

**CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT,
ODISHA**

SCHOOL OF PARAMEDICS & ALLIED HEALTH SCIENCES



Centurion
UNIVERSITY

Shaping Lives...
Empowering Communities...

BACHELOR IN PHYSIOTHERAPY (B.P.T.)

2021

SYLLABUS

Bachelor in Physiotherapy Programme structure

School Core Courses: 18 Credits

Discipline Core Courses: 160 Credits

Ability Enhancement Compulsory Course (AECC): 6 Credits

Skill Courses: 32 Credits

Total Credits: **216 Credits**

Bachelor in Physiotherapy

Programme Structure

BASKET 1	BASKET 2	BASKET 3	BASKET 4	
School Core Courses	Discipline Core Courses	Ability Enhancement Compulsory Courses (AECC) To be selected from University Basket	Skill Courses (To be selected from University Basket)	
SC-1 SC-2 SC-3 SC-4	DC-1 DC-2 DC-3 DC-4 DC-5 DC-6 DC-7 DC-8 DC-9 DC-10 DC-11 DC-12 DC-13 DC-14 DC-15 DC-16 DC-17 DC-18 DC-19 DC-20 DC-21 DC-22 DC-23 DC-24 DC-25 DC-26	AECC-I AECC-II	SFS-1 SFS-2 SFS-3 SFS-4 SFS-5 SFS-6 SFS-7 SFS-8	TOTAL CREDITS

	DC-27 DC-28 DC-29 DC-30			
18 Credits	160 Credits	6 Credits	32 Credits	216 Credits (Minimum Credits Required)

BASKET I
School Core Courses

Sl. No.	CODE	SUBJECT	SUBJECT TYPE (T+P+Pj)	CREDITS
SC-1	CUTM1757	General Anatomy	3+2+0	5
SC-2	CUTM1758	General Physiology	3+2+0	5
SC-3	CUTM1732	Biochemistry	3+1+0	4
SC-4	CUTM1729	Cell Biology	3+0+1	4

BASKET II
Discipline Core Courses

Sl. No.	CODE	SUBJECT	SUBJECT TYPE (T+P+Pj)	CREDITS
DC-1	CUTM1976	Electrotherapy-I	3+3+0	6
DC-2	CUTM1977	Exercise Therapy	3+2+0	5
DC-3	CUTM1978	Psychology and Sociology	5+0+2	7
DC-4	CUTM1979	Electrotherapy-II	3+3+0	6
DC-5	CUTM1715	Clinical Pathology	3+1+0	4
DC-6	CUTM1733	Microbiology	3+2+0	5
DC-7	CUTM1813	Pharmacology	3+0+1	4
DC-8	CUTM1742	Basic Computer and Information Science	0+2+0	2
DC-9	CUTM1980	Biomechanics and Kinesiology	5+0+1	6
DC-10	CUTM1981	Community Medicine	2+1+0	3
DC-11	CUTM1982	Physiotherapy in Cardio Pulmonary Condition	3+2+0	5
DC-12	CUTM1983	Principle of Rehabilitation	4+0+2	6
DC-13	CUTM1984	Paediatrics and Geriatrics	3+0+2	5
DC-14	CUTM1985	Surgery I	3+0+2	5
DC-15	CUTM1986	Medicine I (General Medicine)	3+0+2	5
DC-16	CUTM1987	Medicine II (Cardiology and Work	3+1+0	4

		Physiology)		
DC-17	CUTM1988	Medicine III (Neurology)	3+1+2	6
DC-18	CUTM1989	General Orthopaedics	4+2+1	7
DC-19	CUTM1990	Surgery II	3+2+0	5
DC-20	CUTM1991	Medicine IV (Psychiatry)	3+0+2	5
DC-21	CUTM1721	Research Methodology	2+0+1	3
DC-22	CUTM1734	Medical Law and Ethics	2+0+1	3
DC-23	CUTM1992	Physical Diagnosis and Physical Fitness	2+3+0	5
DC-24	CUTM1993	Yoga and Naturopathy	3+0+1	4
DC-25	CUTM1994	Physiotherapy in Medical Condition	3+2+0	5
DC-26	CUTM1995	Physiotherapy in Surgical Condition	3+1+1	5
DC-27	CUTM1996	Physiotherapy in Orthopaedics	3+2+0	5
DC-28	CUTM1997	Physiotherapy in Neurological Conditions	3+2+0	5
DC-29	CUTM1998	Internship		12
DC-30	CUTM1999	Project		12

NOTE: Along with the School core and Disciple core subjects, the students need to opt for AECC Courses, Skill/ Domain/ Elective courses and value- added courses from the University Basket, as per the norms of the University.

BASKET I
School Core Courses
SC1-CUTM1757-GENERAL ANATOMY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
General Anatomy	CUTM1757	Theory+Practice	3-2-0	Fundamental Medical science

Objective

- To obtain Knowledge about the general anatomy – the structure of different organs and position of the organ.
- To familiarize the student with the different anatomical terminology and positions of the body.
- To develop the students to identify the structural reinforcement of the anatomical structures of human body, which would help the student to develop 3D images of the organs

Course Outcome

- Can acquire knowledge about the general anatomy – the structure of different organs and position of the organ.
- The student get familiarize with the different anatomical terminology and positions of the body.
- One can technically identify the structural reinforcement of the anatomical structures of human body, which would help the student to develop 3D images of the organs.

Course Outline

Module -1 Introduction to Anatomy and Skeleton

Introduction to Anatomy: Sub division of anatomy, terms and terminology, systems of the Body.

Skeleton: Bones: function of bones, classification of bones, parts of young bone, development of bone, ossification of bones, blood supply bone, cartilage, clinical anatomy

Module –2 Muscles & Joints

Muscle: types of muscles, structure of striated muscle, naming of muscle, fascicular architecture of muscle, actions of muscle, nerve supply.

Joints: Classification, structures of joints, movements, mechanism of lubrication, biomechanics, levers, blood supply, nerve supply, and applied anatomy.

Practice: - Identification of different joints and bones from Charts and Human Skeleton.

Module -3 Circulatory System, Lymphatic System & Skin

Circulatory system: Types of circulation of blood, arteries, veins, capillaries, end arteries, applied aspect.

Lymphatic system: components, lymph nodes, clinical anatomy

Skin: structure of skin, superficial fascia, deep fascia, clinical aspects

Module -4 Upper Limb & Lower Limb

Upper extremity: Bony architecture Joints–structure, range of movement Muscles–origin,insertion, actions, nerve supply Major nerves – course, branches and implications of nerve injuries Development of limb bones, muscles and anomalies Radiographic identification of bone and joints Applied anatomy

Lower extremity: Bony architecture Joints – structure, range of movement Muscles – origin, insertion, actions, nerve supply Major nerves – course, branches and implications of nerve injuries Development of limb bones, muscles and anomalies Radiographic identification of bone and joints Applied anatomy

Module -5 Thorax, Abdomen & Back Muscles

Thorax: skeleton of thorax, intercoastal spaces, pleura, lung, mediastinum, heart: morphology, blood supply, interior of heart, general information about upper respiratory tract (trachea, esophagus, pharynx and larynx) clinical anatomy.

Abdomen: Anterior and posterior abdominal wall, general information about viscera: stomach, liver, pancreas, duodenum, kidney, ureter, urinary bladder, uterus and its adenexa.

Practice: -identification of structure, position, and different parts of Lungs, Heart, Kidney from charts, Models.

Back muscles: Superficial layer, Deep muscles of back, their origin, insertion, action and nerve supply. Vertebral column – Structure & Development, Structure & Joints of vertebra Thoracic cage Radiographic identification of bone and joints. Applied anatomy

Practice: - Radiography identification of different architecture joins, structure and position of Bones from Skeleton, Model or PPT.

Module -6 Nervous System & Special Sense Organs

Nervous system: parts of nervous system, neurons, peripheral nerves, spinal nerves, summary of cranial nerves, parasympathetic nervous system.

Special sense organs: Structure and function of Visual system, auditory system, gustatory system, olfactory system.

Module -7 Head and Neck & Central Nervous System

Head and neck: scalp, facial muscles, cranial skeleton , triangles of neck, parotid region, temporamandibular joint, muscles of mastication, applied.

Central nervous system: General idea aboutspinal cord, brainstem, cerebrum, cerebellum, ventricular system, diencephalon, blood supply of brain and its applied, meninges and cerebrospinal fluid.

Practice: -Identification of structure and different parts of Central nervous system from chart.

Identification of different blood supply in brain from PPT.

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

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

Suggested Readings

1. Text book Anatomy & Physiology for nurses by Evelyn Pearce, Publisher Faber& Faber.
2. Text book Anatomy and Physiology for nurses by Sears, Publisher Edward Arnold.
3. Anatomy & Physiology- by Ross and Wilson, Publisher Elsevier.

Reference Books

1. Anatomy& Physiology: Understanding the human body by Clark, Publisher Jones & Bartlett.
2. Anatomy and Physiology for nurses by Pearson, Publisher Marieb & Hoehn.
3. Anatomy and Physiology by N Murgesh, Publisher satya.

SC2-CUTM1758-GENERAL PHYSIOLOGY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
General Physiology	CUTM1758	Theory+Practice	3-2-0	Fundamental Medical science

Objectives

- To obtain Knowledge about the general physiological systems and physiological terminology.
- To familiarize the student with the functionality of different physiological systems.
- To develop the technical skills in identifying the Biopotential and their recording and advanced systems.

Course Outcomes:

- Can acquire knowledge about the general physiological systems and physiological terminology.
- The student get familiarize with the functionality of different physiological systems
- One can technically identify the Biopotential signals, their recording and advanced systems.

Course Outlines

Module -1

Scope of physiology. Definition of various terms used in physiology. Structure of cell, function of its components with special reference to mitochondria and microsomes. Elementary tissues: Elementary tissues of the body, i.e. epithelial tissue, muscular tissue, connective tissue and nervous tissue.

Module -2

Cardiovascular System: Composition of blood, functions of blood elements. Blood group and coagulation of blood. Brief information regarding disorders of blood. Heart: myocardium–innervations– transmission of cardiac impulse- Events during cardiac cycle–cardiac output. Structure and functions of various parts of the heart.

Module-3

Circulation: General principles, Peripheral circulation: peripheral resistances–arterial blood pressure–measurements–factors, Regulation variations–capillary circulation–venous circulation. Special circulation: coronary cerebral–miscellaneous, Arterial and venous system with special reference to the names and positions of main arteries and veins. Brief information about cardiovascular disorders.

Module -4

Respiratory system: Various parts of respiratory system and their functions, physiology of respiration. Mechanics of respiration–pulmonary function tests–transport of respiratory gases–neural and chemical regulation of respiration–hypoxia, –asphyxia.

Module-5

Urinary System: Various parts of urinary system and their functions, structure and functions of kidney, structure of nephron– mechanism of urine formation, composition of the urine and abnormal constituents, urinary bladder & micturition. Patho-physiology of renal diseases and edema.

Practice: - Examination of pulse, B.P, Respiratory rate, Heartbeat, impulses etc. Identification of different artery and Venous supply from chart or PPT.

Module-6

Digestive System: names of various parts of digestive system and their functions. structure and functions of liver, physiology of digestion- functions and regulations of Salivary digestion, Gastric pancreatic digestion, Intestinal digestion and absorption.

Lymphatic system: Name and functions of lymph glands, Reticulo endothelial system: Spleen, lymphatic tissue, Thymus

Module-7

Nervous System: Neuron–Conduction of impulse– synapse–receptor.Sensory organization– pathways and perception, Reflexes–cerebral cortex– functions. Thalamus–Basal ganglia Cerebellum, hypothalamus. Autonomic nervous system– motor control of movements

Reproductive system. Structure and function of Male reproductive system–control & regulation, Female reproductive system– uterus–ovaries–menstrual cycle–regulation–pregnancy & delivery–breast–family planning

PRACTICE

1. Identification of different organs and systems from charts
2. Identification of different blood cell, their normal and abnormal morphology from slides.
3. Examination of pulse, B.P., Respiratory rate.
4. Reflexes
5. Spirometry to measure various lung capacities & volumes, Respiratory rate, Tidal volume, IRV, IC,
6. ERV, EC, residual volume on Spirometry.
7. Estimate of Hemoglobin, R.B.C., W.B.C., TLC, DLC, ESR count.
8. Blood indices, Blood grouping, Bleeding & Clotting time

Text books

1. Text book Anatomy & Physiology for nurses by Evelyn Pearce, Publisher Faber& Faber.
2. Text book Anatomy and Physiology for nurses by Sears, Publisher Edward Arnold.
3. Anatomy & Physiology- by Ross and Wilson, Publisher Elsevier.

