

ASSAM WOMEN'S UNIVERSITY

Department of physiotherapy

Bachelor of Physiotherapy

Programme & course outcomes

P Chaudhuri
8/08/2022

Department of Physiotherapy

The department of physiotherapy was founded in 2015 in Assam women university with a vision that students will be enriched with theoretical and clinical knowledge that will help to alleviate physical dysfunctions and promote optimal health and function of the human body at any stage of life in every sphere of the society. The department offers an undergraduate program, Bachelor of Physiotherapy (BPT) that follows the model curriculum of Ministry of Health and Family Welfare, Allied Health Section 2017, which introduces students into several fundamental areas of knowledge and skill in physical diagnosis and rehabilitation. Besides theory, emphasis is laid squarely on practical courses, clinical work, fieldwork, community visits and projects. The department is attached with Jorhat medical college and hospital for clinical posting of the students that allows exposure to various departments like orthopedics, neurosurgery, pediatric, cardio-pulmonary including ICU. Every year the department draws attention from a huge number of applicants from all over Assam. The Department is proud of its alumni who are engaged with various government and non-government organizations serving mankind. It also takes pride in the co-curricular and extra-curricular achievements of the students. At the completion of the course students will be compassionate, competent and Physiotherapists, with skills and techniques necessary for physical diagnosis, prevention and management of various conditions based on current evidence of Physiotherapy practice.

Definitions

‘Academic programme’ means the entire course of study comprising its structure, course details, evaluation, etc.

‘Course’ means a segment of a subject that is part of the Academic Programme.

‘Programme structure’ means a list of courses (Core and foundation) that makes up the BPT Academic programme, specifying the syllabus, credits, hours of teaching, evaluation and examination schemes, minimum number of credits required for successful completion of the programme, etc., prepared in conformity with Ministry of Health and Family Welfare, Allied Health Section 2017.

‘Core course’ means a course that a student admitted to the BPT programme must successfully complete receiving the degree and which cannot be substituted by any other course.

‘Elective course’ means an optional course that is to be selected by a student out of a menu of such courses offered by the Physiotherapy department.

‘Generic Elective’ means an elective course. Students of other UG departments may opt for these courses.

‘Ability Enhancement Course(s)’: Ability enhancement courses are the courses based upon the content that leads to Knowledge Enhancement. These

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courses may be of two kinds: Ability Enhancement Compulsory courses (AECC) and Skill Enhancement Courses (SEC). These are mandatory for all disciplines. It is a Non CGPA course.

‘Skill Enhancement Course(s)’: These courses are designed to provide value-based/or skill bases knowledge and should contain both theory and lab/hands-on/training/field work. The main purpose of these courses is to provide students life-skills in hands on mode so as to increase their employability. It is a Non CGPA course.

‘project’: This course is compulsory for the final semester students for the fulfillment of post Graduation Degree. Students in the final semester would be required to do dissertation.

‘Credit’ means the value assigned to a course indicating the level and quantity of instruction as measured by instructor-student interaction.

‘SGPA’ means Semester Grade Point Average calculated for individual semester.

‘CGPA’ is the Cumulative Grade Points Average calculated for all courses completed by the students at any point in time. CGPA is calculated each year for both the semesters clubbed together.

‘Grand CGPA’ is calculated in the last year of the course by clubbing together the CGPA of four years, i.e., eight semesters.

Programme Objective:

To make our students competent in the field of physiotherapy practice
To inculcate the capability to work independently and in a multidisciplinary team
To equip the students to pursue higher education and research in physiotherapy and other multidisciplinary areas.
To develop a working knowledge of physiotherapy techniques and equipments.
Develop moral and ethical values of physiotherapy practice.

Programme Outcome

At the end of the BPT program the graduate will

- Acquire basic knowledge of all the medical subjects that will provide a strong foundation for their practice of physiotherapy
- Inculcate cognitive, affective and psychomotor skills which is essential as a physiotherapist to examine, evaluate, diagnose, plan, execute and document the

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treatment independently or as a member of the multidisciplinary team.

- Inculcate various skills of patient handling including communication skills, confidence, clinical reasoning, counselling and research
- Able to operate and maintain physiotherapy equipments used in treatment of patient and physiotherapy treatment planning (both electrotherapy and exercise therapy) independently.
- Able to provide patient education about various physiotherapeutic interventions to the patient and caregivers and acquire an attitude to practice the profession with moral and ethical values.

Bachelor of Physiotherapy

BPT or Bachelor of Physiotherapy is an undergraduate academic Course in the field of Medical Science known as Physiotherapy. The duration of Bachelor of Physiotherapy (BPT) programme shall be of four academic years (8 semesters) and six months of Compulsory Internship with a minimum 960 hours to be completed in six months duration leading to degree that equips the student with analytical and handson skills. Each academic year shall comprise of two semester viz. Odd and Even semesters. Odd semesters shall be from July/August to December and Even Semesters shall be from January to May/June. The programme consists of a combination of Core and foundation courses that includes theory, practical and clinical postings .

Credit Distribution of Courses

Sem	Core Course (CC)		Discipline Specific Elective (DSE) (Choose any one)		Open Elective (OE)		Generic Elective (GE) (Choose any one)		Foundation Courses Non CGPA				Total Credit
	Course	Credit	Course	Credit	Course	Credit	Course	Credit	Ability Enhancement (AEC)		Skill Enhancement (SEC)		
1st	CC1	7	--	--	OE1 (N.C.C)	4	GE1	4	AEC1	2	SEC1	2	34
	CC2	7					GE2	4					
	CC3	4											
	CC4	4											
	CC5	4											
2nd	CC1	7	--	--	OE1 (N.C.C)	4	GE1	4	AEC1	2	SEC1	2	31
	CC2	7					GE2	4					
	CC3	4											
	CC4	5											
3rd	CC1	4	DSE1	4	OE1 (N.C.C)	4	GE1	4	AEC1	2	SEC1	2	34
	CC2	4	DSE2	4			GE2	4					
	CC3	4	DSE3	4									
	CC4	5	DSE4	4									
	CC5	5											
4th	CC1	6	DSE1	4	OE1 (N.C.C)	4	GE1	4	AEC1	2	SEC1	2	32
	CC2	4	DSE2	4			GE2	4					
	CC3	6	DSE3	4									
	CC4	4	DSE4	4									

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5th	CC1	5	DSE1	4	--	--	--	--	AEC1	2	SEC1	2	29
	CC2	5	DSE2	4									
	CC3	5	DSE3	4									
	CC4	6	DSE4	4									
	CC5	4											
6th	CC1	7	DSE1	4	--	--	--	--	AEC1	2	SEC1	2	26
	CC2	7	DSE2	4									
	CC3	4	DSE3	4									
	CC4	4	DSE4	4									
7th	CC1	7	--	--	--	--	--	--	AEC1	2	SEC1	2	24
	CC2	4											
	CC3	5											
	CC4	4											
	CC5	4											
8th	CC1	7	--	--	--	--	--	--	AEC1	2	SEC1	2	25
	CC2	6											
	CC3	4											
	CC4	4											
	CC5	4											
Total Credits:												235	

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Course Structure with distribution of Credit

FIRST SEMESTER

Core Course(s)(CC)						
Code	Course	Teaching Scheme			Contact Hours	Credits
		L	T	P		
BPTC1701	Human Anatomy-I	6	-	1	8	7
BPTC1702	Human Physiology-1	6	-	1	8	7
BPTC1403	Biochemistry	3	-	1	5	4
BPTC1404	Sociology	4	-	-	4	4
BPTC1405	Introduction to Healthcare Delivery Systems in India	4	-	-	4	4
Open Elective(OE) Course(s)						
BPTO1406	N.C.C					4
Generic Elective(GE) Courses (Choose any one)						
BPTG1407	Personality Development and Stress Management	4	-	-	4	4
BPTG1408	National Health Programmes	4	-	-	4	4
Ability Enhancement(AE) Course(s)						
BPTA1209	English, Communication and soft skills	2	-	-	2	2
Skill Enhancement(AE) Course(s)						
BPTS1210	Basic Computer and Information Science	1	-	1	3	2
Total:					37	34

