
- *Cash's Textbook of heart, chest and vascular disorders for physiotherapists-Downie- jaypee Brothers*
- *Chest physiotherapy in intensive care unit- Mackanzie- Williams & Wilkins.*

Web Sources

- *https://www.apsresp.org/pdf/esap/esap-201408-lectures/gp-2-4.pdf*
- *https://erj.ersjournals.com/content/33/5/1206*

Course Title: OBSTETRICS & GYNECOLOGY

Course Code: BPT717

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. Examine physiological changes in pregnancy.
2. Identify common abnormalities of labour, delivery and puerperium.
3. Develop skills to manage post-surgical patients.
4. Learn to diagnose and manage the gynecological malignancies.

Course Content

UNIT I **16 Hours**

Pregnancy, Diagnosis of pregnancy, Abortion, Physiological changes during pregnancy, Importance of antenatal care exercise, Prenatal common complications – investigation and management, Normal labor, Multiple child birth.

UNIT II **15 Hours**

Child birth complications, investigation and management, Normal puerperium, lactation and importance of post-natal exercises

UNIT III **15 Hours**

Surgical procedures involving childbirth – pelvic repair, caesarian section, colposcopy, dilatation and curettage, Gynecologicaldisorders, Infections and sexually transmitted disease in female Salpingitis, parametritis, retro-uterus, prolapse of uterus, pelvic inflammatory diseases, urinary incontinence

UNIT IV **14 Hours**

Cancer of the female reproductive organs- surgical management in brief, mastectomy, Hysterectomy.

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:

- *Physiotherapy in obstetrics and gynaecology- Polden- F.A.DAVIS*
- *Textbook of Gynecology including contraception-DC DUTTA*
- *Essentials of Obstetrics and Gynecology-Neville F. Hacker, J. George Moore, Joseph C. Gambone*

Web Sources

- *https://www.nice.org.uk/guidance/conditions-and-diseases/gynaecological-conditions*
- *https://www.nichd.nih.gov/health/topics/pregnancy/conditioning*

Course Title: SPORTS PHYSIOTHERAPY ON FIELD MANAGEMENT

Course Code: BPT718

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. Introduction to various types of sports injuries.
2. To assess and examine common sports injuries.
3. Develop skills to prevent field injuries.
4. Learn to diagnose and manage the gynecological malignancies.

Course Content

UNIT I **14 Hours**

Sports injuries – Types of Injuries – Definition, Causes, Clinical Features, Management and Prevention of Soft Tissue Injuries: Skin Injuries – strain – Sprain – contusion – cramp Tendon injuries – Bursitis. Bone injuries: Fracture – Subluxation –Dislocation.

UNIT II **15 Hours**

Assessment & evaluation - Methods of evaluation – documentation, Clinical Examination - Investigative Procedures, Causes & Mechanism of Sports Injuries Principle of management of sports injuries- Onsite management of the collapsed athlete triage - The primary abcd survey : airway and cervical spine – breathing – circulation – defibrillation – the glasgow coma scale.

UNIT III **16 Hours**

Principles of Injury prevention: Warm up – Cool down – Stretching – Types of stretching, Principles of stretching. PRICE technique – Immobilization and Early mobilisation –Splinting – Handling & Transfer, Cryotherapy: Methods of application (Ice packs, Ice towel, Ice Immersion, Ice cube massage, Excitatory cold, Vapocoolant spray, cryokinetics& Cold whirlpool).

UNIT IV **15 Hours**

Taping and Bracing - Soft tissue Massage – Trigger point release – Muscle, energy techniques – Manual therapy

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:

- *Norkin & White: Measurement of Joint Motion – A Guide to Goniometry -*
- *F.A.Davis.*
- *Dvir: Isokinetics: Muscle Testing, Interpretation and Clinical Applications,*
- *W.B.Saunders.*
- *Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.*
- *Lillegard, Butcher & Rucker: Handbook of Sports Medicine: A symptom – Oriented*
- *Approach, Butterworth & Heinemann*
- *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*
- *Gould: Orthopaedic Sports Physical Therapy, Mosby.*
- *C. Norris: Sports Injuries – Diagnosis and Management for Physiotherapists,*
- *Heinmann*
- *C. Norris: Sports Injuries – Diagnosis and Management for Physiotherapists,*
- *Heinmann.*