Reference Books

1. Anatomy& Physiology: Understanding the human body by Clark, Publisher Jones & Bartlett.
2. Anatomy and Physiology for nurses by Pearson, Publisher Marieb & Hoehn.
3. Anatomy and Physiology by N Murgesh, Publisher satya.

SC3-CUTM1732- BIOCHEMISTRY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Biochemistry	CUTM1732	Theory+Practice	3-1-0	Fundamental Medical science

Objectives

- To understand the concept of metabolism of carbohydrates
- To understand the significance of amino acids, proteins
- Use of enzymes in enhancing metabolic reactions
- Role of lipids

Course Outcomes

- After completion of the course the student will be developed a very good understanding of various biomolecules which are required for development and functioning of cells.
- Would have understood the significance of carbohydrates in energy generation and storage food molecules for cells.
- They would have understood the significance of proteins and enzymes in accelerating various metabolic activities.
- The conceptual understanding of the subject provides opportunities for skill enhancement and scopes for higher education.

Course Outline

Module- I

Structure of enzyme: Apoenzyme and cofactors, prosthetic group-TPP, coenzyme NAD, metal cofactors, Classification of enzymes.

Mechanism of action of enzymes: active site, transition state complex and activation energy. Lock and key hypothesis, and Induced Fit hypothesis.

Enzyme inhibition, enzyme kinetics.

Diagnostic value of serum enzymes: Creatinine kinase, Alkaline phosphatase, Acid phosphatase, LDH, SGOT, SGPT, Amylase, Lipase, Carbonic anhydrase etc.

Practice: Study of effect of temperature on enzyme activity
Study of effect of pH on enzyme activity

Module- II

Carbohydrates: Biomedical importance & properties of Carbohydrates, Classification, Families of monosaccharides: aldoses and ketoses, trioses, tetroses, pentoses, and hexoses. Stereo isomerism of monosaccharides, epimers, Haworth projection formulae for glucose; chair and boat forms of glucose.

Metabolism: Glycogenesis & glycogenolysis, Glycolysis, citric acid cycle & its significance, Components of respiratory chain, energy relationships during cell respiration, types of respiration. HMP shunt & Gluconeogenesis, regulation of blood glucose level.

Practice:

Estimation of Glucose in urine

Estimation of Glucose in blood

Module- III

Amino acids: Classification, essential & non-essential amino acids. Chemistry of Proteins & their related metabolism, Classification, biomedical importance.

Metabolism: Ammonia formation & transport, Transamination, Decarboxylation, Urea cycle, metabolic disorders in urea cycle, catabolism of amino acids.

Practice: Estimation of Protein in urine

Estimation of Protein in blood

Module- IV

Chemistry of Lipids & their related metabolism: Classification, biomedical importance, essential fatty acids. Brief outline of metabolism: Beta oxidation of fatty acids, fatty liver, Ketogenesis, Cholesterol & its clinical significance, Lipoproteins in the blood composition & their functions in brief, Atherosclerosis.

Diabetes mellitus: its types, features, gestation diabetes mellitus, glucose tolerance test, glycosuria, Hypoglycaemia & its causes.

Practice: Estimation of Bile pigment in urine

Estimation of Bile salts in urine

Suggested Readings:

1. Victor W. Rodwell, David A. Bender, Kathleen M. Botham, Peter J. Kennelly, P. Anthony Weil (2018) Harper's Illustrated Biochemistry. Mc Graw Hill.
(e-Book link: <https://www.pdfdrive.com/harpers-illustrated-biochemistry-d176838999.html>)
2. Nelson DL and Cox MM. (2008). Lehninger Principles of Biochemistry, 5th Ed., W.H. Freeman and Company.
(e-Book link: <https://www.pdfdrive.com/lehninger-principles-of-biochemistry-5th-edition-d164892141.html>)
3. Donald Voet, Judith G. Voet (2011) Biochemistry 4th Edition. Wiley Publishers.
(e-Book link: <https://www.pdfdrive.com/biochemistry-4th-edition-e165192126.html>)
4. Jeremy M. Berg, John L. Tymoczko, Lubert Stryer. Biochemistry 7th Edition. W.H. Freeman and Company, New York.
(e-Book link: <https://www.pdfdrive.com/biochemistry-seventh-edition-e167675390.html>)

Simulation links for labs:

1. Lecturio: (e-source link: <https://app.lecturio.com/#/course/s/8014>)
2. Labs for Life: (e-source link: <http://labsforlife.in/InstructionalVideo.aspx>)

SC4-CUTM1729 - CELL BIOLOGY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Cell Biology	CUTM1729	Theory+ Project	3-0-1	Fundamental Science

Objectives

- Determine the parts of the cell membrane and the cell wall
- Distinguish the types and mechanism of mutation
- Compare and contrast the events of cell cycle and its regulation
- Understand the dynamic character of cellular organelles

Course Outcomes

- Describe the fundamental principals cellular biology
- Develop a deeper understanding of cell structure and how it relates to cell functions.
- Understand how cells grow, divide, and die and how these important processes are regulated.
- Understand cell signaling and how it regulates cellular functions. Also how its dis-regulation leads to cancer and other diseases.

Course Outline

Module- I

An Overview of Cells: History, Cell theory, Structure and Function of Cell and its Organelles: Biological membranes - Nucleus - Nuclear envelope, Nucleolus, Mitochondria, Chloroplasts, Lysosomes, Glyoxysomes and Peroxisomes, endoplasmic reticulum, ribosomes, Golgi complex (Structural organization, function, marker enzymes of the above organelles), Cell types: prokaryotes vs. eukaryotes; from single cell to multi-cellular organism; Different molecules of cell- water, salt and mineral ions etc.

Module- II

Cell cycle and its regulation, Cellular communication and cell mobility: Cell cycle: G₀/G₁, S, G₂ and M phases (Cell Division: Mitosis, meiosis and cytokinesis); regulation of cell cycle; cell adhesion and roles of different adhesion molecules, gap junctions, Extra- Cellular Matrix (ECM), Cell-cell interaction and cell- ECM interaction, The cytoskeleton, Microtubule- based movement and microfilament -based movement.

Module- III

Cell signaling, Programmed Cell Death (Apoptosis) and Cancer: Hormones and their receptors, cell surface receptor, signaling through G-protein coupled receptors (GPCR), Tyrosine Kinase, signal transduction pathways, second messengers, regulation of signaling pathways, bacterial and plant two-

component systems, bacterial chemotaxis, Intrinsic and Extrinsic apoptotic pathway, Caspase enzyme, Biology and elementary knowledge of development and causes of cancer; Tumor viruses, Oncogenes and tumor suppressor genes.

Suggested Readings:

1. The Cell a Molecular Approach (4th Edition) by Cooper & Hausman
<https://www.thebiomics.com/books/cell-biology/cell-molecular-approach-cooper-and-hausmn-4th-ed.html>
2. Molecular Biology by Friefelder David, Publisher Narosa
www.alibris.com/Molecular-Biology-David..
3. Introduction to Cell biology by John K Young, World Scientific publishing
companywww.overdrive.com/.../introduction-to-cell-biology
4. Introduction to biology, 3rd tropic edition by D G Maackean
www.amazon.com/Introduction-Biology-D-G-Mackean/.

BASKET II
Discipline Core Courses
DC-1- CUTM1976- Electrotherapy-I

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Electrotherapy-I	CUTM1976	Theory+ Practice	3-3-0	Medical Science

Objectives

- Recall the physics principles & Laws of Electricity, Electromagnetic spectrum, & ultra sound
- Describe effects of environmental & man made electromagnetic field at the cellular level & risk factors on prolonged exposure.
- Describe the Main electrical supply, Electric shock, precautions
- Enumerate Types & Production of various Therapeutic electrical currents & describe the panel diagrams of the machines

Course Outcomes

- Know the indications and contra indications of various types of electrotherapeutic currents
- Demonstrate of knowledge on application of electrotherapy on nerve lesions, facilitation of muscle contraction and pain relief by low frequency currents.
- Understand physiology of electrical stimulation on excitable tissue principles, techniques and effects of electrotherapy as a therapeutic modality in the restoration of physical function.

Course Outlines

Module I

Physical Principles: Structure and properties of matter – solids, liquids and gases, adhesion, surface tension, viscosity, density and elasticity. Structure of atom, molecules, elements and compounds. Election theory, static and current electricity. Conductors, Insulators, Potential Difference, Resistance & Intensity Ohm's Law – Its application to AC & DC currents :
a) Rectifying Devices – Thermionic valves, Semiconductors, Transistors, Amplifiers, Transducers Oscillator circuits, b) Capacitance, condensers in DC and AC circuit, c) Display devices & indicators – analogue & digital.

Effects of Current Electricity: 1. Chemical effects- Ions and electrolytes, Ionisation, Production of a E.M.F by chemical action. 2. Magnetic effects, Molecular theory of magnetism, Magnetic fields, Electromagnetic Induction. 3. Milli ammeter and Voltmeter, Transformers and choke coil Thermal Effects – Joule's Law and Heat production 4. Electromagnetic spectrum – biophysical application 5. Electrical supply:- a) Brief outline of main supply of electric current b) Dangers – short circuits, electric shocks c) Precautions – safety devices, earthing, fuses etc. d) First aid & initial management of electric shock.

Module II

Low Frequency Currents: 1. Introduction to direct, alternating & modified currents, 2. Production of direct current – Physiological and therapeutic effects of constant current anodal and cathodal Galvanism, Ionisation and their application in various conditions, 3. Iontophoresis – Principles of clinical application, indication, contraindication, precaution, operational skills of equipment & patient preparation, 4. Modified direct current – various pulses, duration and frequency and their

effect on Nerve and Muscle tissue. Production of interrupted and surged current and their effects, 5. Modified direct current- Physiological and therapeutic effects, principles of clinical application, indications, contra indications, precautions, operational skills of equipment & patient preparation, 6. Transcutaneous Electrical Nerve Stimulation (TENS):- a) Types of Low Frequency pulse widths, frequency & intensities used as TENS applications. b) Theories of pain relief by TENS, c) Principle of clinical application, effects & users, indicators, contraindications, precautions, operational skills of equipment and patient preparation.

Module III

Electrical Reactions and Electro-diagnostic tests: Electrical Stimuli and normal behavior of Nerve and muscle tissue. S.D Curve and its application Chronaxie, Rheobase & pulse ratio 1. Infra red rays- Wavelength, frequency, types & sources of IRR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, operational skills of equipment & patient preparation. 2. Ultra-violet rays (UVR): a) Wavelength, frequency, types & sources of UVR generation, techniques of irradiation, physiological & therapeutic effects, indications. Contraindications, precautions, operational skills of equipment & patient preparation. b) Dosimetry of UVR.

Module IV

Superficial heat – Paraffin wax bath, moist heat, electrical heating pads a) Mechanism of production. b) Mode of heat transfer. c) Physiological & therapeutic effects. d) Indications, contraindications, precautions, operational skills of equipment & patient preparation.

PRACTICE

1. To study the operation of electric supply to the equipment & safety devices.
2. To experience sensory and motor stimulation of nerves and muscles by various types of low frequency currents on self.
3. To locate and stimulate different motor points region wise including the upper and lower limb, trunk free.
4. Therapeutic application of different low frequency currents, Faradic foot bath, Faradism under pressure, Ionotophoresis.
5. To study the reactions of degeneration of nerves to plot strength duration curves.
6. To find chronaxie and Rheobase.
7. To study a hydrocollator unit, its operations and therapeutic application of Hot packs- region wise.
8. To study the various types of Infrared lamps and their application to body region wise.
9. To study paraffin wax bath unit, its operation, and different methods of application- regions wise.
10. To study the different types of Ultra violet units, their operation, assessment of test dose and application of UVR- region wise.
11. To study a TENS stimulation, its operation and application – region wise.

Books Recommended:-

1. Electrotherapy Explained: Principles & Practice – Low & Reed – Butterworth Heinemann.
2. Clayton's Electrotherapy, (9th ed.) Forster & Palastanga Bailliere Tindall.
3. Therapeutic Heat and cold – Lehman- Williams & Wilkins.
4. Principles and Practice of Electrotherapy- Kahn – Churchill Livingstone

DC-2- CUTM1977- EXERCISE THERAPY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Exercise Therapy	CUTM1977	Theory+ Practice	3-2-0	Medical Science

Objectives

This course provides information on restoration of movement, improvement of function and strength, improvement in gait and balance, and the prevention and the promotion of health, wellness, and fitness.

Course Outcomes

- Analysis of various types of massage techniques and their effects.
- Analysis of various types of therapeutic exercise and movements.
- Knowledge on the clinical measurements available in rehabilitation process and interpret them.
- Interpretation of the Merits and demerits of manual muscle testing.