SECOND SEMESTER

Core Course(s)(CC)						
Code	Course	Teaching Scheme			Contact Hours	Credits
		L	T	P		
BPTC2701	Human Anatomy-II	6	-	1	8	7
BPTC2702	Human Physiology-II	6	-	1	8	7
BPTC2403	General & clinical Psychology	4	-	-	4	4
BPTC2404	Basic principles of Biomechanics	4	-	1	6	5
Open Elective(OE) Course(s)						
BPTO2406	N.C.C					4
Generic Elective(GE) Course(s)						
BPTG2407	Biomedical Waste Management	4	-	-	4	4
BPTG2408	Health Psychology	4	-	-	4	4
Ability Enhancement(AE) Course(s)						
CO-I	Clinical Observation-I	-	-	2	4	2
Skill Enhancement(AE) Course(s)						
CO-II	Clinical Observation-II	-	-	2	4	2
Total:					42	31

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THIRD SEMESTER

Core Course(s)(CC)						
Code	Course	Teaching Scheme			Contact Hours	Credits
		L	T	P		
BPTC3401	Pathology	4	-	-	4	4
BPTC3402	Microbiology	3	-	1	5	4
BPTC3403	Pharmacology	4	-	-	4	4
BPTC3504	Biomechanics & Kinesiology	4	-	1	6	5
BPTC3505	Foundation of Exercise Therapy and Therapeutic Massage	4	-	1	6	5
Discipline Specific Elective(DSE) Course(s)						
BPTD3406	Hospital Management	4	-	-	4	4
BPTD3407	Applied Physics	3	-	1	5	4
BPTD3408	Yoga	3	-	1	5	4
BPTD3409	Orthosis and Prosthesis	3	-	1	5	4
Open Elective(OE) Course(s)						
BPTO3410	N.C.C					4
Generic Elective(GE) Course(s)						
BPTG3411	Exercise Prescription in Women Health	3	-	1	5	4
BPTG3412	Fitness	4	-	-	4	4
Ability Enhancement(AE) Course(s)						
CP-I	Clinical Postings-I	-	-	2	4	2
Skill Enhancement(AE) Course(s)						
CP-II	Clinical Postings-II	-	-	2	4	2
Total:					45	34

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FOURTH SEMESTER

Core Course(s)(CC)						
Code	Course	Teaching Scheme			Contact Hours	Credits
		L	T	P		
BPTC4801	Therapeutic Exercises & Health Promotion	4	-	2	8	6
BPTC4402	Biophysics	4	-	-	4	4
BPTC4603	Electrotherapy	4	-	2	8	6
BPTC4404	Professional Values & Laws for Physiotherapists	4	-	-	4	4
Discipline Specific Elective(DSE) Course(s)						
BPTD4405	Electrodiagnosis	3	-	1	5	4
BPTD4406	Splinting and Bracing	3	-	1	5	4
BPTD4407	Physiotherapeutic Evaluation	3	-	1	5	4
BPTD4408	Manual Therapy	3	-	1	5	4
Open Elective(OE) Course(s)						
BPTO4409	N.C.C					4
Generic Elective(GE) Course(s)						
BPTG3410	First Aid and Emergency Management	3	-	1	5	4
BPTG3411	Physiotherapy in Geriatric Care	3	-	1	5	4
Ability Enhancement(AE) Course(s)						
CP-III	Clinical Postings-III	-	-	2	4	2
Skill Enhancement(AE) Course(s)						
CP-IV	Clinical Postings-IV	-	-	2	4	2
Total:					46	32

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FIFTH SEMESTER

Core Course(s)(CC)						
Code	Course	Teaching Scheme			Contact Hours	Credits
		L	T	P		
BPTC5501	Clinical Orthopaedics & Traumatology	5	-	-	5	5
BPTC5502	General Surgery and Obstetrics & Gynaecology	5	-	-	5	5
BPTC5503	General Medicine, Paediatrics & Psychiatry	5	-	-	5	5
BPTC5604	Physiotherapy in Sports Medicine	4	-	2	8	6
BPTC5405	Introduction to Quality and Patient safety	4	-	-	4	4
Discipline Specific Elective(DSE) Course(s)						
BPTD5406	Exercise Physiology	3	-	1	5	4
BPTD5407	Sports Psychology	4	-	-	4	4
BPTD5408	Occupational Health	3	-	1	5	4
BPTD54099	Bronchial Hygiene Techniques	3	-	1	5	4
Ability Enhancement(AE) Course(s)						
CP-V	Clinical Postings-V	-	-	2	4	2
Skill Enhancement(AE) Course(s)						
CP-VI	Clinical Postings-VI	-	-	2	4	2
Total:					40	29

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SIXTH SEMESTER

Core Course(s)(CC)						
Code	Course	Teaching Scheme			Contact Hours	Credits
		L	T	P		
BPTC6701	Physiotherapy in Orthopaedics and Sports	5	-	2	9	7
BPTC6702	Physiotherapy in General Medicine and General Surgery	5	-	2	9	7
BPTC6403	Clinical Neurology and Neurosurgery	4	-	-	4	4
BPTC6404	Diagnostic Imaging & Record Keeping	4	-	-	4	4
Discipline Specific Elective(DSE) Course(s)						
BPTD6405	Ergonomics	4	-	-	4	4
BPTD6406	Hand & Foot Rehabilitation	3	-	1	5	4
BPTD6407	Neurophysiological Techniques	3	-	1	5	4
BPTD6408	Physiotherapy in ICU	3	-	1	5	4
Ability Enhancement(AE) Course(s)						
CP-VII	Clinical Postings-VII	-	-	2	4	2
Skill Enhancement(AE) Course(s)						
CP-VIII	Clinical Postings-VIII	-	-	2	4	2
Total:					39	26

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SEVENTH SEMESTER

Core Course(s)(CC)						
Code	Course	Teaching Scheme			Contact Hours	Credits
		L	T	P		
BPTC7701	Physiotherapy in Neurology and Psychosomatic Disorder	5	-	2	9	7
BPTC7402	Biostatistics and Research Methodology	4	-	-	4	4
BPTC7503	Clinical Cardiovascular and Pulmonary Systems	5	-	-	5	5
BPTC7404	Community Medicine	4	-	-	4	4
BPTC7405	Evaluation Methods & Outcome measures	3	-	1	5	4
Ability Enhancement(AE) Course(s)						
CP-IX	Clinical Postings-IX	-	-	2	4	2
Skill Enhancement(AE) Course(s)						
CP-X	Clinical Postings-X	-	-	2	4	2
Total:					35	24

EIGHT SEMESTER

Core Course(s)(CC)						
Code	Course	Teaching Scheme			Contact Hours	Credits
		L	T	P		
BPTC8701	Physiotherapy in cardiovascular, Pulmonary and intensive Care	5	-	2	9	7
BPTC8602	Community Physiotherapy	4	-	2	8	6
BPTC8403	Principles of Management & Teaching Skills	4	-	-	4	4
BPTC8404	Evidence based Physiotherapy & Case Presentation	2	-	2	6	4
BPTC8405	Research Project	3	-	1	5	4
Ability Enhancement(AE) Course(s)						
CP-XI	Clinical Postings-XI	-	-	2	4	2
Skill Enhancement(AE) Course(s)						
CP-XII	Clinical Postings-XII	-	-	2	4	2
Total:					40	25

NINTH SEMESTER

Sl.No.	Title of the Course	Hours	
		Theory	Practical
1.	Internship		960(minimum)Hrs
Total	960 Hrs		

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SYLLABUS OF COURSES UNDER CBCS PROGRAM

FIRST SEMESTER

HUMAN ANATOMY I

Course Objective - It is designed to provide students with the working knowledge of the structure of the human body which is essential foundation for their clinical studies.