Web Sources

- *https://www.niams.nih.gov/health-topics/sports-injuries*
- *https://medicine.umich.edu/sites/default/files/content/downloads/Anacker%20Michael%20On-Field%20Assessment%20%26%20Management%20of%20Injuries%2010-2.pdf*
- *http://www.drraghuveer.com/sports-medicine/management-of-sports-injuries/*
- *https://www.verywellfit.com/sports-injury-first-aid-treatment-3120820*

SEMESTER VIII

Course Title: PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Course Code: BPT809

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. To identify 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 **16 Hours**

Neurological assessment -Higher mental functions ,Motor examination, Reflexes Sensory, Examination, Special tests, Gait analysis, Functional analysis, Assessment tools and scales, Pediatric neurology, Motor Development, Milestones, Neo-natal & Primitive Reflexes, Evaluation and management in Cerebral Palsy, developmental disorders, autism, hydrocephalus, Spina Bifida and syringomyelia.

UNIT II **15 Hours**

Approaches of neurological physiotherapy **–** Basic outline of principles of treatment techniques & approaches used in: N.D.T. Therapy **,** Motor Relearning Programme**,** P.N.F, Roods Approach**,** Sensory Re-education**,** Facilitatory& Inhibitory Techniques**,** Muscle re-education approach**,** Peripheral and Cranial nerve injuries – Evaluation and management of Brachial Plexus Injuries**,** Lumbosacral plexus lesion**,** Axillary nerve palsy **,**Sciatic nerve palsy**,** Neuritis, Neuralgia**,** Injuries of nerves of upper & lower extremities**,** Facial Nerve Palsy.

UNIT III **14 Hours**

Review of pathological changes, assessment & Physiotherapy Management and Rehabilitation in following conditions: Hemiplegia, Tabes Dorsalis, Syringomyelia, Meningitis, Encephalitis, Transverse Myelitis, Parkinsonism, Multiple sclerosis Cerebellar Ataxia.

UNIT IV **15 Hours**

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

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:

- *Neurological Physiotherapy - A problem solving approach - Susan Edwards - Churchill Livingstone.*
- *Neurological Rehabilitation - Umpherd - Mosby.*
- *Treatment of Cerebral Palsy and Motor Delay-Sophie Levitt*
- *Guided to clinical Neurology - Mohn & Gaectier - Churchill Livingstone.*
- *Examination in Neurology examination- Dejong.*
- *Differential Diagnosis-John PatternNeurology in Clinical Practice – Bradley&Daroff*
- *Neurological Assessment-Blicker staff.*
- *Clinical Evaluation of Muscle Function-Lacote- Churchill Living*

Web Sources

- *https://www.albertahealthservices.ca/assets/about/scn/ahs-scn-bjh-hf-barthel-index-of-adls.pdf*
- *https://www.stgeorges.nhs.uk/service/audiology/vestibular-balance-and-dizziness-service/vestibular-function-tests/*

Course title: PHYSIOTHERAPY IN SURGICAL CONDITIONS
Course Code: BPT810

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. To gain skills 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

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

UNIT II **15 Hours**

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

UNIT III **15 Hours**

Principles of Intensive Care Physiotherapy**,** 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, Evaluation of the patient in the intensive care Unit including Glasgow Coma Scale, Outline the history of mechanical Respiration.

UNIT IV **14 Hours**

Define the terms: (a) Respirator (b) Lung Ventilator (c) Resuscitators (d) IPPB (e) PEEP (f) CPAP (g) SIMV, Outline the principles of Aerosol Therapy. Humidification therapy, Describe techniques of sterile nasopharyngeal and endotracheal suctioning.

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*

Web Sources

- *https://www.researchgate.net/publication/342199130_Burns_Definition_Classification_Pathophysiology_and_Initial_Approach*
- *https://www.news-medical.net/health/Transplant-Surgery.aspx*

Course Title: REHABILITATION

Course Code: BPT811

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. To gain knowledge about the basic principles, role and models of rehabilitation.
2. To develop skills about preventing the disability and rehabilitation of disabled persons in community.
3. To explain the role of NGO's in rehabilitation.
4. To know about principles of orthotics and prosthetics.

Course Content

UNIT I **14 Hours**

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

UNIT II **15 Hours**

Preventive aspects of disability and organizational skills to manage it, 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, Rural Rehabilitation with agriculture tools, Statutory provisions - Schemes of assistance to persons with disabilities.