Course Outline

Module I

Introduction to Exercise therapy , Principles, techniques and general areas of its application, Assessment & its importance. Description of Fundamental starting positions and derives position including joint positions, muscle work, stability, effects and uses. Introduction to Movements including analysis of joint motion, muscle work and Neuro muscular co- ordination. Classification of movements – Describe the types, technique of application, indications, contraindication, effects and uses of the following: a)Active movement, b) Passive movement, c)Active assisted movement, d) Resisted movement, e) To study the principles, techniques of application indication, Contraindication, precaution, effects and uses of Suspension Therapy.

Module II

Principles and application techniques of Manual muscle testing. Testing position, procedure and grading of muscles of the upper limb, lower limb and trunk etc. Goniometry: Principles, techniques and application of Goniometry. Testing position, procedure and measurement of R.O.M of the joints of upper limbs, lower limbs and trunk.

Module III

Soft Tissue Manipulation (Therapeutic Massage): History, various types of soft tissue manipulation techniques. Physiological effects of soft tissue manipulation on the following systems of the body, Circulatory, Nervous, Musculoskeletal, Excretory, Respiratory, Integumentary system and Metabolism. Classify define and describe – effleurage, stroking, kneading, p ,deep friction, vibration and shaking etc. Preparation of patient: Effects, uses, indications and contraindications of the above manipulation.

Module IV

Motor Learning:- i)Introduction to motor learning: a)Classification of motor skills, b)Measurement of motor performance; ii)Introduction to motor control: a)Theories of motor control, b)Applications; iii)Learning Environment: a)Learning of Skill, b)Instruction& augmented feedback.

PRACTICE

1. To practice all the soft tissue manipulative techniques region wise - upper limb, lower limb, neck, back and face.
2. To practice the measurement of ROM of joints – upper limb, lower limb & trunk.
3. To practice the grading of muscle strength region wise –upper limb, lower limb and trunk.
4. To study the position of joints, muscle work, and stability of various fundamental and derived positions.
5. To study the different types of muscle contraction, muscle work, group action of muscles and co-ordinated movements.
6. To practice the various types of suspension therapy and its application on various parts of body-region wise
7. To study & practice local & general relaxation techniques

Books Recommended:

1. Practical Exercise Therapy Hollis- Blacwell Scientific Publications.
2. Therapeutic Exercise – Basmajian- Williams and Wilkins.
3. Therapeutic Exercises Foundation and Techniques – Kisner and Colby-F.A Davis
4. Proprioceptive Neuromuscular Facilitation- Vos et al-Williams and wilkins.
5. Principle of Exercise Therapy- Gardiner – C.B.S Delhi.
6. Beard's Massage- Wood- W.B Saunders.
7. Motor Control: Theory and Practical Applications Shumway – Cook & Wallcott-Lippincott.
8. Hydrotherapy, Principles and Practices – Champion – Butterworth Heinmam.
9. Muscle testing and functions – Kendall – Williams & Wilkins.

DC-3- CUTM1978- PSYCHOLOGY AND SOCIOLOGY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Psychology and Sociology	CUTM1978	Theory+ Project	5-0-2	Medical Science

Objectives

- To recognize and help with the psychological factors involved in disability , pain, disfigurement, unconscious patients, chronic illness, death , bereavement and medical-surgical patients/conditions.
- To understand the elementary principles of behavior for applying in the therapeutic environment.
- To understand the role of family and community in the development of behaviors.
- To develop a holistic outlook towards the structure of society and community resources.

Course Outcomes

- Understanding specific psychological factors and effects in physical illness.
- Development of holistic approach in their dealing with patients during admission, treatment, rehabilitation and discharge.
- Understanding the social and economic aspects of community that influence the health of the people.
- Identification of social institutions and resources.
- Appreciation of the role of therapist as a member of society and the interdependence of individuals and society.
- Demonstration of an understanding of the role of socio cultural factors as determinants of health and behaviors in health and sickness.

Course Outline

Module I

General Psychology:-Definition of Psychology : Definition of Psychology, information in relation to following schools methods and branches, a)Schools : Structuralism, functionalism, behaviorism psychoanalysis, gestalt Psychology, b)Methods: Introspection , observation, inventory and experimental method, c)Branches :General, child, social, abnormal industrial.

Heredity and Environment : Twins, Relative importance of heredity and environment, their role in relation to physical characteristics, intelligence and personality, nature- nature controversy.

Intelligence: Definitions, IQ, Mental Age, List of various intelligence tests- WAIS, WISC, Bhatia's performance test, Raven's Progressive Matrices test.

Motivation Definitions :Motive, drive, incentive and reinforcement activity, air, avoidance of pain, attitude to sex.Psychological needs: Information, security, self-esteem, competence, love and hope

Emotions Definitions: Differentiate from feelings, psychological changes of emotion, role of RAS, hypothalamus, cerebral cortex sympathies nervous system, adrenal gland, heredity and emotion, nature and control of anger, fear and anxiety.

Personality: Definitions: List of components, Physical characteristics: character, abilities families and culture of personality characteristics, Personality assessment: Interview,

standardized, non-standardized, Exhaustive and stress interviews, list and define inventories BAP, CPI and MMPI projective test Rorschach, TAT and sentence completion test.

Learning Definition: List the laws of learning as proposed by Thorndike. Types of learning: Briefly describe, Classical conditions, Operan conditioning, insigle observation and Trial and Error type list the effective ways to learn. Massed Vs spaced. Whole Vs. Part, Recitation Vs. Reading, Serial Vs. Free Recall. Knowledge of results. Association Organization, Mnerroic methods, incidental Vs Intentional learning, role of language

Sensation, Attention and Perception: a)List of senses, Vision, Hearing, Olfactory, Gustatory and outancous sensation, movement, equilibrium and visceral sense. Define attention and list factors that determine attention, nature of stimulus intensity, colour, change, extensity, repetition, movement size, curiosity, primary motives, b)Define perception and list the principles of perception, figure fround, constancy, similarity, proximity, closure, continuity, values and interests, past experience context, needs, moods, religion and age, perceived susceptibility perceived seriousness perceived benefits and socio- economic status, c)Define illusion and hallucination, d)List visual, auditory, cutaneous, gustatory and olfactory mechanism. Defence Mechanisms of the ego, rationalization, projection, reaction, formation, identification, repression, emotional insulations undoing, interjection, acting out.

Module II

Health Psychology: Psychological Reaction of a patient: Psychological reaction of a patient during admission and treatment anxiety, shock, denial, suspicious, questioning, loneliness, regression, shame, guilt, rejection, fear, withdrawl, depression, egocentricity, concern about small matters narrowed interests, emotional, anger reactions, Perpetual changes, confusion, disorientation, hallucinations, depression, illusions, anger, hostility, loss of hope.

Reactions to Loss: Reactions to loss, death and bereavement shock and disbelief, development of awareness, restitution, resolution. Stages of acceptance as proposed by Kubler-Ross.

Stress: Physiological and Psychological relation to health and sickness psychrosomatic, professional stress burnout.

Emotional needs: Emotional needs and psychological factors in relation to unconscious patients, handicapped patients, bed- ridden patients, chronic pain, spinal cord injury, paralysis, cerebral palsy, burns, amputations, disfigurement, head injury, degenerative disorders, parkinsonism, leprosy, incompetence and mental illness. Geriatric psychology: Specific psychological reactions and needs of geriatric patients.

Pediatric Psychology: Specific psychological reactions and needs of pediatric patients. Behaviour Modifications: Applications of various conditioning and learning principles to modify patient behaviours.

Module III

Introduction: Definitions of sociology, sociology as a science of society, uses of the study of sociology, application of knowledge of sociology in physiotherapy and occupational therapy. **Sociology & Health:** Social factors affecting health status, social consciousness and perception of illness, social consciousness and meaning of illness, decision making in taking treatment. **Institutions of health,** their role in the improvement of the health of the people. **Socialization:** Meaning of Socialization, influence of social factor on personality, Socialization in hospitals,

Socialization in the rehabilitation of patients. Social groups: Concept of social groups, influence of formal and informal groups on health and sickness, the role of primary groups and secondary groups in hospitals and rehabilitation setting.

Module IV

Family: Influence of family on human personality, discussion of changes in functions of a family, influence of family on individual's health, family and nutrition, the effects of sickness on family and psychosomatic disease. Culture: Components of culture. Impact of culture on human behavior, cultural meaning of sickness, response & choice of treatment (role of culture as social consciousness in moulding the perception of reality), culture induced symptoms and disease, sub- culture of medical workers. Caste system: Features of modern caste system and its trends. Social change: Meaning of social change, factors of social change, human adaptation and social change, social change and stress, social change and deviation, social change and health programmes, the role of social planning in improvement of health and in rehabilitation.

Module V

Social Control: Meaning of social control, Role of norms, folkways, customs, morals, religion, law and other means of social control in the regulation of human behavior, social deviation and disease. Social Problems of the Disabled: Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems: a) Population explosion, b) Poverty and unemployment, c) Beggary, d) Juvenile delinquency, e) Prostitution, f) Alcoholism, g) Problems of women in employment. Social Security: Social security and social legislation in relation to the disabled. Social Worker: The role of medical social worker.

Books Recommended:

1. Introduction to Psychology- Mums-IDP Co.
2. Foundation of Psychology: Weld- Publishing House, Bombay
3. Introduction to social Psychology- Akolkar- Oxford Publishing House.
4. Psychology and Sociology- Applied to Medicine- Porter & Alder- W.B Saunders.
5. Behavioral Sciences for Medical Undergraduates- Manju Mehta –Jaypee Brothers.
6. Elementary Psychology- S.M Mohsin
7. Megee-Sociology- Drydon Press Illinois
8. Kupaswamy – Social changes in India- Vikas , Delhi
9. Ahuja – Social Problems – Bookhive, Delhi
10. Ginnberg – Principles of sociology – Sterling Publications.
11. Parter & Alder – Psychology & Sociology applied to medicine – W.B Saunders.
12. Julian – Social Problems- Prentice Hall

DC-4- CUTM1979- ELECTROTHERAPY-II

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Electrotherapy-II	CUTM1979	Theory+ Practice	3-3-0	Medical Science

Objectives

- Describe the Physiological effects, Therapeutic uses, indication & contraindications of various Low/ Medium & High Frequency modes / Actinotherapy.
- Describe the Physiological Effects & therapeutic uses of various therapeutic ions & topical pharmaco - therapeutic agents to be used for the application of iontophoresis & sono/ phonophoresis.

Course Outcomes

- Acquire knowledge of the physics of heat, sound and soft laser and their effects on tissues along with principles, techniques and effects of them as a therapeutic modality in restoration of physical function.
- Understand the physiology of electromagnetic field on excitable tissue, principles, techniques and effects of electrotherapy as a therapeutic modality in the restoration of physical function.
- Indications and contra indications of various types of electrotherapy, actinotherapy ,cryotherapy and describe their effects.

Course Outline

Module I

Review of Neuro- muscular Physiology including effects of electrical stimulation. Physiological responses to heat gain or loss on various tissues of the body. Therapeutic effects of heat, cold and electrical currents. Physical principles of Electro- magnetic radiation.

Module II

High frequency currents (S.W.D and M.W.D) – Production, biophysical effects, types, Therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation. Medium frequency currents (Interferential Therapy) – conceptual framework of medium frequency current therapy, production, biophysical effects, types theurapeutics effects, Techniques of application, indications, Contraindications, Precautions, operational skills and patient preparation. High frequency sound waves (Ultrasound) – Production, biophysical effects, types, therapeutic effects, Techniques of application, indications, contraindications, precautions, operational skills and patient preparation.

Module III

Therapeutic light in Physiotherapy (LASER) –Definition, historical background, physical principles, biophysical effects, types, production, therapeutic effects, Techniques of application, indications, contraindications, precautions, operational skills and patient preparation. Therapeutic cold (Cryotherapy) – Sources, biophysical effects, types, production, therapeutic effects, Techniques of application, indications, contraindications, precautions, operational skills and patient preparation. Therapeutic mechanical pressure (Intermittent compression therapy) – Principal, biophysical effects, types, production, therapeutic effects, Techniques of application, indications, contraindications, precautions, operational skills and patient preparation.

Module IV

Electro-Diagnosis – Instrumentation, definition & basic techniques of E.M.G and E.N.G. Bio-Feedback – Instrumentation, principles, Therapeutic effects, indications, contraindications, limitations, precautions, operational skills and patient preparation.