Course Outcome:

CO1: The students will have a broad knowledge about the working of Thorax including cardiovascular & Respiratory system with especial emphasis on structure and functions

CO2: The students will have a better understanding of regional anatomy of Abdomen including organs like Spleen, Pancreas, Kidney Pelvis urinary bladder, intestines, gall bladder and Endocrine Glands

Total Credits: 7 (L+T+P= 6+0+1) Total Contact hrs: 128 hrs

MODULE NO.	MODULE	CONTACT HOURS
1.	Histology : General Histology, study of the basic tissues of the body Microscope, Cell, Epithelium, Connective Tissue, Cartilage, Bone, Muscular tissue, Nerve Tissue – TS & LS, Circulatory system – large sized artery, medium sized artery, large sized vein, lymphoid tissue, Skin and its appendages.	16(L)+4(P)
2.	Embryology: Ovum, Spermatozoa, fertilization and formation of the Germlayers and their derivations. Development of skin, Fascia, blood vessels, lymphatic, Development of bones, axial and appendicular skeleton and muscles, Neural tube, brain vessels and spinal cord, Development of brain and brain stem structures	20(L)+2(P)

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3.	<p>Regional Anatomy:</p> <p>Thorax: Cardio – Vascular System Mediastinum: Divisions and contents Pericardium: Thoracic Wall: position, shape and parts of the heart; conducting System; blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body – region wise. Respiratory system - Outline of respiratory passages: Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on bronchopulmonary segments. Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm. Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action. Abdomen: Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum. Large blood vessels of the gut. Location, size, shape, features, blood supply, nerve supply and functions of the following: stomach, liver, spleen, pancreas, kidney, urinary bladder, intestines, gall bladder. Pelvis: Position, shape, size, features, blood supply and nerve supply of the male and female reproductive system. Endocrine glands: Position, shape, size, function, blood supply and nerve supply of the following glands: Hypothalamus and pituitary gland, thyroid glands, parathyroid glands, Adrenal glands, pancreatic islets, ovaries and testes, pineal glands, thymus.</p>	60(L) + 26(P)
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Suggested Readings:

SNELL [Richard S], Clinical Anatomy for Medical students: Ed. 5. Little Brown and Company Boston. 1995, p898,
 B.D Chaurasia's Human Anatomy – Regional and Applied; Volume I, Volume II and Volume III.
 MOORIE [Kieth L], Clinically Oriented Anatomy. Ed.3. Williams and Wilkins, Baltimore,

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1992, p917,

DATTA [A.K], Essentials of human Anatomy: Thorax and Abdomen Ed 2. Vol. I CurrentBook International, Culcutta 1994, p433,

SINGH [Inderbir], Text book of Anatomy with colour atlas: Introduction, Osteology, UpperExtremity, Lower Extremity. Vol I. P Brothers, New Delhi 1996,

SINGH [Inderbir], Text book of Anatomy with colour Atlas: Thorax and Abdomen. Vol II. JP

PRACTICALS

ROMANES [G J], Cunningham manual of practical anatomy: upper and lower limb ed 15Vol 1 Oxford Medical Publication, Oxford 1996, P263

ROMANES [G J], Cunningham manual of practical anatomy: Thorax and abdomen ed15 Vol II Oxford Medical Publication, Oxford 1996, P298,

ROMANES [G J], Cunningham manual of practical anatomy: Head and Neck andBrain ed 15 Vol II Oxford Medical Publication, Oxford 1996, P346,

HUMAN PHYSIOLOGY – I

Course Objective - It is designed to provide students with the working knowledge of the structure of the human body. The course is designed to give the student an in-depth knowledge of fundamental reactions of living organisms, particularly in the human body.

Course Outcome:

CO1: The students will be able to understand the Cell morphology and function

CO2: The students will be able to understand the normal composition of Blood, its functions and Blood grouping and transfusion

CO3: The students will be able to understand the structure and functions of nerve structure

CO4: The students will have a better understanding of Cardiovascular system and Respiratory system, which will help them in their clinical knowledge

CO5: The students will have able to understand the function of Digestive and Endocrine system

Total Credits: 7 (L+T+P= 6+0+1) Total Contact hrs: 128 hrs

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Module:

MODULE NO.	MODULE	Contact Hrs
1.	General Physiology: Cell: Morphology. Organelles: their structure and functions Transport Mechanisms across the cell membrane Body fluids: Distribution, composition	8 [8(L)+0(P)]
2.	Blood: Introduction: Composition and functions of blood. Plasma: Composition, formation, functions. Plasma proteins. RBC: count and its variations. Erythropoiesis- stages, factorsregulating. Reticulo-endothelial system (in brief) Haemoglobin –structure, function and derivatives Anemia (in detail), types of Jaundice. Blood indices, PCV, ESR. WBC: Classification. Morphology, functions, count, its variation of each. Immunity Platelets: Morphology, functions, count, its variations. Hemostatic mechanisms: Blood coagulation–factors, mechanisms. Their disorders. Anticoagulants. Blood Groups: Landsteiner’s law. Types, significance, determination, Erythroblastosis foetalis. Blood Transfusion: Cross matching. Indications and complications. Lymph: Composition, formation, circulation and functions	16 [16(L)+0(P)]
3.	Nerve Muscle Physiology: Introduction: Resting membrane potential. Action potential – ionic basis and properties. Nerve: Structure and functions of neurons. Classification, Properties and impulse transmission of nerve fibers. Nerveinjury – degeneration and regeneration. Neuroglia: Types and functions. Muscle: Classification. Skeletal muscle: Structure. Neuromuscular junction: Structure. Neuromuscular transmission, myasthenia gravis. Excitation- Contractioncoupling. Rigomortis.	10 [10(L)+0(P)]