UNIT III **16 Hours**

Role of NGO's in rehabilitation of persons with disabilities, 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**

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

Transaction mode

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

Suggested Readings

- *Physical Rehabilitation – Assessment and Treatment – Sullivan & Schmitz – 2013 - F. A. Davis.*
- *Textbook of Rehabilitation – Sunder – 2005 – Jaypee publishers*
- *Occupational Therapy and Physical Dysfunction. Principles, Skills and Practices – Hand Splinting - Tuner, Forster & Johnson –2009 - Churchill Livingstone*
- *Orthotics in Rehabilitation : Mckee and Morgan – 1998 - F. A. Davis*
- *Atlas of Limb Orthotics and Limb Prosthetics American Academy of Orthopedic Surgeons – Mosby.*
- *Krusens Handbook of Physical Medicine and Rehabilitation – 1992 - Saunders*

Web Sources

- *https://www.nityango.org/community-rehabilitation/*
- *https://wecapable.com/locomotor-disability-meaning/*

Course Title: PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS LAB

Course Code: BPT812

L	T	P	Credits
0	0	4	2

Learning outcomes **Total Hours- 30**

After the completion of this course the learner will be able to:

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

Clinical assessment of neurological function by: Basic history taking to determine whether the brain, spinal cord or peripheral nerve is involved, Assessment of higher mental function such as Orientation, Memory, Attention, Speech and Language, Assessment of Cranial Nerves. Assessment of Motor System, Assessment of Sensory function, Touch, Pain and Position, Assessment of Tone-Spasticity, Rigidity and Hypotonia. Assessment of Cerebral Function, 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

Web Sources

- *https://www.ncbi.nlm.nih.gov/books*
- *https://www.msdmanuals.com/en-in/professional/neurologic-disorders/neurologic-examination/how-to-assess-sensation*

Course Title: PHYSIOTHERAPY IN SURGICAL CONDITIONS LAB

Course Code: BPT813

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

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: Post-operative examination of thoracic and cardiac surgeries, Antenatal examination, Demonstration of normal as well as surgical procedures involved in child birth, Exercise tolerance tests, Bedside case presentations and case discussions, Lab sessions consisting of evaluation and assessment methods on student models, Treatment techniques and practice sessions, Demonstration of procedure of anesthesia, Dressing of wounds, Practicing technique of CPR, Demonstration of procedure of skin grafting, Clinical examination of incisions of abdominal surgeries, Exercise tolerance tests, Bedside case presentations and case discussions, Lab sessions consisting of evaluation and assessment methods on student models, Treatment techniques and practice sessions.

Transaction mode

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

Web Sources

- *https://www.beaumont.org/treatments/intervention-surgical-delivery*
- *https://cpr.heart.org/en/resources/what-is-cpr*

Course Title: REHABILITATION LAB

Course Code: BPT814

L	T	P	Credits
0	0	4	2

Total Hours: 30

Learning outcomes

After the completion of this course the learner will be able to:

1. Become proficient using orthotic devices.
2. Understand vocational evaluation and occupational therapy.
3. Learn about wheel chair transfer.
4. Plan out indications of splints and prosthetics.

Course Content

Introduction and indications for the application of various aids & appliances like common splints, orthotic devices, Learning basic principles of pre-vocational evaluation & occupational therapy, Training of wheel chair activities, bed activities, transfer activities, Introduction and indications for the application of various aids & appliances like common splints, prosthetics.

Transaction Mode

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

Suggested Readings

- *Physical Rehabilitation- Assessment & Treatment – Sullivan &Schmitz- F.A.Davis*
- *Hand Splinting – Wilson- W.B. Saunders.*
- *Orthotics in Rehabilitation: Splinting the hand and body- Mckee& Morgan- F.A.Davis.*
- *Occupational Therapy and Physical dysfunction: Principles, Skills*

Web Sources

- *https://www.webmd.com/pain-management/occupational-rehab*
- *https://www.saintlukeskc.org/health-library/transfer-bed-wheelchair*

Course Title: PEDIATRICS

Course Code: BPT815

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. Examine Cerebral Palsy and its management
2. Gain knowledge about various types of muscular disorders.
3. Develop skills to assess neurological disorders in childhood.
4. Learn about infant immunization.