PRACTICE

1. To study a short wave diathermy unit, its operation and different methods of application – region wise.
2. To study a Micro wave diathermy unit, its operation unit, its operation and different methods of application – region wise.
3. To study a Ultrasound unit, its operation, its operation and different methods of application – region wise.
4. To study a laser unit, its operation and different methods of application – region wise.
5. To study various forms of therapeutic cold application region wise including-ice, cold packs, vapour coolant sprays,etc.
6. To study a Intermittent therapy unit, its operation and different methods of application- region wise.
7. To study Interferential pneumatic therapy unit, its operation and different and different methods of application- region wise.
8. To observe various Electro- myography (EMG) procedures.
9. To observe various Electro- neurography (ENG) procedures.
10. To study a Bio feedback unit, its operation and different methods of application- region wise.

Books Recommended:

1. Electrotherapy Explained: Principles & Practice Low & Reed – Butterworth Heinmann.
2. Clayton's Electrotherapy (10th Saunders. edition) – Kitchen & Bazin – W.B
3. Therapeutic Heat and Cold Lehmann –Williams & Wilkins
4. Principles and Practice of Electrotherapy –Kahn- Churchill Livingstone
5. Electrotherapy: Clinica in Physical Therapy –Wolf- Churchill Livingstone

DC-5- CUTM1715-CLINICAL PATHOLOGY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Clinical Pathology	CUTM1715	Theory+ Practice	3+1+0	Medical Science

Objectives

- Analyze body fluid for diagnosis of disease
- Analyze waste product for diagnosis of disease
- Understanding DOT Policy
- Understand Physiological disorder and infectious disease
- Analysis of pregnancy

Course Outcomes

- Able to collect pathological specimen
- Able to detect diabetes, ketosis, nephritis, jaundice and other physiological disorder
- Able to detect infectious disease (UTI, Hematuria, Filaria, Dysentery, Ulcer, TB, etc.)
- Preservation and processing of pathological sample.
- Identification of Parasites
- Analysis of Infertility disorder

Course Outline

Module-I

Introduction of clinical pathology, Composition, collection and preservation of urine, Physical examination of Urine, Chemical Examination of Urine - Sugar and Ketone bodies, Diabetes and Ketosis, Nephritis and UTI, Albumin, Phosphate, BJP, Bile Salt and Bile pigment, Chemical Examination of Urine - Multistix reagent strip, Jaundice, Microscopical Examination of Urine, Operation of Urine Analyzer, Pregnancy test, Report writing and report analysis of Urine

Practice: Operation of Urine analyzer, Benedict Test, Heat and Acid Test, Rothera's Test, Benzidine Test, Fouchet's Test

Lab:-

Urine Analysis: Collection and Physical Examination, Specific Gravity, Benedict's Qualitative test, Acetone Rothera's Test, Protein and BJP Test, Hay's Test and Fouchet's test, Benzidine test, Microscopical Examination, Pregnancy Test, Auto-mentation by Urine analyzer

Module-II

Respiratory Tract Infection: Gram Staining and ZN Staining, Basic of DOT Centre, Report writing and report analysis of sputum, Sputum for the diagnosis of Mycobacterium tuberculosis, Clinical significance and Report writing of Stool, Difference between Amoebic, Dysentery and Bacillary Dysentery, Microscopical Examination of Stool, Physical and Chemical examination of Stool, Composition, collection and preservation of stool

Practice: *Microscopic finding of stool, Morphology of stool parasite*

Lab:-

Stool Analysis: Collection and physical examination, Chemical Examination, Occult test and reducing sugar, Microscopical Examination: Protozoa, Microscopical Examination: Helminthes
Sputum Analysis: Collection and physical examination, Tuberculosis (ZN Stain), Respiratory infection (Gram Stain)

Module-III

Routine laboratory investigation of Pleural Fluid, Routine laboratory investigation of Pericardial Fluid, Routine laboratory investigation of Synovial Fluid, Synovial fluid: Collection and preservation, Examination of CSF related to Meningitis, Brain Tumour and other disorder, CSF: Composition, Collection, Preservation and physical examination, Report analysis and report writing of Semen, Semen examination for male infertility disorder, Semen: Composition, function, collection and physical examination

Practice: *Gram stain, ZN Stain, General consideration on specimen collection*

Lab:-

Semen Analysis: Collection and physical examination, Chemical Examination, Microscopical examination. CSF Analysis: Collection and Routine Examination. Synovial Fluid: Collection and Routine examination. Pleural Fluid: Collection and routine examination. Pericardial Fluid: Collection and routine examination. Bacteriological Examination of throat swab

Suggested Readings:

1. Textbook of Clinical laboratory methods and diagnosis by Gradwohls, Publisher Mosby
2. Medical laboratory technology Vol.1 by K. L. Mukherjee, 2007, Publisher Tata McGrawHill
3. Textbook of medical laboratory technology by Praful B Godkar, Publisher Bhalan
4. Medical laboratory science theory and practice by J Ochei and Kolhatkar, 2002, Tata McGraw- Hill, Publisher TBS

DC-6- CUTM1733- MICROBIOLOGY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Microbiology	CUTM1733	Theory+ Practice	3-2-0	Medical Science

Objective

- To know various Culture media and their applications and also understand various physical and chemical means of sterilization
- To know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and virus
- To master aseptic techniques and be able to perform routine culture handling tasks safely and effectively

Course Outcome

- This study demonstrates the theory and practical skills in microscopy and their handling techniques and staining procedures.
- Understanding the details of microbial cell organelles.
- Provides knowledge on growth of microorganism.
- Provides knowledge Culturing microorganism.

Course Outline

Module -I

Microbiology: Definition, history, host- microbe relationship, and safety measures in a microbiology laboratory. Morphology of bacterial cell wall, Bacterial anatomy (Bacterial cell structure: including spores, flagella, pili and capsules). Sporulation. Classification of bacteria according to cell wall and shape (arrangement), Classification of micro-organisms. Growth and Nutrition of Microbes: General nutritional requirements of bacteria, Bacterial growth curve

Practice:

1. Handling of Microscope
2. To learn techniques for Inoculation of bacteria on culture media
3. To isolate specific bacteria from a mixture of organisms.

Module-II

Sterilization: Definition, sterilization by dry heat, moist heat (below, at & above 100° C), Autoclave, Hot air oven, Radiation and Filtration, preventive measures, controls and sterilization indicators. Use of laminar flow in sterilization.

Antiseptics and Disinfectants: Definition, types, properties, mode of action and use of disinfectants and antiseptics, efficiency testing of disinfectants.

Practice:

4. To demonstrate simple staining (Methylene blue)
5. Bacterial identification: To demonstrate reagent preparation and procedure for Gram

stain, Z-N staining, Capsule staining, Demonstration of flagella by staining methods, Spore staining, To demonstrate spirochetes by Fontana staining procedure

Module-III

Staining techniques: Methods of smear preparation, Gram stain, AFB stain, Albert's stain and special staining for spore, capsule and flagella, Culture Media, Liquid and solid media, defined and synthetic media, routine laboratory media (basal, enriched, selective, enrichment, indicator, and transport media). Different Culture, media their preparation and uses in microbial growth.

Practice:

6. Biochemical tests for identification of bacteria
7. Preservation of stock cultures of bacteria
8. Antibiotic susceptibility test

Suggested Reading:

1. Medical Laboratory Technology by Kanai Lal Mukherjee; Tata McGraw Hill, New Delhi
2. Microbiology by Prescott
3. An Introduction to Medical Laboratory Technology by FJ Baker; Butterworth – Heinemann; Oxford
4. Practical Book of Medical Microbiology by Satish Gupta; JP Brothers, New Delhi
5. Medical Laboratory Manual for Tropical Countries Vol. I and II by Monica Cheesbrough; Cambridge University Press; UK
6. Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House, Mumbai
7. Text book of Medical Microbiology by Gruckshiank

DC-7- CUTM1813- PHARMACOLOGY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Pharmacology	CUTM1813	Theory+ Project	3-0-1	Medical Science

Objectives:

- To make the students learn about various drugs acting on different body systems

Course Outcomes:

At the end of the course students will be knowledgeable in the following areas:

- Pharmacokinetics and pharmacodynamics of drugs
- Drugs and their actions on different body systems
- Detailed study about different anesthetic drugs

Course Outlines

Module -I: General Pharmacology Part I

Introduction, Routes of Drug Administration, Pharmacokinetics - membrane transport, absorption, bioavailability, metabolism, plasma half life, excretion and distribution of drugs, Routes of drug administration (local and systemic).

Module -II: General Pharmacology Part II

Pharmacodynamics – Mechanisms of drug actions, drug synergism and antagonism. Adverse Drug Reactions, Drug Interactions

Module -III: General Pharmacology Part II

Receptor pharmacology, Drug Nomenclature and Essential Drugs Concept

Module -IV: Drugs for ANS

Autonomic nerves system – sympathetic and parasympathetic nervous system. Basic Anatomy & functional organisation. List of drugs acting on ANS including dose, route of administration, indications, contra indications and adverse effects.

Module -V: Cholinergic System

Cholinergic system – acetyl choline, cholinergic drugs, anticholinesterases, Irreversible Anticholinesterases. Anticholinergic drugs – classification, mechanism of action, uses, adverse effects

Module -VI: Skeletal Muscle Relaxants

Skeletal muscle relaxants – classification, mechanism of action, uses, adverse effects. Adrenergic system – adrenergic receptors, drug classification, mechanism of action, uses, adverse effects

Module VII: Chemotherapy agents and other antibiotics

Chemotherapy of infections, Definition - Classification and mechanism of action of antimicrobial agents. Combination of antimicrobial agents. Chemoprophylaxis. Classification, spectrum of activity, dose, routes of administration and adverse effects of penicillin

TEXT BOOKS:

1. *Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.*

DC-8- CUTM1742- BASIC COMPUTER AND INFORMATION SCIENCE

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Basic Computer and Information Science	CUTM1742	Practice	0-2-0	Medical Science

Objective

- Identify the function of computer hardware components.
- Identify the factors that go into an individual or organizational decision on how to purchase computer equipment.
- Identify how to maintain computer equipment and solve common problems relating to computer hardware.
- Identify how software and hardware work together to perform computing tasks and how software is developed and upgraded
- Identify different types of software, general concepts relating to software categories, and the tasks to which each type of software is most suited or not suited.

Course Outcome

- Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components.
- Understand the difference between an operating system and an application program, and what each is used for in a computer.
- Describe some examples of computers and state the effect that the use of computer technology has had on some common products

Course Outline

Module- I

Introduction to computer: introduction, characteristics of computer, block diagram of computer, generations of computer. Types of Input output devices.Processor and memory: The Central Processing Unit (CPU), main memory. Storage Devices.

Module- II

Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.

Module- III

Introduction to MS-DOS: History of DOS, features of MS-DOS, MS-DOS Commands (internal and external). Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.). Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid). Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.

Suggested readings:

1. Objective Computer Awareness
2. Computer Networking (Global Edition)

DC-9- CUTM1980-BIOMECHANICS AND KINESIOLOGY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Biomechanics and Kinesiology	CUTM1980	Theory+ Project	5-0-1	Medical Science

Objectives

- Define the various terms used in relation to Mechanics, Biomechanics & Kinesiology
- Recall the basic principles of Biophysics related to mechanics of movement / motion & understand the application of these principles to the simple equipment designs along with their efficacy in Therapeutic Gymnasium & various starting positions used in therapeutics.

Course Outcomes

- Demonstration of an understanding of the principles of biomechanics and kinesiology and their application in health and disease
- Analysis of normal human movement from a global perspective, integrating biomechanics, muscle mechanics and motor control theory

Course Outlines

Module I

Mechanics: a)Introduction to mechanics including motion, forces, parallel forces system, b)Newton's law of motion, concurrent force systems – composition forces, muscle action line etc., c)Centre of Gravity, line of gravity, stability and equilibrium, d)Introduction to Bio-Mechanics and terminology.

Module II

Joint Structure and Function: Lower extremity kinematics-hip and thigh,Hip joint motion and force of hip joint,two leg stance and one leg stance. Knee and leg kinematics,Motion of the knee,force of knee. Ankle and foot kinematics:Motion of ankle,stability of ankle joint,weight bearing of foot and arches of foot.

Module III

Muscle Structure and function: a)Mobility and stability functions of muscle, b)Elements of muscle structure and its properties, c)Types of muscle contractions and muscle work, d)Classification of muscles and their functions, e)Group action of muscles, Co-ordinated movement

Module IV

Posture & Gait: a) Posture- Definition, Anatomical aspects of posture, factors responsible for posture. b) Postural imbalance – factors responsible for imbalance in Static and dynamic positions including ergonomics. c) Description of Normal gait, determinants of gait, biomechanics of walking aids. d)Gait deviations – Types, Causative factors and analysis.