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4.	<p>Cardiovascular System: Introduction: Physiological anatomy and nerve supply of the heart and blood vessels. Organisation of CVS. Cardiac muscles: Structure. Ionic basis of action potential and pacemaker potential. Properties. Conducting system: Components. Impulse conduction Cardiac Cycle: Definition. Phases of cardiac cycle. Pressure and volume curves. Heart sounds – causes, character. ECG: Definition. Different types of leads. Waves and their causes. P-R interval. Heart block. Cardiac Output: Definition. Normal value. Determinants. Stroke volume and its regulation. Heart rate and its regulation. Their variations. Arterial Blood Pressure: Definition. Normal values and its variations. Determinants. Peripheral resistance. Regulation of BP. Arterial pulse. Shock – Definition. Classification – causes and features. Regional Circulation: Coronary, Cerebral and Cutaneous circulation. Cardiovascular changes during exercise.</p>	16 [16(L)+0(P)]
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5.	<p>Respiratory System :</p> <p>Introduction: Physiological anatomy – Pleura, tracheo-bronchial tree, alveolus, respiratory membrane and their nerve supply. Functions of respiratory system. Respiratory muscles.</p> <p>Mechanics of breathing: Intrapleural and Intrapulmonary pressure changes during respiration. Chest expansion. Lung compliance: Normal value, pressure-volume curve, factors affecting compliance and its variations. Surfactant –</p> <p>Composition, production, functions. RDS</p> <p>Spirometry: Lung volumes and capacities. Timed vital capacity and its clinical significance. Maximum ventilation volume. Respiratory minute volume.</p> <p>Dead Space: Types and their definition.</p> <p>Pulmonary Circulation. Ventilation-perfusion ratio and its importance.</p> <p>Transport of respiratory gases: Diffusion across the respiratory membrane. Oxygen transport – Different forms, oxygen- haemoglobin dissociation curve. Factors affecting it. P50, Haldane and Bohr effect.</p> <p>Carbon dioxide transport: Different forms, chloride shift.</p> <p>Regulation of Respiration: Neural Regulation. Hering-breuer's reflex. Voluntary control. Chemical Regulation.</p> <p>Hypoxia: Effects of hypoxia. Types of hypoxia. Hyperbaric oxygen therapy. Acclimatization Hypercapnoea. Asphyxia. Cyanosis – types and features. Dysbarism.</p> <p>Disorders of Respiration: Dyspnoea. Orthopnoea. Hyperpnoea, hyperventilation, apnoea, tachypnoea. periodic breathing – types</p> <p>Artificial respiration.</p> <p>Respiratory changes during exercise.</p>	16 [16(L)+0(P)]
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6.	<p>Digestive System :</p> <p>Introduction: Physiological anatomy and nerve supply of alimentary canal. Enteric nervous system.</p> <p>Salivary Secretion: Saliva: Composition. Functions. Regulation.</p> <p>Mastication (in brief)</p> <p>Swallowing: Definition. Different stages. Function.</p> <p>Stomach: Functions. Gastric juice: Gland, composition, function, regulation. Gastrin: Production, function and regulation. Peptic ulcer.</p> <p>Gastric motility. Gastric emptying. Vomiting.</p> <p>Pancreatic Secretion: Composition, production, function. Regulation.</p> <p>Liver: Functions of liver. Bile secretion: Composition, functions and regulation. Gall bladder: Functions.</p> <p>Intestine: Succus entericus: Composition, function and regulation of secretion. Intestinal motility and its function and regulation.</p> <p>Mechanism of Defecation.</p>	15 [15(L)+0(P)]
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7.	<p>Endocrine System :</p> <p>Introduction: Major endocrine glands. Hormone: classification, mechanism of action. Functions of hormones</p> <p>Pituitary Gland: Anterior Pituitary and Posterior Pituitary hormones: Secretory cells, action on target cells, regulation of secretion of each hormone. Disorders: Gigantism, Acromegaly, Dwarfism, Diabetes insipidus. Physiology of growth and development: hormonal and other influences.</p> <p>Pituitary-Hypothalamic Relationship.</p> <p>Thyroid Gland: Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxedema, Cretinism, Grave's disease.</p> <p>Parathyroid hormones: secretory cell, action, regulation of secretion. Disorders: Hypoparathyroidism. Hyperthyroidism. Calcium metabolism and its regulation.</p> <p>Adrenal Gland: Adrenal Cortex: Secretory cells, synthesis, action, regulation of secretion of Aldosterone, Cortisol, and Androgens. Disorders: Addison's disease, Cushing's syndrome, Conn's syndrome, Adrenogenital syndrome.</p> <p>Adrenal Medulla: Secretory cells, action, regulation of secretion of adrenaline and noradrenaline. Disorders: Pheochromocytoma.</p> <p>Endocrine Pancreas: Secretory cells, action, regulation of secretion of insulin and glucagon. Glucose metabolism and its regulation. Disorder: Diabetes mellitus.</p> <p>Calcitriol, Thymus and Pineal gland (very brief). Local Hormones. (Briefly</p>	15 [15(L)+0(P)]
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Practicals :

Practical classes include hematology experiments, clinical examinations, and recommended demonstrations.
1P[0(L)+32(P)]

Haematology: To be done by the students
Study of Microscope and its uses
Determination of RBC count
Determination of WBC count
Differential leukocyte count
Estimation of hemoglobin
Calculation of blood indices
Determination of blood groups
Determination of bleeding time
Determination of clotting time

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Demonstrations only:

Determination of ESR Determination of PCV Clinical Examination:

Examination of Radial pulse Recording of blood pressure Examination of CV system Examination of Sensory system

Examination of Motor System Examination of reflexes Examination of cranial nerves

Suggested Readings :

Text book of medical physiology – Guyton Arthur

Concise medical physiology – Chaudhuri Sujit K.

Human Physiology – Chatterjee C.C.

Text book of practical Physiology – Ranade.

Text of Physiology – A.K.Jain.

Basics of Medical physiology- Venkatesh D &Sudhakar H H

Manipal Manual of Physiology – Prof. C N Chandrashekar

Review of Medical Physiology – Ganong William F.

Physiological basis of Medical practice – Best & Taylor

BIOCHEMISTRY

Course Objective - It is designed to provide students with the working knowledge of the biochemistry of the human body which is essential foundation for their clinical studies.

Course Outcome:

CO1: The students will be have a clear idea of working of Enzymes, Nutrition Carbohydrate Chemistry: Lipid Chemistry, Amino-acid Chemistry, Nucleotide and Nucleic acid Chemistry

CO2: The students will have a grip on Carbohydrate Chemistry, Lipid Chemistry, Amino-acid Chemistry, Nucleotide and Nucleic acid Chemistry.

CO3: The students will have a better understanding of Human body function through Electrolyte balance Hormone Action and Clinical Biochemistry

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Total Credits: 4 (L+T+P= 3+0+1) Total Contact hrs: 80 hrs

MODULE NO.	MODULE	Contact Hrs
1.	<p>Nutrition :</p> <p>Introduction, Importance of nutrition Calorific values, Respiratory quotient – Definition, and its significance Energy requirement of a person - Basal metabolic rate: Definition, Normal values, factor affecting BMR Special dynamic action offood.</p> <p>Physical activities - Energy expenditure for various activities.</p> <p>Calculation of energy requirement of a person</p> <p>Balanced diet</p> <p>Recommended dietary allowances</p> <p>Role of carbohydrates in diet: Digestible carbohydrates and dietary fibers</p> <p>Role of lipids in diet</p> <p>Role of proteins in diet: Quality of proteins - Biological value, netprotein utilization, Nutritional aspects of proteins- essential and non- essential amino acids. Nitrogen balance</p> <p>Nutritional disorders.</p>	10T +4P

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2.	Carbohydrate Chemistry: Definition, general classification with examples, Glycosidic bond Structures, composition, sources, properties and functions of Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides. Glycosaminoglycan (mucopolysaccharides)	5T + 2P
3.	Lipid Chemistry: Definition, general classification Definition, classification, properties and functions of Fatty acids, Triacylglycerol, Phospholipids, Cholesterol Essential fatty acids and their importance Lipoproteins: Definition, classification, properties, Sources and function Ketone bodies	2T + 2P
4.	Amino-acid Chemistry: Amino acid chemistry: Definition, Classification, Peptide bonds Peptides: Definition, Biologically important peptides Protein chemistry: Definition, Classification, Functions of proteins.	2T + 2P
5.	Enzymes: Definition, Active site, Cofactor (Coenzyme, Activator), Proenzyme. Classification with examples, Factors effecting enzyme activity, Enzyme inhibition and significance, Isoenzymes, Diagnostic enzymology (clinical significance of enzymes)	3T
6.	Nucleotide and Nucleic acid Chemistry: Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in body. Nucleic acid (DNA and RNA) chemistry: Difference between DNA and RNA, Structure of DNA (Watson and Crick model), Functions of DNA. Structure and functions of tRNA, rRNA, mRNA.	3T + 4P
7.	Digestion and Absorption : General characteristics of digestion and absorption, Digestion and absorption of carbohydrates, proteins and lipids. Disorders of digestion and absorption – Lactose intolerance.	3T + 2P
8.	Carbohydrate Metabolism : Introduction, Glycolysis – Aerobic, Anaerobic Citric acid cycle, Substrate level phosphorylation. Glycogen metabolism – Glycogenesis, Glycogenolysis, Metabolic disorders glycogen, Gluconeogenesis, Cori cycle Hormonal regulation of glucose, Glycosuria, Diabetes mellitus.	3T + 4P
9.	Lipid Metabolism: Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids - oxidation of fatty acids	4T + 4P