UNIT I **16 Hours**

Cerebral palsy: Types, etiology, clinical features, management and rehabilitation of various types of cerebral palsies. Pediatric neurology, Motor Development, Milestones, Neo-natal & Primitive Reflexes.

UNIT II **15 Hours**

Muscular disorders: Types of muscular dystrophies and Myopathies of childhood, DMD, BMD etc.

UNIT III **15 Hours**

Neurological affection of childhood: Poliomyelitis, Spina bifida, Hydrocephalus, Encephalitis. Birth injuries of brachial plexus, paraplegia in children.

UNIT IV **14 Hours**

Infant feeding, Nutritional deficiency, Immunization.

Transaction mode

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

Suggested Readings

- Nelson's Textbook of Paediatrics- Behrman & Vaughan- W.B Saunders
- Textbook of Pediatrics- Partsarthy- Jaypee
- The short textbook of Paedtrics- Gupte- Jaypee

Web Sources

- *https://www.msdmanuals.com/en-in/home/children-s-health-issues/general-problems-in-newborns/birth-injuries-in-newborns*
- *https://www.cerebralpalsyguide.com/cerebral-palsy/*

Course Title: GERIATRICS

Course Code: BPT816

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

1. Classify the process of normal aging
2. Gain knowledge about various depressive disorders in elderly.
3. Develop skills to assess neurological disorders in childhood.
4. Learn about neurological disorders and there management.

UNIT I **14 Hours**

Normal aging- definition, the anatomical, physiological and cognitive changes related to aging, Examination and assessment of geriatric patient.

UNIT II **15 Hours**

Dementia- Types and its management, Overview of depressive disorders in the elderly.

UNIT III **16 Hours**

Musculoskeletal disorders- etiogenesis, clinical manifestation and its management, Cardiopulmonary disorders- etiogenesis, clinical manifestation and its management

UNIT IV **15 Hours**

Neurological disorders (CNS & PNS) -etiogeneiss, clinical manifestation & and its management

Transaction mode

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

Suggested Readings:

- Geriatric Physical Therapy- Guccione- Mosby
- Essential Geriatrics- Henry Woodford
- Inpatient Geriatric Psychiatry-Optimum Care, Emerging Limitations, and Realistic Goals-Howard H. Fenn, Ana Hategan, James A. Bourgeois

Web Sources

- *https://www.alz.org/alzheimers-dementia/what-is-dementia*
- *https://www.uptodate.com/contents/normal-aging*

Course Title: NEURODEVELOPMENTAL TECHNIQUES

Course Code: BPT817

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will be able to:

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

Course Content

UNIT I **16 Hours**

Pediatric Neurology: Pediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental screening tests, Evaluation & Management - History, Observation, Palpation, and Milestone Examination, developmental reflex Examination

UNIT II **15 Hours**

Neurophysiological Techniques – Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNF.

UNIT III **14 Hours**

Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach

UNIT IV **15 Hours**

Brunnstorm movement therapy, Motor relearning program, Contemporary task-oriented approach, Muscle re-education approach and Constraint induced movement therapy

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.*

Web Sources

- *https://www.physio.co.uk/treatments/neurological-rehabilitation/bobath.php*
- *https://raisingchildren.net.au/autism/therapies-guide/sensory-integration*
- *https://www.physio-pedia.com/images/5/5b/Brunnstrom%27s_Approach.pdf*

Course Title: ICU MANAGEMENT

Course Code: BPT818

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning outcomes

After the completion of this course the learner will 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 **15 Hours**

Positioning, Education, Manual and ventilator hyperinflation

UNIT II **16 Hours**

Weaning from mechanical ventilation, Non-invasive ventilation, Percussion, vibration, suctioning

UNIT III **15 Hours**

Respiratory muscle strengthening**,** Chest Physiotherapy**,** Postural Drainage

UNIT IV **14 Hours**

Breathing exercises and mobilization**,** Prevention of complications

Transaction mode

Demonstration method**,** Group Discussion, Collaborative Learning and Cooperative Learning

Suggested Readings

- Donna Frownfelter, Tidy's Physiotherapy, Colby Kisner
- Textbook of Critical Care-Jean-Louis Vincent, Edward Abraham,PatrickKochanek

Web Sources

- *https://www.physio-pedia.com/The_Intensive_Care_Unit*
- *https://pubmed.ncbi.nlm.nih.gov/33115261/*