Books Recommended:

1. Joint Structure and Function- A Comprehensive Analysis – Norkins & Levensie –F.A Davis
2. Measurement of Joint Motion – A guide to Goniometry – Norkins & White-
3. F. A Davis
4. Brunstrom's Clinical Kinesiology –Smith et al –F.A Davis
5. Basic Biomechanics explained – Low & Reed –Butterworth Heinmann
6. Kinesiology Applied to Pathological Motion –Soderberg Lippineou.

DC-10- CUTM1981- COMMUNITY MEDICINE IN

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Community Medicine in Orthopaedic Disease	CUTM1981	Theory+ Practice	2-1-0	Medical Science

Objectives

- To understand various Health Programs & the general concepts about health, disease and physical fitness.
- To understand social security measures & the strategies to access prevalence and incidence of various conditions responsible for increasing morbidity in the specific community – role of PT in reducing morbidity, expected clinical and functional recovery, reasons for non-compliance in specific community environment & solution for the same.

Course Outcomes

Be able to describe:

- The influence of social and environmental factors on the health of the individual and society.
- The effects of the environment and the community dynamics on the health of the individual.

Course Outlines

Module I

Outline selected national health programmes. Define occupational health and prevention of occupational disease and hazards. Outline the employee's state insurance scheme and its various benefits. Social security measures for protection from occupational hazards, accidents, and workman's compensation act.

Module II

Describe the epidemiology of Rheumatic heart disease, cancer, degenerative disease and cerebrovascular accident. Describe communicable disease with mode of transmission, route of entry and level of prevention: a. Poliomyelitis, b) meningitis, c) encephalitis, d) leprosy, e) Measles. Define community based and institution based rehabilitation, describe advantage and disadvantage of institution and community based rehabilitation.

PRACTICE

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.

Books Recommended

1. "Exam Preparatory Manual For Undergraduates Community Medicine (PSM)" by Jain Vivek
2. "Community Medicine With Recent Advances" by Suryakantha Ah
3. "Community Medicine: Prep Manual for Undergraduates" by Rajvir Bhalwar

DC-11- CUTM1982- PHYSIOTHERAPY IN CARDIO PULMONARY CONDITION

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Physiotherapy in Cardio Pulmonary Condition	CUTM1982	Theory+ Practice	3-2-0	Medical Science

Objectives

- To demonstrate and understand the cardio thoracic conditions causing disability and their medical management.

Course Outcomes

- Learn how to undertake physiotherapeutic measures as preventive/restorative rehabilitative purposes for pulmonary/cardiac patient.

Course Outline

Module I

Cardiac anatomy, cardiac physiology, congenital and Acquired heart disease, Ischemic heart disease, Peripheral vascular disease, physiotherapy management for common arterial venous and lymphatic condition, Cardio pulmonary resuscitation

Module II

Cardiac rehabilitation. Incisions for cardiac surgeries, Drainage tubes and bottles, ventilators uses and function of ventilators. Pre and post operative physiotherapy and management of open heart and closed heart surgery.

Module III

Physiotherapy in respiratory condition.

1. Anatomy and physiology of respiratory system.
2. Respiratory assessment and investigation.
3. Breathing strategies, chest clearance technique, exercise testing and training.

Module IV

Incisions for pulmonary surgery. Drainage tubes and bottles, ventilations. Use and function of ventilators. Post operative complication, physiotherapy for pulmonary surgery, pre and post operative physiotherapy management following condition: a) Thoractomy, b) Lobotomy, c) Thoracoplasty, d) Pneumonectomy, e) monitoring in ICU. Role of physiotherapist in ICU. Pulmonary rehabilitation. Pediatric chest physiotherapy: lung infection, complication, lung abscess, cystic fibrosis. Acute paediatric respiratory distress syndrome, intensive paediatric care.

PRACTICE

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.

Books Recommended:

1. Davidson's Principles and Practices of Medicine – Edward – Churchill Livingstone
2. Hutchinson's Clinical Methods – Swash- Bailliere Tindall
3. A short Textbook of Medicine- Krishna Rao- Jaypee Brothers

DC-12- CUTM1983- PRINCIPLE OF REHABILITATION

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Principle of Rehabilitation	CUTM1983	Theory+ Project	4-0-2	Medical Science

Objectives

The aim of rehabilitation is to maximize the potential to restore a person who has an impairment, or an incapacity for service or work, as a result of a service injury or disease to at least the same physical and psychological state, and at least the same social, vocational and educational status, as he or she had before the injury or disease.

Course Outcomes

- Demonstrate an understanding of the concept of team approach in rehabilitation and implementation with contributions from all members of the team, medical and surgical aspects of disabling conditions.
- Identify the residual potentials in patients with partial or total disability.

Course Outline

Module I

1. Conceptual framework of Rehabilitation, roles of Rehabilitation, definitions and various models of Rehabilitation.
2. Epidemiology of disability with emphasis on locomotor disability. Its implications- individual, family, social, economic and the state
3. Community based Rehabilitation and out each programs to Rehabilitate persons with disabilities living in rural areas
4. Statutory provisions, Scheme of assistance to persons with disability.
5. Role of N.G.Os in Rehabilitation of the persons with disabilities
6. Basic principles of administration and finance including personal management and budget preparation and procurement etc

Module II

1. Principles of orthotics- types, indications, contra indications, assessment (check out) uses and fitting-region wise
2. Fabrication of simple splints and self help devices for upper and lower extremity- indications and application.
3. Principles of Prosthetics- types, indications, contra-indications, assessment (check out), uses and fitting and lower extremities.

Module III

1. Principles and mechanisms of communication including speech and hearing.
2. Common disorders of speech and hearing- etiology, clinical features, assessment and principles of management.
3. Principles in the management of vocational problems, including evaluation and vocational goals for people with disabilities.

Module IV

1. Identification, assessment and classification of mentally subnormal.
2. Rehabilitation of the mentally subnormal, including vocational training & a home education programme.
3. Definition, scope and importance of Activities of Daily Living (ADLs).
4. The teaching and training of (a) wheel chair activities (b) bed activities (c) transfer

activities (d) Locomotor activities (e) self care activities, such as toilet, eating, dressing etc

Books Recommended

1. Physical rehabilitation- assessment & treatment- Sullivan & Schmitz-F.A Davis
2. Occupational Therapy and physical disfunction: Principles, skills & practices-tumor, Doster & Johson- Churchill Livingstone
3. Hand Splitting- Wilson-W.B Saunders
4. Orthotics in rehabilitation: Splinting the hand and the body- Mckee & morgan-F.A Davis
5. Atlas of limb Prosthetics- American Academy of Orthopaedic Surgeon- Mosby
6. Atlas of Orthotics- American Academy of Orthopaedic Surgeon- Mosby
7. Krusen's Handbook of Physical Medicine & rehabilitation- Kottke & Lehmann- W.B Saunders
8. Willard and Spacknan's occupational therapy- neistadt & Crepeau- Lippincott

DC-13- CUTM1984-PAEDIATRICS AND GERIATRICS

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Paediatrics and Geriatrics	CUTM1984	Theory+ Project	3-0-2	Medical Science

Objectives

- To study about fetal dev development & child birth.
- To understand the assessment process of pediatric patients.
- To study about Musculoskeletal, Genetic, Neurological disorders etc.

Course Outcomes

After completion of this course, the students will be able to:
Understand the aging process.
Understand Diet & Nutritional requirement of the younger and elderly ones.

Course Outlines

Module I

1. Review normal foetal development & child birth, including assessment of a neonate.
2. Development of a normal child- neuromotor, physical growth, cognitive, intellectual, social etc.
3. The examination & assessment of a pediatric patient.

Module II

1. Congenital & acquired musculo skeletal disorders- etiology, clinical manifestation & principles of management.
2. Congenital & acquired Cardio- pulmonary disorders – etiology, clinical manifestation & principles of management.
3. Congenital & acquired neurological disorders (CNS& PNS): etiology clinical manifestation & principles of management

Module III

1. Hereditary disorders- etiology clinical manifestation & principles of management.
2. Nutritional Vitamins, Deficiency & development disorders: etiology clinical manifestation & principles of management.
3. Burns, Injuries & accident – Types & principles of management including preventive care.
4. Surgical intervention- Indications & common surgical procedure.

Module IV

1. Normal aging- Definition, the anatomical, physiological and cognitive changes related to aging
2. Epidemiology and Socio-economic impact of aging
3. The examination & assessment of a geriatric patient

Module V

1. Musculoskeletal disorders- etiology clinical manifestation & principles of management
2. Cardiac- pulmonary disorders- etiology clinical manifestation & principles of management
3. Neurological disorders(CNS & PNS)- etiology clinical manifestation & principles of management
4. Diet & Nutritional requirement of the elderly, nutritional disorders & their management
5. Burns, Injuries & accident as related to the elderly & preventive care
6. Dementia- Types and principles of management 7. Overview of depressive disorders in the elderly.

Books Recommended:

1. Nelson's Textbook of Paediatrics- Behrman & Vaughan- W.B Saunders
2. Textbook of Paediatrics- Parthsarthy –Jaypee
3. The short Textbook of Paediatrics – Gupte- Jaypee
4. Geriatric Physical Therapy- Guccione- Mosby
5. Motor Assessment of Developing infant – Piper Davrah – W.B Saunders

DC-14- CUTM1985- SURGERY I

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Surgery I	CUTM1985	Theory+ Project	3-0-2	Medical Science

Objectives

- Describe the effects of surgical trauma & Anaesthesia in general.
- Describe pre-operative evaluation, surgical indications in various surgical approaches, management and post operative care in above mentioned areas with possible complications.

Course Outcomes

- Demonstrate a general understanding of the diseases that therapists would encounter in their practice.
- Demonstrate skill in providing the treatment for the disabilities identified according to the clinical picture and rehabilitation need of the patient.

Course Outline

Module I

1. Introduction to principles of surgery and its procedure.
2. Principle of pre and postoperative management of surgical patients.
3. Shock- definition, types, clinical feature, pathology & management.
4. Haemorrhage – common sites, complication , clinical feature & management.
5. Blood Transfusion- Blood group matching, indication & complication.
6. Anesthesia – Principles of Anesthesia, types of procedure.

Module II

1. Wounds, Tissue repair, classification- Acute Wounds, Chronic wounds, Scars & their management
2. Wound infections, Psychology and manifestation, Types of infections & their management
3. Tumors and Ulcers:
 - a) Tumors-Types & Management
 - b) Ulcers- Types & Management
4. Burns – Causes, Classification, clinical features & management
5. Skin grafting-indications, Types & Procedures
6. Hand Infections- Types & Management
7. General Injuries - Types & Management

Module III

1. Complications of Surgery.
2. Abdominal Surgery – Types of Incisions & common surgical procedures.
3. Thoracic and cardiac surgery – Types of incisions & common surgical procedures.

Module IV

Obstetrics & Gynecology

1. Pregnancy, stages of labour & its complications, indications & types of surgical procedures.
2. Gynecological disorders- Salpingitis, parametritis, retro-uterus, prolapse of uterus, pelvic inflammatory diseases, urinary incontinence.

Module V

Ophthalmology

1. Comme – inflammation and other infections of eye
2. Ptosis
3. Blindness- common causes & management
4. Refractions- testing, errors & remedies.
5. Strabismus- types, features & corrective measures.

Module VI

Ear, Nose & Throat (ENT)

1. Introduction- Outline , Mechanism of audition, olfaction & speech
2. Classify causes of hearing impairment, assessment techniques, conservative & surgical management.
3. Hearing aids- Types & indications
4. Outline common ENT infections & lesions which affect hearing breathing, speech & their management
5. Outline the function of vestibular organ, its common disorders & their management

Books Recommended:

1. Baily and Love – Short Practice of surgery – Mann and Rains – H. K Levis Publications, London.
2. Undergraduate Surgery- Nan-Academic Publishers, Calcutta
3. Textbook of Surgery- Gupta R.L Jaypee.
4. Principles and Practices of trauma care – Kocher- Jaypee
5. Chemical Methods- S.Das- Calcutta

DC-15- CUTM1986- MEDICINE I (GENERAL MEDICINE)

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Medicine I (General Medicine)	CUTM1986	Theory+ Project	3-0-2	Medical Science

Objectives

- Be able to describe Etiology, Pathophysiology, Signs & Symptoms & Management of the various Endocrinal, Metabolic, and Geriatric & Nutrition Deficiency conditions.
- Acquire skill of history taking and clinical examination of Musculoskeletal, Respiratory, Cardio-vascular & Neurological System as a part of clinical teaching.

Course Outcomes

- Demonstrate a general understanding of the diseases that therapists would encounter in their practice.
- Know the etiology and pathology, the patient's symptoms, the resultant functional disability and the limitations imposed by the disease on any therapy.