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	<p>Lipogenesis - Denovo synthesis of fatty acids, chain elongation, desaturation, triacylglycerol synthesis, fat metabolism in adose tissues</p> <p>Ketone body metabolism: Ketone body formation (ketogenesis), utilization (ketolysis), ketosis, Rothera's test.</p> <p>Cholesterol metabolism: synthesis, degradation, cholesteroltransport</p> <p>Hypercholesterolemia and its effects (atherosclerosis and coronary heart diseases) Hypocholesterolemic agents, Common hyperlipoproteinemia, Fatty liver</p>	
10.	<p>Amino acid and Protein Metabolism :</p> <p>Catabolism of amino acids - Introduction, transamination, deamination, Fate of ammonia, transport of ammonia, Ureacycle</p> <p>Specialized products formed from amino acids - from glycine, arginine, methionine, phenylalanine and tyrosine.</p>	2T + 2P
11.	<p>Vitamins :</p> <p>Definition, classification according to solubility.</p> <p>Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity</p>	1T
12.	<p>Mineral Metabolism:</p> <p>Definition, Sources, RDA, Digestion, absorption, transport, excretion, functions, disorder of Individual minerals - Calcium, phosphate, iron, Magnesium, fluoride, selenium, molybdenum, copper. Phosphate, calcium and iron in detail.</p>	1T
13.	<p>Cell Biology:</p> <p>Introduction, Cell structure, Cell membrane structure and function, various types of absorption. Intracellular organelles and their functions, briefly on cytoskeleton.</p>	1T
14.	<p>Muscle Contraction:</p> <p>Contractile elements in muscle, briefly on the process of muscle contraction, Energy for muscle contraction.</p>	1T
15.	<p>Biochemistry of Connective tissue:</p> <p>Introduction, various connective tissue proteins: Collagen, elastin - Structure and associated disorders. Glycoproteins, Proteoglycans.</p>	1T
16.	<p>Hormone Action:</p> <p>Definition, classification, Mechanism of hormone action. Receptors, signal transduction, second messengers and cellfunction.</p>	1T
17.	<p>Acid-Base balance:</p> <p>Acids, bases and buffers, pH. Buffer systems of the body, bicarbonate buffer system Role of lungs and kidneys in acidbase balance, Acid base imbalance.</p>	1T

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18.	Water balance: Water distribution in the body, Body water, water turnover, Regulation of water balance: role of ADH and thirst centre.	1T + 2P
19.	Electrolyte balance: Osmolarity. Distribution of electrolytes. Electrolyte balance: Role of aldosterone, rennin angiotensin system and ANF.	1T + 2P
20.	Clinical Biochemistry: Normal levels of blood and urine constituents, Relevance of blood and urine levels of Glucose, Urea, Uric acid, Creatinine, Calcium, Phosphates, pH and Bicarbonate. Liver function tests, Renal function tests.	2T + 2P

Suggested Readings

Concise Medical Biochemistry – Sucheta Dandekar

Textbook of Biochemistry for Physiotherapy Students – Prasad R Manjeshwar, 5th edition, 2019

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Biochemistry for physiotherapy And Allied Health Sciences Students – Beena v Shetty, nandiniM Vinitha Ramanath Pai

SOCIOLOGY

Course Objective: Sociology will introduce student to the basic sociology concepts, principles and social process, social institutions in relation to the individual, family and community and the various social factors affecting the family in rural and urban communities in India will be studied.

Course Outcome:

CO1: The students will have a better knowledge about society and its components

CO2: The students will be able to understand the different social groups and communities. CO3: The student will be able to understand the role of social worker

Total Credits: 4 (L+T+P= 3+0+0) Total Contact hrs: 64 hrs

MODULE NO.	MODULE	Contact Hrs

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1.	<p>Introduction: Meaning- Definition and scope of sociology Its relation to Anthropology, Psychology, Social Psychology. Methods of Sociological investigations- Case study, social survey, questionnaire, Interview and opinion poll methods. Importance of its study with special reference to Health Care Professionals.</p>	6
2.	<p>Social Factors in Health and disease situations: Meaning of social factors Role of social factors in health and illness</p>	6
3.	<p>Socialization: Meaning and nature of socialization. Primary, Secondary and Anticipatory socialization. Agencies of socialization.</p>	6
4.	<p>Social Groups: Concepts of social groups, influence of formal and informal groups on health and sickness. The role of primary groups and secondary groups in the hospital and rehabilitation setup.</p>	6
5.	<p>Family: The family, meaning and definitions. Functions of types of family Changing family patterns Influence of family on the individual's health, family and nutrition, the effects of sickness in the family and psychosomatic disease and their importance to physiotherapy.</p>	6
6.	<p>Community: Rural community: Meaning and features –Health hazards of ruralities, health hazards to tribal community. Urban community: Meaning and features- Health hazards of urbanities.</p>	6
7.	<p>Culture and Health: Concept of Health Concept of Culture Culture and Health Culture and Health Disorders</p>	6
8.	<p>Social change: Meaning of social changes. Factors of social changes. Human adaptation and social change Social change and stress. Social change and deviance. Social change and health programme The role of social planning in the improvement of health and rehabilitation.</p>	6

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9.	Social Problems of disabled: Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems. Population explosion Poverty and unemployment Beggary Juvenile delinquency Prostitution Alcoholism Problems of women in employment Geriatric problems Problems of underprivileged.	6
10.	Social Security: Social security and social legislation in relation to the disabled.	5
11.	Social worker: Meaning of Social Work The role of a Medical Social Worker	5

Suggested Readings

Textbook of Sociology for Physiotherapy students – KP neeraja Sociology for Physiotherapists – Purnima Khanna
ATBS Publishers
Handbook of Medical Sociology for Nursing, Physiotherapy and paramedical Students, Jaypee Publishers

INTRODUCTION TO HEALTHCARE DELIVERY SYSTEMS IN INDIA

Course Objective::The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world.

Course Outcome:

CO1: The students will be able to understand the Healthcare system in India

CO2: The students will have a better understanding of Health Programmes under National Health Mission

CO3: The students will have a broad knowledge of Ayush system of Medicine

Total Credits: 4 (L+T+P= 3+0+0)

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Total Contact hrs: 64 hrs

MODULENO.	MODULE	Contact Hrs
1.	Introduction to healthcare delivery system: Healthcare delivery system in India at primary, secondary and tertiary care Community participation in healthcare delivery system Health system in developed countries. Private Sector National Health Mission National Health Policy Issues in Health Care Delivery System in India	12
2.	National Health Programme: Background objectives, action plan, targets, operations, achievements and constraints in various National Health Programme.	10
3.	Introduction to AYUSH system of medicine: Introduction to Ayurveda.	10
	Yoga and Naturopathy Unani Siddha Homeopathy Need for integration of various system of medicine	
4.	Health scenario of India- past, present and future	5
5.	Demography & Vital Statistics: Demography – its concept Vital events of life & its impact on demography Significance and recording of vital statistics Census & its impact on health policy	10
6.	Epidemiology: Principles of Epidemiology Natural History of disease Methods of Epidemiological studies Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.	19

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Suggested Readings:

National Health Mission – Jaypee publishers

Health policies Programmes in India – Dk Taneja's, 15th edition Bratati Banerjee, jaypee Publishers

BASIC COMPUTER AND INFORMATION SCIENCE

Course Objective: The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation.

Course Outcome:

CO1: The students will be able to operate a computer with basic knowledge of MS Office including Word, Power point and Excel, which will help them in making their presentations.

CO2: The students will be able to understand and imply knowledge of Networking

Total Credits: 2 (L+T+P= 1+0+1) Total Contact hrs: 48hrs

MODULENO.	MODULE	Contact Hrs
	Introduction to computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.	1L + 3P
2.	Input output devices: Input devices(keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems).	1L + 2P
3.	Processor and memory: The Central Processing Unit (CPU), main memory.	1L

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4.	Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.	1L + 1P
5.	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.).	1 L + 2P
6.	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.	2L + 6 P
7.	Introduction to Excel: Introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.	2L + 6P
8.	Introduction to power-point: Introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.	3L + 6 P
9.	Introduction of Operating System: Introduction, operating system concepts, types of operating system.	2L + 1P
10.	Computer networks: Introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.	2L + 2P
11.	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. Application of Computers in clinical settings	2L + 2P

Practical: Practical on fundamentals of computers -

Learning to use MS office: MS word, MS PowerPoint, MS Excel. To install different software.