Course Outline

Module I

1. Introduction of modes of transfer of communicable diseases & general preventive measures.
2. Bacterial Diseases: Tuberculosis, Leprosy, Rheumatic fever, Tetanus, Typhoid fever, Diphtheria, Pneumonia, Bacillary Dysentery and Measles.
3. Viral Diseases : Simplex and zoster, Varicella , Measles Mumps, Hepatitis B &C,AIDS & Inflenza.
4. Metabolic and Deficiency Diseases: Diabetes, Anemia, Vitamin & Nutritional, Deficiency diseases, diseases of the endocrine glands.

Module II

Diseases of Respiratory System: Asthma, Bronchitis, Massive collapse of lungs, Bronchiectasis Bronchial, Pneumonia, lung abscess, Emphysema, Empyema, Paralysis of diaphragm & vocal cords, chronic infection of larynx and trachea, Abnormalities of trachea, infract of lungs, chronic passive congestion.

Diseases of Circulatory System: Thromobsis, Embolism, Gangrene, Valvular diseases Hemorrhage, Heart Malformation, various diseases of arteries, diseases of blood forming organs, Anemia, Leukemia, Leucocytosis, Peripheral vascular diseases, diseases of the lymphatic systems. Diseases of the heart- Hypertension, Hypotension, Aortic aneurysm, Endocarditis, Pericarcitis, Aortic Regurgitation, Cardiac Failure, coronary heart diseases, congenital heart malformation and its manifestation.

Module III

Diseases of Digestive System: Pharyngitis, spasm of the Oesophagus, Diverticulum stenosis, Gastric ulcer, Hematemesis Peloric stenosis, Dyspepsia, Vomiting, Diarrhoea, Doudenal ulcer etc.

Diseases of Liver: Jaundice Cirrhosis of liver, Abscess of liver, Ascitis.

Diseases of kidney :Plyuria, Hematuria, Uremia, Anuria, Nephritis, Urinary infections, Urinary calculi.

Module IV

Diseases of Skin –

Characteristics of normal skin, abnormal changes, types of skin lesions.

Conditions – Leprosy, Acne , Boil, Carbuncles, Impetigo , Infections of skin, Herpes, Urticaria, Psoriasis, Skin disorders associated with circulatory disturbances, Warts, Com. Defects in Pigmentation, Psoriasis, Leucoderma, Fungal infections, Alopecia, Dermatitis Eczema, Skin – Allergies, Venereal. Psychosis.

Books Recommended:

1. Davidson's Principles and Practices of Medicine – Edward – Churchill Livingstone
2. Hutchinson's Clinical Methods – Swash- Bailliere Tindall
3. A short Textbook of Medicine- Krishna Rao- Jaypee Brothers
4. A short textbook of Psychiatry – Ahuja Niraj – Jaypee Brothers

**DC-16- CUTM1987-MEDICINE II (CARDIOLOGY AND WORK
PHYSIOLOGY)**

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Medicine II (Cardiology and Work Physiology)	CUTM1987	Theory+ Practice	3-1-0	Medical Science

Objectives

- Study Chest X-ray, Blood gas analysis, P.F.T. findings & Haematological studies, for Cardiovascular, Respiratory, Neurological & Rheumatological conditions.
- Be able to acquire the skills of Basic Life Support.
- Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.

Course Outcomes

Understand the goals of pharmacological therapy in those diseases in which physical therapy will be an important component of overall management

Course outlines

Module I

1. Basic anatomy of heart, coronary circulation and development of heart.
2. Normal cardiac contraction and relaxation mechanism and diagnosis.
3. Ischaemic heart disease: clinical feature, diagnosis and management
4. HYPERTENSION: Aetiology, diagnosis, clinical feature and management.
5. Peripheral vascular disease: aetiology clinical feature and management.
6. Valvular heart disease-aetiology and management
 - a. Mital stenosis
 - b. Mital regurgitation
 - c. Aortic regurgitation
7. Acute rheumatic fever: aetiology, clinical feature, diagnosis and management

Module II

1. Physiology of exercise
2. Cardiac rate during exercise
3. Oxygen consumption of the body at rest, during exercise and after exercise.
4. Effect of exercise:
 - a) calorie intake, b) Metabolism, c) Renal blood flow, d) contractility of myocardium, e) Blood Pressure, f) increase pulmonary ventilation, g) Ergo meter –cycle and treadmill type.

PRACTICE

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.

Books Recommended:

1. Davidson's Principles and Practices of Medicine – Edward – Churchill Livingstone
2. Hutchinson's Clinical Methods – Swash- Bailliere Tindall
3. A short Textbook of Medicine- Krishna Rao- Jaypee Brothers
4. Katz AM: *Physiology of the Heart*, 4th ed. Philadelphia, Lippincott Williams & Wilkins, 2006. ISBN: 0781755018
5. Klabunde RE: *Cardiovascular Physiology Concepts*, Lippincott Williams & Wilkins, 2005. ISBN: 078175030X

DC-17- CUTM1988-MEDICINE III (NEUROLOGY)

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Medicine III (Neurology)	CUTM1988	Theory+ Practice+Project	3-1-2	Medical Science

Objectives

- Be able to describe Aetiology, Pathophysiology, signs & Symptoms & Management of the various Neurological conditions.
- Acquire skill of history taking and clinical examination of Neurological conditions as a part of clinical teaching.
- Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.

Course Outcomes

- Understand the disability and plan treatment for these disabilities due to pathology in nervous system.
- Demonstrate skill in providing the treatment for the disabilities identified according to the clinical picture and rehabilitation need of the patient.

Course outlines

Module I

Neuroanatomy: Review the basic anatomy of the brain and spinal cord including: Blood supply of the brain and spinal cord, anatomy of the visual pathway, connections of the cerebellum and extrapyramidal system, relationship of the spinal nerves to the spinal cord segments, long tracts of the spinal cords, the brachial and lambar plexus and cranial nerves.

Neurophysiology: Review in brief the Neurophysiological basis of tone and disorders of the tone and posture, bladder control, muscle contraction movement and pain

Assessment and evaluative procedures for the neurological patient

Review of the principles of the management of a neurological patient

Module II

Briefly outline the etiogenesis , clinical features and management of the following Neurological disorders:-Congenital and childhood disorders- Cerebral palsy, Hydrocephalus and Spine Bifida.Cerebovascular accidents – General , classification, thrombotic, embolic, hemorrhagic & inflammatory, strokes, gross localization and sequelae. Trauma- localization, first and aid and management of sequelae of head injury and spinal cord injury. Diseases of the spinal cord- Craniovertebral junction anomalies, Syringomyelia, Cervical and lumbar disc lesions. Tumors and spinal Arachnoiditis. Demyelinating diseases (central and peripheral)- Guillain- Bane Syndrome. Acute disseminated encephalomyelitis. Transverse myelitis and Multiple sclerosis.

Module III

Briefly outline the etiogenesis, clinical features and management of the following Neurological disorders: Degenerative disorders- Parkinson's disease and dementia. Infections- Pyogenic Meningitis sequelae, Tuberculous infection of central nervous system and Poliomyelitis. Diseases of the muscle – Classification, signs, symptoms, progression and management. Peripheral nerve disorders – Peripheral nerve injuries, Equipment neuropathies and Peripheral neuropathies.

Module IV

1. Epilepsy : Definition, Classification and management
2. Myasthenia Gravis : Definition, course and management
3. Intra cranial Tumors – Borad classifications, signs and symptoms
4. Motor neuron disease – Definition, classification and management
5. Cranial Nerves - Types of disorders, clinical manifestation & management

Module V

1. Introduction to neuropsychology
2. General assessment procedures and basic principles of management

PRACTICE

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.

Books recommended:

1. Bran's Disease of the Nervous System- Nalton- ELBS
2. Guide to clinical Neurology – Mohn & Gaectier- Churchill Livingstone
3. Principles of Neurology- Victor- McGraw Hill International edition.
4. Davidson's Principles and practices of medicine –Edware- Churchill Livingstone.

DC-18- CUTM1989- GENERAL ORTHOPAEDICS

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
General Orthopaedics	CUTM1989	Theory+ Practice+Project	4-2-1	Medical Science

Objectives

- To read & interpret salient features of the X-ray of the Spine & Extremities and correlate the radiological findings with the clinical findings.
- Be able to interpret Pathological / Biochemical studies pertaining to Orthopaedic conditions.

Course Outcomes

- Identification of disability and plan treatment for these disabilities due to pathology in musculoskeletal system, as well as evaluate and document them.
- Demonstration of skill in providing the treatment for the disabilities identified according to the clinical picture and rehabilitation need of the patient.

Course outlines

Module I

Introduction to Orthopedics : Introduction to orthopedic terminology, Types of pathology commonly dealt with, clinical examination, common investigations X- rays& imaging techniques and outline of non operative management. Principles of operative treatment: List indications, Contraindication and briefly outline principles of Athrodesis, Arthroplasty, Osteotomy, Bonegrafting, Tendon- Tranfers and Arthroscopy. Sprains and Muscle strains: List common sites of sprains and muscle strains describe the clinical manifestations and treatment Viz. tennis elbow, golfer's elbow, Dequervan's disease, tenovaginitis, trigger finger, carpal tunnel syndrome and plantar fasciitis. Sports Injuries: Injuries related to common sports their classification and management.

Module II

1. Fractures and dislocations: General Principles, Outline the following. a. Types of fractures including patterns ,Open and close fractures and fracture- dislocations. b. Differences between dislocation subluxation. c. General & Local signs & symptoms of fractures & dislocation. d. Principle of management of fractures & dislocations. e. Prevention& treatment of complication including : Fracture- disease, Volkman's ischeamic contracture, Sudeek's Atrophy Carpal Tunnel Syndrome. Myositis Ossificans and shoulder- hand syndrome. f. Fracture healing.
2. Upper Limb Fracture & Dislocations: a) Enumerate major long bone fractures and joint injuries. b) Briefly describe their clinical features, principles of management and complications.
3. Lower Limb Fracture & Dislocations: a) Enumerate major long bone fractures and joint injuries. b) Briefly describe their clinical features, principles of management and complications.
4. Spinal Fractures and Dislocations: Outline the mechanism, clinical features, and principles of management and complications of spinal injuries.
5. Recurrent Dislocations: Outline the mechanism, clinical features, principles of management and complications of recurrent dislocation of the shoulder and petalla.

Module III

Amputations: a) Classify amputations: List indication for surgery. b) Outline pre-operative, operative and prosthetic management. c) Outline prevention and treatment of complications.

Bone & Joint Infections: Outline the etiology, clinical features, management and complications of septic arthritis osteomyelitis. Tuberculosis (including spinal TB)

Bone Joint Tumors: Classify and outline the clinical feature, management and complications of the following (benign/malignant bone and joint tumors, osteomas, osteosarcomas, osteoclastomas, Ewing's sarcoma, multiple myeloma).

Module IV

Chronic Arthritis: Outline of pathology: Clinical features, mechanism of deformities, management and complications of Rheumatoid arthritis, Osteoarthritis of major joints and spine, Ankylosing spondylitis. Neck & Back Pain, Painful Arc syndrome, Tendonitis, Facitis & Spasmodic Torticollis. Outline the above including clinical features and management. Spinal Deformities: Classify spinal deformities and outline the salient clinical features, management and complications of Scoliosis, Kyphosis and Lordosis.

Module V

Poliomyelitis: Describe the pathology, microbiology, prevention, management and complications of polio. Outline the treatment of residual paralysis including use of orthoses. Principles of muscle transfer and corrective surgery. Congenital Deformities: Outline the clinical features and management of CTEV, CDH, flat foot, vertical talus, limb deficiency radial club hand and femoral, tibial and tibia deficiencies meningocele Arthrogryphosis multiplex congenita and Osteogenesis imperfecta. Peripheral Nerve Injuries: Outline the clinical features and management, including re-constructive surgery of a) Radial, median and ulnar nerve lesions, b) Sciatic and lateral popliteal lesions, c) Brachial Plexus injuries including Erb's, Klumpke's crutch palsy. Hand injuries: Outline of clinical features, management and complications of skin and soft tissue injury, tendon injury, bone and joint injury. Leprosy: Outline of clinical features, management and complications of neuritis, muscle paralysis, tropic ulceration and hand & foot deformities.

PRACTICE

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.

1. To study the effects of forces on objects.
2. To find out the C.O.G of an object.
3. To identify axis and planes of motion at the joints of spine, shoulder, girdles, joints of upper extremity, Pelvic girdle and joints of lower extremity.
4. To study the different types of muscle contraction, muscle work, group action of muscles of co-ordinated movements.
5. Analysis of Normal posture respect to L.O.G and the optimal position of joint in Anterior-posterior and lateral views.
6. Analysis of normal gait and measurement of spatio-temporal features.