Data entry efficiency

Suggested Readings

Computer Fundamentals – concepts , Systems & Applications – Pradeep K Sinha, Priti Sinha Basic Computer Course made simple , 3rd Revised Edition, BPB publications

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ENGLISH, COMMUNICATION & SOFT SKILLS

Course Objective: The course provides basic knowledge of language skills, basic concepts of communications, types of communications and the skills to communicate with patients

Course Outcome:

CO1: The students will have good communication skills

CO2: The students will have communication skills with different kinds of patients

Total Credits: 2 (L+T+P= 2+0+0) Total Contact hrs: 32 hrs

MODULE NO.	MODULE	Contact Hrs
1.	Basic Language Skills: Grammar and Usage.	3
2.	Business Communication Skills. With focus on speaking - Conversations, discussions, dialogues, short presentations, pronunciation.	3
3.	Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization.	3
4.	Basic concepts & principles of good communication	3
5.	Special characteristics of health communication	3
6.	Types & process of communication – verbal, non-verbal and written communication. Upward, downward and lateral communication.	3
7.	Therapeutic communication: empathy versus sympathy.	3
8.	Communication methods for teaching and learning.	3
9.	Communication methods for patient education.	3
10.	Barriers of communication & how to overcome.	5

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PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT

Course Objectives :

To give a better understanding about yourself and those around you. To understand the concept of personality and its theories. Factors influencing personality development; nature vs nurture. Understanding the relationship between personality, stress and coping Coping with health stress

Importance of soft skills in personality Various aspects of soft skills

Course Outcome : By successfully completing this course, students will be able to:

CO 1: Describe how a personality develops and stages of personality development CO 2: Personality and stress.

CO 3: Health stress, coping and relaxation. CO 4: Soft skills and personality

Credit Distribution: Total Credits: 4 (L+T+P= 4+0+0) Total Contact hrs: 64 hrs

MODULE NO	Module	Contact hours
1	Introduction to Personality Development, Developing Personality,	4

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	Stages of Development, Types of personality, Theories of personality	
2	Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.	4
3	Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.	4
4	Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality	4
5	Major lifestyle diseases: e diseases I: Coronary Heart Disease (CHD):Role of stress and personality in CHD other psychosocial risk factor modification of risk factors management of Cardiovascular diseases Hypertension: causes of hypertension psychological factors related to hypertension management of hypertension Stroke: Risk factors for stroke stroke	12
6	Major lifestyle diseases II: Diabetes: types of diabetes lifestyle changes as a cause for diabetes stress management and diabetes controll	12
7	Cancer: psychological factors related to cancer cancer related health behaviour - stress, coping and cancer psychological intervention	12
8	- Management of lifestyle diseases: effects of chronic illness quality of life emotional responses coping mechanisms pain management dealing with terminally ill patients lifestyle modification, prevention and health promotion	12

Suggested Readings:

Hurlock (1976). Personality development. Tata McGraw Hill.

Baron R A, Psychology 5th edition, Pearsons publication.

Abraham A, General Psychology, Tata Mc Graw hill Education private limited

Behavioural medicine A guide for clinical practice, 3rd edition, Mitchell D. Feldman & John F. Christensen, McGraw Hill, 22

NATIONAL HEALTH PROGRAMMES

Course description: This course involves a description of the various National Health Programmes and schemes that has been running in the country.

Course objectives: The objective of this course is to educate the student with the various National Health Programmes and schemes that are functional and offered by the healthcare delivery system in India.

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Course Outcomes: On completion of this subject, the students will be able to attain the knowledge of the background objectives, action plan, targets, operations, achievements and constraints in various National Health Programmes.
 Total Credits: 4 (L+T+P= 4+0+0) Total Contact hrs: 64 hrs Detailed Syllabus:

MOD ULE NO.	MODULE	Contact Hrs
1.	National Health Programmes:	4
2.	National Health Mission: Aims, goals, plan of action Programmes integrated Roles & responsibilities of ASHA	4
3.	National Health Policy 2015	4
4.	Vector borne disease control programme	8
5.	National leprosy eradication programme	4
6.	National tuberculosis programme	4
7.	National AIDS control programme	4
8.	National programme for control of blindness	4
9.	Iodine deficiency disorders (IDD) programme	4
10.	Universal Immunisation programme	4
11.	Reproductive and child health programme	4
12.	National cancer control programme	4

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13.	National mental health programme	4
14.	National diabetes control programme	4
15.	National family welfare programme	4

SECOND SEMESTER

HUMAN ANATOMY II

Course Objective – Studies are concerned with the topographical and functional anatomy of the limbs and thorax. Particular attention is paid to the muscles, bones and joints of the regions. The head and neck and central nervous system (CNS) are studied with particular reference to topics of importance to physiotherapists. The study of the CNS includes detailed consideration of the control of motor function.

Course Outcome:

CO1: The students will have a better understanding of the anatomy of Upper and Lower limbs
CO2: The students will have a good clinical knowledge of Head, Neck and Neuroanatomy.

Total Credits: 7 (L+T+P= 6+0+1)

Total Contact hrs: 128 hrs

Module:

Module No.	Module	Contact Hrs
1.	Musculo Skeletal Anatomy - (All the topics to be taught in detail) Anatomical positions of body, axes, planes, common anatomical terminologies (Groove, tuberosity, trochanters etc) Connective tissue classification. Bones- Composition & functions, classification and types according to morphology and development. Joints-definition-classification, structure of fibrous, cartilaginous joints, blood supply and nerve supply of joints. Muscles – origin, insertion, nerve supply and actions.	6L
2.	Upper Extremity:	24L+ 14 P

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	<p>Osteology: Clavicles, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges.</p> <p>Soft parts: Breast, pectoral region, axilla, front of arm, back of arm, cubital fossa, front of fore arm, back of fore arm, palm, dorsum of hand, muscles, nerves, blood vessels and lymphatic drainage of upper extremity.</p> <p>Joints: Shoulder girdle, shoulder joint, elbow joints, radio ulnar joint, wrist joint and joints of the hand.</p> <p>Arches of hand, skin of the palm and dorsum of hand</p>	
3.	<p>Lower Extremity:</p> <p>Osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metatarsals and phalanges.</p> <p>Soft parts: Gluteal region, front and back of the thigh (Femoral triangle, femoral canal and inguinal canal), medial side of the thigh (Adductor canal), lateral side of the thigh, popliteal fossa, anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of lower limb, venous drainage of the lower limb, arterial supply of the lower limb, arches of foot, skin of foot.</p> <p>Joints: Hip Joint, Knee joint, Ankle joint, joints of the foot.</p>	13 L + 14 P

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4.	<p>Trunk & Pelvis:</p> <p>Osteology: Cervical, thoracic, lumbar, sacral and coccygealvertebrae and ribs.</p> <p>Soft tissue: Pre and Para vertebral muscles, intercostals muscles, anterior abdominal wall muscles, Inter-vertebral disc.</p> <p>Pelvic girdle and muscles of the pelvic floor.</p>	10 (L)+ 6P
5.	<p>Head and Neck:</p> <p>Osteology: Mandible and bones of the skull.</p> <p>Soft parts: Muscles of the face and neck and their nerve and blood supply-extra ocular muscles, triangles of the neck.</p> <p>Gross anatomy of eyeball, nose, ears and tongue.</p>	10 L + 10 P
6.	<p>Neuro Anatomy - Organization of Central Nervous system - Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital system.</p> <p>Cranial nerves</p> <p>Peripheral nervous systemPeripheral nerve Neuromuscular junction</p> <p>Sensory end organs Central Nervous System Spinal segments and areas</p> <p>Brain Stem</p> <p>Cerebellum Inferior colliculi Superior ColliculiThalamus Hypothalamus</p> <p>Corpus striatum</p> <p>Cerebral hemisphere Lateral ventricles Blood supply to brainBasal</p> <p>Ganglia</p> <p>The pyramidal system</p> <p>Pons, medulla, extra pyramidal systemsAnatomical integration</p>	15L + 6 P

PRACTICAL - List of Practical / Demonstrations *Upper extremity including surface Anatomy.