Books Recommended:

1. Watson- Zones, Fractures and Joint Injuries- Wilson- Churchill Livingstone.
2. Clinical Orthopaedics Examination- Merrett- Churchill Livingstone.
3. Connoisseur System of Orthopaedics and Fractures- Apley Butterworth Heinemann
4. Outline of Fractures- Adam- Churchill Livingstone.
5. Outline of Orthopaedics- Adam- Churchill Livingstone.
6. Physical examination in Orthopaedics- Apley- Butterworth Heinemann
7. Clinical Orthopaedics Diagnosis- Pandey & Pandey- Jaypee Brothers.

DC-19- CUTM1990-SURGERY II

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Surgery II	CUTM1990	Theory+ Practice	3-2-0	Medical Science

Objectives

- To read & interpret salient features of the X-ray of the Spine & Extremities and correlate the radiological findings with the clinical findings.
- Be able to interpret Pathological / Biochemical studies pertaining to Orthopaedic conditions.

Course Outcomes

- Identification of disability and plan treatment for these disabilities due to pathology in musculoskeletal system, as well as evaluate and document them.
- Demonstration of skill in providing the treatment for the disabilities identified according to the clinical picture and rehabilitation need of the patient.

Course outlines

Module I

Fracture and dislocation including soft tissue injury. Pathology of fracture and repairs of bones. Reason for union, non-union and delayed union fibrous union and myositis. Common fracture of upper extremity, lower extremity including spine management ,complication. Dislocation of shoulder, elbow, hip, knee and spine. Sprain of muscle, ligament, and tendon. Knee injury-injury to medial ligament internal dearrangement and meniscus tear lateral ligament sprain of ankle. Volkmanns ischaemic contracture, tennis elbow.

Module II

Deformities: Common congenital and acquired deformities of foot, knee, hip, shoulder, elbow and wrist including hand and spine. cervicalrib, torticollis, metatarsalgia, claw hand.

Module III

Inflammatory condition lesions of joints and bones .Osteomyelitis, tuberculosis, gynogenic infection, osteoarthritis, rheumatoid arthritis, synovitis, capsulitis, tendonitis, osteoporosis and osteomalacia. Low back pain, bracial neuralgia. Operative procedures, management after surgery.

Module IV

Principle of management of cranial and spinal trauma. Neurosurgical intensive care study Rehabilitation of neurologically disabled patient. Outline of clinical presentation and management of brain tumours &spinal cord compressions.

Module V

Use of operative microscope, endoscopy, stereotactic surgery, minimally invasive surgery in neurosurgical prespective. Development anomalies of CNS & their brief management. Degenerative disease of spine & outline of management. Management of pain syndrome.

PRACTICE

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.

Books Recommended:

1. Alexander's Care of the Patient in Surgery
2. Sabiston Textbook of Surgery

DC-20- CUTM1991- MEDICINE IV (PSYCHIATRY)

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Medicine IV (Psychiatry)	CUTM1991	Theory+ Project	3-0-2	Medical Science

Objectives

- Recognize and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical-surgical patients/conditions.

Course Outcomes

- Understanding the elementary principles of behavior for applying in the therapeutic environment.
- Understanding specific psychological factors and effects in physical illness.
- Development of holistic approach in their dealing with patients during admission, treatment, rehabilitation and discharge.

Course outlines

Module I

Neuroanatomy. Examination and diagnosis of psychiatric cases, classification of mental disorder. Theories of personality and psychoanalysis, Neuropsychiatry aspect of: i) Brain tumour, ii) Cerebrovascular disorder, iii) Epilepsy, iv) Neuromuscular disorder.

Psychosis: Schizophrenia (including paranoid), manic depressive psychosis, involvement psychosis.

Psychoneurosis : Anxiety, hysteria, anxiety states, neurasthenia, reactive depression, obsessive compulsive neurosis. Organic reaction- toxins, trauma & infection. Senile dementia.

Module II

Somatic disorder: i) Conversion disorder, ii) somatization disorder. Dissociative disorder. Normal human sexual and gender identity disorder. Mental retardation: definitions, causes, manifestation and management. Eating disorders. Sleep disorder. Mood disorder.

Module III

Psychological factor affecting medical condition. Therapies:-

- a) Psychotherapy – Group therapy, Psychodrama, behavior modification, family therapy, play therapy, psychoanalysis, hypnosis.
- b) Drug therapy
- c) Electro convulsive therapy

Books Recommended

1. Davidson's Principles and Practices of Medicine – Edward – Churchill Livingstone
2. Hutchinson's Clinical Methods – Swash- Bailliere Tindall
3. A short Textbook of Medicine- Krishna Rao- Jaypee Brothers
4. A short textbook of Psychiatry – Ahuja Niraj – Jaypee Brothers

DC-21- CUTM1721- RESEARCH METHODOLOGY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Research Methodology	CUTM1721	Theory+ Project	2-0-1	Medical Science

Objective

- To equip students with a basic understanding of the underlying principles of quantitative and qualitative research methods.
- Provide students with in-depth training on the conduct and management of research from inception to completion using a wide range of techniques.

Course Outcome

- Students can understand the ethical and philosophical issues associated with research in education
- This study provides knowledge on various modes of presenting and disseminating research findings.
- Enable students to acquire expertise in the use and application of the methods of data collection and analysis.
- Provide learning opportunities to critically evaluate research methodology and findings.
- Enable students to be reflexive about their role and others' roles as researchers.

Course Outline

Module- I

Introduction to Research: Definition, Scope, Limitations, and Types. Objectives of Research. Research Process: Proposal Development: Basic steps involved in the health research proposal development process Literature Review: Importance and Sources, Strategies for gaining access to information, Library search, Computer search. Research Designs: Research Title and Objectives Criteria for selecting a research title, Formulation of research objectives, Types of research objectives, Qualities of research objective

Module- II

Data Collection: Secondary Data, Primary Data, and Methods of Collection. Scaling Techniques: Concept, Types, Rating scales & Ranking Scales, Scale Construction Techniques and Multi-Dimensional Scaling. Sampling Designs: Concepts, Types and Techniques and Sample size Decision.

Module- III

Research Hypothesis: Definition, Qualities of research hypothesis Importance and types of research hypothesis. Theory of Estimation and Testing of Hypothesis Small & Large Sample Tests, Tests of Significance based on t, F, Z test and Chi-Square Test. Designing Questionnaire. Interviewing. Tabulation, Coding, Editing. Interpretation and Report Writing.

Project: Writing a review on Nosocomial urinary tract infection. Writing a research article on antibiotic resistance patterns in wound infections. Writing a review on Virus culture. Literature survey on Covid-19

Suggested Readings:

1. Research Methodology by C.R. Kothari (3rd Ed)
2. Research Methodology In the Medical & Biological Sciences by PetterLaake et al.
3. Essentials of Research Design and Methodology by Geoffrey Marczyk et al.
4. WHO, Health Research Methodology: A guide for training in research Methods, 2nd Edition, WHO- WIPRO
5. A Student's Guide to Methodology by Clough P and Nutbrown C. Sage Publication.

DC-22- CUTM1734 -Medical Law and Ethics

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Medical Law and Ethics	CUTM1734	Theory+ Project	2-0-1	Fundamental Science

Objective

The course provides an introduction to ethics generally and more specifically to medical ethics, examining in particular the principle of autonomy, which informs much of medical law. The course then considers the general part of medical law governing the legal relationship between medical practitioners and their patients. It considers the legal implications of the provision of medical advice, diagnosis and treatment. Selected medico-legal issues over a human life are also examined. These may include reproductive technologies, fetal rights, research on human subjects, organ donation, rights of the dying and the legal definition of death.

Course Outcome

- The ethical underpinnings of the law as it relates to medicine,
- The law of negligence in the context of the provision of healthcare,
- Legal and ethical issues surrounding end and beginning of life decisions,
- The maintenance of professional standards in the healthcare profession, and
- The role of policy in the formation of law as it relates to medicine.

Course Outline

Module-1

1. The Indian medical council act. 2. Medical council of India (functions). 3. Functions of state medical councils. 4. The declaration of Geneva

Module-2

1. Duties of medical practitioners 2. Regarding red cross emblem 3. Professional secrecy 4. Privileged communication.

Module-3

1. Professional negligence 2. Medical mal occurrence 3. Contributory negligence 4. Criminal negligence

Module-4

1. Corporate negligence 2. Ethical negligence 3. Precautions against negligence 4. difference between professional negligence and infamous conduct.

Module-5

1. Malpractice litigation involving various specialities 2. Prevention of medical negligence 3. Supreme court of India guidelines on medical negligence 3. The therapeutic misadventure 4. Vicarious liability

Module-6

1. Products liability 2. medical indemnity insurance 3. Medical records 4. Consent in medical practice

Module-7

1. Euthanasia 2. Deaths due to medical care 3. Malingering

Text books

1. Medical Law and Ethics by Shaun D Pattinson, 5th edition, 2017. 2. Reflections on Medical law and Ethics in India by B. Sandeepabhat, publisher Eastern law house.

DC-24- CUTM1992-PHYSICAL DIAGNOSIS AND PHYSICAL FITNESS

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Physical Diagnosis and Physical Fitness	CUTM1992	Theory+ Practice	2-3-0	Fundamental Science

Objective

- To get information on the concepts and principles of various approaches.
- To Plan therapeutic interventions and justify the selection.
- To get idea on Sports and industry

Course Outcome

- Demonstrate to assess patients, utilizing various principles.
- Analyze the patients problem.
- Conclude physical diagnosis.

Course Outline

Module-I

Problem oriented medical record- history-concept-advantage. Communication with the patients orinciple and method. Physical diagnosis on basis of a) MUSCULO SKELETAL SYSTEM- Maitland concept, Cyriax Approach, Mackenzie's concept, Kennel concept, Neural tension tests. b) NEURO MUSCULAR: Motor learning, Bobath approach, Vojta approach

Module-II

PHYSICAL FITNESS-

1. Factors responsible for occupational hazard, faculty working,
2. Accidents electrical, mechanical, thermal, chemical.
3. Preventive PT measure
4. Sports and industry
5. Relaxation technique
6. Fitness programe for specific work

PRACTICE

1. Demonstration of motor learning
2. Demonstration of Health Assessment technique
3. Demonstration of Relaxation technique
4. Fitness training for specific work

Books Recommended:

1. Textbook of Physical Diagnosis: History and Examination With STUDENT CONSULT Online Access. by Mark H. Swartz MD FACP
2. Advanced Health Assessment & Clinical Diagnosis in Primary Care. by Joyce E. Dains DrPH JD RN FNP-BC FNAP FAANP

DC-24- CUTM1993-YOGA AND NATUROPATHY

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Yoga and Naturopathy	CUTM1993	Theory+ Project	3-0-1	Fundamental Science

Objective

- To get information on the concepts and principles of various approaches.
- To Plan therapeutic interventions and justify the selection.
- To get idea on Yoga and Naturopathy

Course Outcome

- Demonstrate to assess patients, utilizing various principles.
- Analyze the patients problem.
- Analysis on Yoga and its relationship with Healthcare.

Course Outline

Module-I

Yoga: Introduction, Historical background and Origin of Yoga, Meaning and Concept of Yoga and its relationship with Healthcare.

Yoga in Global Scenario: Yoga as a Science; and recent advances in Yoga.

Naturopathy: definition, history, principle and concept and effect.

Acupuncture and acupressure, mechanism of acupuncture

Forbidden points

Module-II

Asanas: Asanas- meaning, types, principles, Techniques of asanas and effects of asanas on various systems of the body - circulatory, respiratory and digestive system. Yoga and Treatment: Therapeutic and Corrective Values of Yoga Practices special reference to disease like: Diabetes, Asthama, Constipation, Obesity, Cervical, Gastric and Acidity.

Reference Books

1. Debnath, Monica "Basic Core Fitness through Yoga and Naturopathy" (2006-07) Sports Publication, G-623/23B EMCA House, Ansari Road, Darya Ganj New Delhi.
2. Yogeshwar, "Text Book of Yoga" (2004) Penguin Book.
3. Harvey, Paul (Yoga for Everybody" (2001) Tucker Slingsby Publisher Ltd.
4. Sharma, Lalita " All You Wanted to know about Yoga" (1991) Sterling Publisher Pvt. Ltd.
5. Sarawati, S Satyananda " Asana, Pranayam, Mudra and Bandhas".
6. Iyengar, B.K.S " The Illustrated Light of Yoga" (1982) Great Britain, George Allenand U

DC-25- CUTM1994- PHYSIOTHERAPY IN MEDICAL CONDITION

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Physiotherapy in Medical Condition	CUTM1994	Theory+ Practice	3-2-0	Fundamental Science

Objective

- Explains the concepts and principles of disease management by Physiotherapy
- Plans therapeutic interventions and justify the selection.