Lower extremity including surface Anatomy.

Head & Spinal cord and Neck and Brain including surface Anatomy.Thorax including surface anatomy, abdominal muscles.

Histology-Elementary tissue including surface Anatomy.Embryology-models, charts & X-rays

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Suggested Readings:

SNELL [Richard S], Clinical Anatomy for Medical students: Ed. 5. Little Brown and Company Boston. 1995, p898,
B.D Chaurasia's Human Anatomy – Regional and Applied; Volume I, Volume II and Volume III.
MOORIE [Kieth L], Clinically Oriented Anatomy. Ed.3. Williams and Wilkins, Baltimore, 1992, p917,
DATTA [A.K], Essentials of human Anatomy: Thorax and Abdomen Ed 2. Vol. I Current Book International, Calcutta
1994, p433,
SINGH [Inderbir], Text book of Anatomy with colour atlas: Introduction, Osteology, Upper Extremity, Lower
Extremity. Vol I. P Brothers, New Delhi 1996,
SINGH [Inderbir], Text book of Anatomy with colour Atlas: Thorax and Abdomen. Vol II. JP

PRACTICALS

ROMANES [G J], Cunningham manual of practical anatomy: upper and lower limb ed 15 Vol 1 Oxford Medical
Publication, Oxford 1996, P263
ROMANES [G J], Cunningham manual of practical anatomy: Thorax and abdomen ed 15 Vol II Oxford Medical
Publication, Oxford 1996, P298,
ROMANES [G J], Cunningham manual of practical anatomy: Head and Neck and Brain ed 15 Vol II Oxford Medical
Publication, Oxford 1996, P346,

HUMAN PHYSIOLOGY II

Course Objective: The course is designed to provide students with the working knowledge of the structure of the human body. The course is designed to give the student an in-depth knowledge of fundamental reactions of living organisms, particularly in the human body.

Course Outcome:

CO 1 : The students will be able to understand the function of special senses.

CO 2: The students will be able to understand in details about the nervous system and its function

CO3: The students will be correlate the Exercise and its Human Physiology

Total Credits: 7 (L+T+P= 6+0+2) Total Contact hrs: 128 hrs

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MODULE NO.	MODULE	Contact Hrs
1.	<p>Special Senses –</p> <p>Vision: Introduction: Functional anatomy of eye ball. Functions of cornea, iris, pupil, aqueous humor – glaucoma, lens – cataract, vitreous humor, rods and cones. Photopic vision. Scotopic vision. Visual Pathway and the effects of lesions.</p> <p>Refractive Errors: myopia, hypermetropia, presbyopia and astigmatism.</p> <p>Visual Reflexes: Accommodation, Pupillary and Light. Visual acuity and Visual field. Light adaptation. Dark adaptation. Color vision – color blindness. Nyctalopia.</p> <p>Audition: Physiological anatomy of the ear. Functions of external ear, middle ear and inner ear. Structure of Cochlea and organ of Corti. Auditory pathway. Types of Deafness. Tests for hearing. Audiometry.</p> <p>Taste: Taste buds. Primary tastes. Gustatory pathway. Smell: Olfactory membrane. Olfactory pathway.</p> <p>Vestibular Apparatus: Crista ampullaris and macula. Functions, Disorders</p>	14 [14(L)+0(P)]

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2.	<p>Nervous System –</p> <p>Introduction: Organisation of CNS – central and peripheral nervous system. Functions of nervous system. Synapse: Functional anatomy, classification, Synaptic transmission. Properties.</p> <p>Sensory Mechanism: Sensory receptors: function, classification and properties. Sensory pathway: The ascending tracts – Posterior column tracts, lateral spinothalamic tract and the anterior spinothalamic tract – their origin, course, termination and functions. The trigeminal pathway. Sensory cortex. Somatic sensations: crude touch, fine touch, tactile localization, tactile discrimination, stereognosis, vibration sense, kinesthetic sensations. Pain sensation: mechanism of pain. Cutaneous pain</p> <p>–slow and fast pain, hyperalgesia. Deep pain. Visceral pain – referred pain. Gate control theory of pain. tabes dorsalis, sensory ataxia.</p> <p>Motor Mechanism: Motor Cortex. Motor pathway: The descending tracts – pyramidal tracts, extrapyramidal tracts – origin, course, termination and functions. Upper motor neuron and lower motor neuron. Paralysis, monoplegia, paraplegia, hemiplegia and quadriplegia.</p> <p>Reflex Action: components, Bell-Magendie law, classification and Properties. Monosynaptic and polysynaptic reflexes, superficial reflexes, deep reflexes. Stretch reflex– structure of muscle spindle, pathway, higher control and functions. Inverse stretch reflex. Muscle tone – definition, and properties hypotonia, atonia and hypertonia. UMNL and LMNL</p> <p>Spinal cord Lesions: Complete transection and Hemisection of the spinal cord.</p> <p>Cerebellum: Functions. Cerebellar ataxia.</p> <p>Posture and Equilibrium: Postural reflexes – spinal, medullary, midbrain and cerebral reflexes.</p> <p>Thalamus and Hypothalamus: Nuclei. Functions. Thalamic syndrome</p> <p>Reticular Formation and Limbic System: Components and Functions.</p> <p>Basal Ganglia: Structures included and functions. Parkinson's disease.</p> <p>Cerebral Cortex: Lobes. Brodmann's areas and their functions. Higher functions of cerebral cortex – learning, memory and speech.</p> <p>EEG: Waves and features. Sleep: REM and NREM sleep.</p>	10 [10(L)+0(P)]
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	<p>CSF: Formation, composition, circulation and functions. Lumbarpuncture and its significance. Blood brain barrier. Hydrocephalus.</p> <p>ANS: Features and actions of parasympathetic and sympathetic nervous system.</p>	
3.	<p>Renal System –</p> <p>Introduction: Physiological anatomy. Nephrons – cortical and juxtamedullary. Juxta-glomerular apparatus. Glomerular membrane. Renal blood flow and its regulation. Functions of kidneys.</p> <p>Mechanism of Urine Formation: Glomerular Filtration: Mechanism of glomerular filtration. GFR – normal value and factors affecting. Renal clearance. Inulin clearance. Creatinine clearance.</p> <p>Tubular Reabsorption: Reabsorption of Na⁺, glucose, HCO₃⁻, urea and water. Filtered load. Renal tubular transport maximum. Glucose clearance: T_mG. Renal threshold for glucose.</p> <p>Tubular Secretion: Secretion of H⁺ and K⁺. PAH clearance.</p> <p>Mechanism of concentrating and diluting the Urine: Counter-current mechanism. Regulation of water excretion. Diuresis. Diuretics.</p> <p>Micturition: Mechanism of micturition. Cystometrogram. Atonic bladder, automatic bladder.</p> <p>Acid-Base balance (very brief)</p> <p>Artificial Kidney: Principle of haemodialysis. Skin and temperature regulation.</p>	10 [10(L)+0(P)]
4.	<p>Reproductive System –</p> <p>Introduction: Physiological anatomy reproductive organs. Sex determination. Sex differentiation. Disorder</p> <p>Male Reproductive System: Functions of testes. Pubertal changes in males. Spermatogenesis. Testosterone: action. Regulation of secretion. Semen.</p> <p>Female Reproductive System: Functions of ovaries and uterus. Pubertal changes in females. Oogenesis. Hormones: estrogen and progesterone-action. Regulation of secretion. Mentrual Cycle: Phases. Ovarian cycle. Uterine cycle. Hormonal basis. Menarche. Menopause. Pregnancy: Pregnancy tests. Physiological changes during pregnancy. Functions of placenta. Lactation. Contraception methods</p>	10 [10(L)+0(P)]
5.	<p>Physiology of exercise –</p> <p>Effects of acute and chronic exercise on O₂ transport</p> <p>Muscle strength/power/endurance</p> <p>B.M.R. /R.Q.</p> <p>Hormonal and metabolic effect</p>	20 [20(L)+0(P)]