Course Outcome

- Identify cardio respiratory dysfunction, understand and analyze the clinical problems of the described conditions.
- Understand the goals of pharmacological therapy in those diseases in which physical therapy will be an important component of overall management.

Course Outline

Module-I

General Medicine:

Review of the Pathological and principles of management by Physiotherapy to the following conditions;

1. Inflammation –acute, chronic and suppurative.
2. Oedema – Traumatic, obstructive, Paralytic, Oedema due to poor muscle and laxity of the facia.
3. Arthritis and Allied conditions:
 - a) Osteo- arthritis- generalized, Degenerative and traumatic.Spondylosis and disorders.
 - b) Rheumatoid Arthritis, Still’s disease infective Arthritis
 - c) Spondylitis, Ankylosing Spondylitis
 - d) Nonarticular Rheumatism- Fibrosusm,Myalgia,Bursitis, Periarthritis etc.
4. Common conditions of skin –Acne, Psoriasis,Alopecia, Leucoma, Leprosy, Sexually transmitted diseases.
5. Deficiency diseases – Rickles, Diabetes, Obesity, Osteoporosis and other deficiency disorders related to Physiotherapy
6. Psychiatric Disorders – Psychosis, Psychoneurosis, Senile dementia

Module-II

Respiratory:

1. Review of mechanism of normal respiration.
2. Chest examination, including auscultation, percussion.
3. Knowledge of various investigative procedures (invasive& non invasive) used in the diagnosis of various respiratory disorders.

Review of pathological changes and principle of management by physiotherapy of the following conditions:

1. Bronchitis, Asthama, Lung Abscess, Bronchiectasis, Emphysema, COPD
2. Pleurisy and Empyema, Pneumonia
3. Bacterial disease.
4. Rheumatic fever, Carcinoma of respiratory tract
5. Paralysis of diaphragm & vocal cords

6. Chest wall deformities

Module-III

Cardiovascular:

1. Review of anatomy & physiology of the cardiovascular system
2. Knowledge of various investigative procedures (invasive & non invasive) used in the diagnosis of various respiratory disorders.
3. Review of pathological changes and principle of management by physiotherapy of the following conditions: Thrombophlebitis, thrombosis, Embolism, Buerger's diseases, Artherosclerosis, Phlebitis, Gangrene, Congestive Cardiac failure, Hypertension, hypotension, aneurysm.

PRACTICE

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.

Books Recommended:

1. Cash textbook of general medical and surgical conditions for physiotherapies- Downie- Jaypee Brothers.
2. Essentials of Cardiopulmonary physical therapy- Hillegass & Sadowsky-W.B Saunders.
3. Cash Textbook of Chest, Heart and vascular Disorders for Physiotherapists- Downie - Jaypee Brothers.
4. The Brompton Guide to chest Physical Therapy
5. Cardiopulmonary Physical Therapy – Irwin and Techlin – Mosby
6. Cardiovascular/Respiratory Physiotherapy-Smith & Ball – Mosby
7. ACSM Guidelines for Exercise Testing and Prescription – ACSM- Williams and Wilkins
8. Chest Physiotherapy in Intensive Care Unit – Machenzie et al – Williams and Wilkins

DC-26- CUTM1995-PHYSIOTHERAPY IN SURGICAL CONDITION

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Physiotherapy in Surgical Condition	CUTM1995	Theory+ Practice+Project	3-1-1	Fundamental Science

Objective

- Describe pre-operative evaluation, surgical indications in various surgical approaches, management and post operative care in above mentioned areas with possible complications.
- Clinically evaluate & describe the surgical management in brief of a) General Surgery b) Neuro Surgery c) Cardiovascular and Thoracic Surgery d) ENT & Ophthalmic Surgery e) Plastic & Reconstructive Surgery.

Course Outcome

- Gain the skill of clinical examination; apply special tests & interpretation of the preoperative old cases & all the post-operative cases.
- Be able to interpret Pathological / Biochemical studies pertaining to various diseased conditions.

Course Outline

Module-I

Thoracic Surgery:

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

1. Lobectomy, Pneumonectomy, Thoracotomy, thoracoplasty, Endoscopy & eye hole surgeries.
2. Corrective surgeries of congenital heart defects, angioplasties, blood vessel grafting, open heart surgeries & heart transplant.

Module-II

General, Gynaecology and Obstetrics and ENT:

1. Common abdominal surgeries, including GIT, liver, spleen, kidney, bladder etc.
2. Common operation of reproductive system, including surgical intervention for child delivery. Ante natal & post natal, physiotherapy.
3. Common operations of the ear, nose, throat & jaw as related to physiotherapy.
4. Common organ transplant surgeries- heart, liver, bone marrow etc.

Module-III

Wounds, Burns & Plastic surgery

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

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

Module-IV

Neurosurgery:

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

1. Common surgeries of the cranium & brain.
2. Common surgeries of vertebral column & spinal cord.
3. Common surgeries of peripheral nerves.
4. Surgical interventions in traumatic head injuries.

PRACTICE

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.

Books Recommended:

1. Cash textbook of general medical & surgical conditions for physiotherapists- Downie- Jaypee Brothers.
2. Cash textbook of heart, chest and vascular disorders for physiotherapists- Downie- Jaypee Brothers.
3. Principles and practices of cardiopulmonary physical therapy- Frown Felter- Mosby.
4. Chest physiotherapy in intensive care unit – Mackenzie- Williams & Wilkins
5. Restoration of motor functions in stroke patient- A physiotherapist Approach- Johnstone- Churchill Livingstone.
6. Physiotherapy in obstetrics and gynaecology – Polden –F.A Davis

DC-27- CUTM1996-PHYSIOTHERAPY IN ORTHOPAEDICS

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Physiotherapy in Orthopaedics	CUTM1996	Theory+ Practice	3-2-0	Fundamental Science

Objective

- Identify disability and plan treatment for these disabilities due to pathology in musculoskeletal system, as well as evaluate and document them.

Course Outcome

- Demonstrate skill in providing the treatment for the disabilities identified according to the clinical picture and rehabilitation need of the patient.

Course Outline

Module-I

- Introduction: Brief review of the following surgical condition and various physiotherapeutic modalities, aims, means and technique of physiotherapy should be taught.
- Traumatology: General physiotherapeutic approach for the following conditions:
- Fracture and dislocations: Classification and type of displacement, method of immobilization, healing of fractures and factors affecting union, un-union, delayed union etc common site factors.
- Specific fractures and their complete physiotherapeutic management.
- Upper limb, Clavical, humerus, ulna, radius, crush injuries of hand.
- Lower limb, fracture neck of femur, shaft of femur patella tibia fibula, pott's fracture, fracture of tarsal and metatarsals.
- Spine, fracture and dislocations of cervical, thoracic and lumbar vertebrae with and without neurological deficits.

Module-II

- Surgical procedures; Pre and post operative management of common corrective procedure like arthroplasty, arthrodesis, osteotomy, tendon transplants, and soft tissue release grafting, including polio residual paralysis and leprosy deformities corrections.
- Injuries: Soft tissue injuries, synovitis, capsulitis volkmann's ischemic contracture etc. tear of semilunar cartilage and cruciate ligaments of knee, meniscectomy, patellectomy, internal derangement of knee.
- Amputation: level of amputation of upper limb and lower limb, stump care, stump bandaging, pre and post prosthetic management including check out of prosthesis, training etc.
- Deformities: Congenital torticollis and cervical rib, CTEV, Pes cavus, Pes planus and other common deformities.
- Acquired- Scoliosis, kyphosis, lordosis, coxa vara, genu valgum, genu varum and recurvatum.

Module-III

- Degenerative and infective conditions: osteoarthritis of major joints, spondylosis, spondylitis, spondylolisthesis, PIVD, Periarthritis of shoulder, Tuberculosis of spine, bone and major joint, perthes disease. Rheumatoid arthritis, Ankylosing spondylitis etc.

- and other miscellaneous orthopaedic conditions treated by physiotherapy.
- Principles of sports physiotherapy – cause of sports injury, prevention of sports injuries, management of acute sports injury, common occurred injuries, Role of Physiotherapist in sports , principle & advanced rehabilitation of the injured athlete.

PRACTICE

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.

Books Recommended:

1. Cash Textbook of Orthopaedics and Rheumatology for Physiotherapists- Downie- Jaypee Brothers.
2. Tidy's Physiotherapy- Thomson et al –Butterworth Heimann
3. Essentials of Orthopaedics and applied physiotherapy – Joshi and kotwal-
4. B.L Churchill Livingstone.
5. Tetraplegia & Paraplegia –Bromley-W.B Saunders.
6. Orthopaedics Physiotherapy- Donatelli & Wooden- W.B Saunders
7. Rheumatological Physiotherapy- David- Mosby
8. Orthopaedic Physiotherapy – Tids well- Mosby
9. Phyiotherapy for Amputee- Engstrom &Van de van- Churchill Livingstone
10. Sports Injuries: Diagnosis and Management – Butterworth Livingstone

DC-28- CUTM1997-PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Physiotherapy in Neurological Conditions	CUTM1997	Theory+ Practice	3-2-0	Fundamental Science

Objective

- Demonstrate an understanding of neurological conditions causing disability and their management.

Course Outcome

- Understand the disability and plan treatment for these disabilities due to pathology in nervous system.
- Demonstrate skill in providing the treatment for the disabilities identified according to the clinical picture and rehabilitation need of the patient.

Course Outline

Module-I

Brief review of the following medical condition and various modalities of physiotherapy, aims means and technique. pre and post operative management and UMN LESIONS

- a) Hemiplegia
- b) Cerebral palsy
- c) Multipul sclerosis
- d) Monoplegia, paraplegia, Tetraplegia
- e) Parkinsions disease
- f) Ataxia
- g) Motor neuron disease
- h) Tabes dorsalis
- i) Acute CNS infection

Module-II

LMN LESION-

- a) Myopathy and muscular dystrophies
- b) Poliomyelities
- c) Leprosy
- d) Sciatica
- e) Peripheral neuropathy
- f) Bracial neuralgia
- g) Peripheral nerve injury.

PRACTICE

Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.

Books recommended:

1. Bran's Disease of the Nervous System- Nalton- ELBS
2. Guide to clinical Neurology – Mohn & Gaectier- Churchill Livingstone
3. Principles of Neurology- Victor- McGraw Hill International edition.
4. Davidson's Principles and practices of medicine –Edware- Churchill Livingstone.

DC-29- CUTM1998- INTERNSHIP

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Internship	CUTM1998	Project	12	Fundamental Science

Internship Thesis Guideline

This Guideline is designed to provide students the knowledge and practice of public health research activity, to enable them to carry out researches and solve research related problems and to help them in writing thesis and defend their work. Upon successful completion of the course, the students shall be able to:

1. Search relevant scientific literature
2. Develop a research proposal
3. Employ appropriate data collection techniques and tools
4. Manage collected data
5. Analyze data with appropriate statistical techniques
6. Write thesis
7. Defend the findings

Proposal Development:

At the ending of 4th year (Eighth Semester), students individually consultation with designated faculties and extensive literature survey will develop research proposal during the initial 6 months period.

Data Collection/ Thesis Writing:

Students will carry out data collection, data management, data analysis, and thesis writing during the remaining period (Six Semester).

The Dissertation should have following format:

1. Title
2. Introduction
3. Materials and Methods
4. Results
5. Discussion
6. Conclusion
7. Recommendation
8. References
9. Appendix

Internship

1. Case record
2. Lab management and ethics
3. Evaluation -Guide(internal)
 - Industries guide(external)
 - University-project report/ Viva

DC-30- CUTM1999- PROJECT

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Internship	CUTM1999	Project	12	Fundamental Science

Project work:

Suggested Project title

1. Why Indian women delay seeking treatment for urinary incontinence: a focus group study?
2. The prevalence of playing-related musculoskeletal disorders to the upper limb in student guitar players.
3. A survey of the current physiotherapy management of people with multiple sclerosis.
4. Evaluating the effect of arm dominance on supraspinatus thickness in college badminton players.
5. A study of the psychological views and strategies used by Indian chartered physiotherapists in rehabilitating injured athletes.
6. An investigation into student physiotherapist's understandings of exercise adherence and their use of motivational strategies to improve exercise adherence in patient groups – a focus group study.
7. A qualitative investigation into how physiotherapists currently review people with Multiple Sclerosis and their opinions of telephone reviews in this population.