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	Cardiovascular system Respiratory system Body fluids and electrolyte Effect of gravity / altitude / acceleration / pressure on physical parameters Physiology of Age	
APPLIED PHYSIOLOGY:		
1.	Pulmonary Functions: Properties of gases, Mechanics of respiration, Diffusion capacity, special features of pulmonary circulation and their application. Respiratory adjustments in exercises. Artificial respiration Breath sounds.	10 [10(L)+0(P)]
2.	Cardio vascular Functions: Blood flow through arteries, arterioles, capillaries, veins and venuoles. Circulation of Lymph, Oedema Factors affecting cardiac output. Circulatory adjustment in exercise and in postural and gravitational changes, Pathophysiology of fainting and heart failure.	6 [6(L)+0(P)]
3.	Muscles and Nervous System Functions: Peripheral nervous system, neuromuscular transmission, Types of nerve fibers. Action potential, Strength-duration curve, ECG, EMG, VEP, NCV Degeneration and regeneration of nerve, Reactions of denervations. Synaptic transmission, Stretch reflex- Mechanism and factors affecting it. Posture, Balance and Equilibrium/Coordination of voluntary movement. Voluntary motor action, clonus, Rigidity, incoordination. Special senses- Vision, taste, hearing, vestibular, Olfaction Sympathetic and Parasympathetic regulation, Thermoregulation.	20 [20(L)+0(P)]
4.	Blood functions: Thalassemia Syndrome, Hemophilia, VWF Anemia, Leukocytosis Bone marrow transplant	4 [4(L)+0(P)]
5.	Metabolic Functions: Diabetes Mellitus, Physiological basis of Peptic Ulcer, Jaundice, GIT disorders and Dietary fiber, Thyroid functions, Vitamins deficiency	4 [4(L)+0(P)]

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Practical classes include hematology experiments, clinical examinations, amphibian chart, and recommended demonstrations. 2P[0(L)+2(P)]

Clinical Examination:

Examination of Radial pulse. Recording of blood pressure Examination of CVS

Examination of Respiratory system Examination of Sensory system Examination of Motor System Examination of reflexes Examination of cranial nerves

Amphibian Experiments – Demonstration and Dry charts Explanation. Normal cardiogram of amphibian heart.

Properties of Cardiac muscle

Effect of temperature on cardiogram. Recommended Demonstrations Spirometry

Artificial Respiration ECG

Perimetry

Mosso's Ergometry Suggestive Readings:

Text book of medical physiology – Guyton Arthur

Concise medical physiology – Chaudhuri Sujit K.

Human Physiology – Chatterjee C.C.

Text book of practical Physiology – Ranade.

Text of Physiology – A.K.Jain.

Basics of Medical physiology- Venkatesh D & Sudhakar H H

Manipal Manual of Physiology – Prof. C N Chandrashekar

Review of Medical Physiology – Ganong William F.

Physiological basis of Medical practice – Best & Taylor

GENERAL AND CLINICAL PSYCHOLOGY

Course Objective: Human Psychology involves the study of various behavioral patterns of individuals, theories of development, normal and abnormal aspects of motor, social, emotional and language development, communication and interaction skills appropriate to various age groups.

The study of these subjects will help the student to understand their clients while assessment and while planning appropriate treatment methods.

Course Outcome:

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CO1: The students will have a better understanding of Human Emotions like Frustration, Motivation, its types and Analysis.

CO2: The students will be understand different personalities and its types.

Total Credits: 4 (L+T+P= 4+0+0) Total Contact hrs: 64 hrs

Sl.No.	Topics	ContactHrs
1.	Introduction to Psychology Schools: Structuralism, functionalism, behaviorism, Psychoanalysis. Methods: Introspection, observation, inventory and experimental method. Branches: pure psychology and applied psychology Psychology and physiotherapy	4L
2.	Growth and Development Life span: Different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age). Heredity and environment: role of heredity and environment in physical and psychological development, —Nature v/s Nurture controversy.	5L
3.	Sensation, attention and perception Sensation: Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium and visceral sense. Attention: Types of attention, Determinants of attention (subjective determinants and objective determinants). Perception: Gestalt principles of organization of perception (principle of figure ground and principles of grouping), factors influencing perception (past experience and context). Illusion and hallucination: different types.	6L
4.	Motivation Motivation cycle (need, drive, incentive, reward). Classification of motives. Abraham Maslow's theory of need hierarchy	4L
5.	Frustration and conflict Frustration: sources of frustration. Conflict: types of conflict. Management of frustration and conflict	5L
6.	Emotions Three levels of analysis of emotion (physiological level, subjective state, and overt behavior). Theories of emotion Stress and management of stress.	5L

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7.	Intelligence Theories of intelligence. Distribution of intelligence. Assessment of intelligence	5L
8.	Thinking Reasoning: deductive and inductive reasoning Problem solving: rules in problem solving (algorithm and heuristic) Creative thinking: steps in creative thinking, traits of creative people	6L
9.	Learning Factors effecting learning. Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory. The effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.	7L
10.	Personality Approaches to personality: type & trait, behavioristic, psychoanalytic and humanistic approach. Personality assessment: observation, situational test, questionnaire, rating scale, interview, and projective techniques. Defense Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjection, acting out.	4L
11.	Social psychology Leadership: Different types of leaders. Different theoretical approaches to leadership. Attitude: development of attitude. Change of attitude.	5L
12.	Clinical psychology – Models of training, abnormal behavior assessment, clinical judgement, psychotherapy, self-management methods, physiotherapist patient interaction, aggression, self-imaging, stress management, assertive training, Group therapy, Body awareness, Pediatric, child and geriatric clinical psychology	8L

BASIC PRINCIPLES OF BIOMECHANICS

Course Objective: Biomechanics involves the study of basic concepts of human movement, and application of various biomechanical principles in the evaluation and treatment of disorders of musculoskeletal system. Students are taught to understand the various quantitative and qualitative methods of movement. Mechanical principles of various treatment methods are studied. Study of posture and gait are also included.

Course Outcome:

CO 1: The students will be able to understand the Planes and axis of different movements of Human Body
CO2: The students will have a better understanding of Human Joints, its types and function

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CO3: Students will be able to understand the Biomechanics of Respiration and Tempromandibular Joint
 CO4: Students will be able to understand the structure of muscle and its mechanics behind contraction
 Total Credits: 4 (L+T+P= 4+0+1)
 Total Contact hrs: 96 hrs

Module No.	Module	Contact Hrs
1.	Basic Concepts in Biomechanics: Kinematics and Kinetics Types of Motion Location of Motion Direction of Motion Magnitude of Motion Definition of Forces Force of Gravity Reaction forces Equilibrium Objects in Motion Force of friction Concurrent force systems Parallel force system Work Moment arm of force Force components Equilibrium of levers	10 T + 8P
2.	Joint structure and Function -Joint design Materials used in human joints General properties of connective tissues Human joint design Joint function Joint motion General effects of disease, injury and immobilization.	20 T
3.	Muscle structure and function - Mobility and stability functions of muscles Elements of muscle structure Muscle function Effects of immobilization, injury and aging	10 T + 9 P
4.	Biomechanics of the Thorax and Chest wall -General structure and function Rib cage and the muscles associated with the rib cage Ventilatory motions: its coordination and integration Developmental aspects of structure and function Changes in normal structure and function I relation to pregnancy, scoliosis and COPD	10 T +9 P
5.	The Temporomandibular Joint- General features, structure, function and dysfunction	10 T + 10P

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Suggestive Readings:

An introduction to Human Movement and Biomechanics Joint structure & Function, Pamela K. Levangie
Human Movement & Biomechanics: An Introductory Text
Kinesiology: The Mechanics & Pathomechanics of Human Movement, Carol A. Oatis

BIOMEDICAL WASTE MANAGEMENT

Course description: This course involves a detailed description of the various types of biomedical wastes generated in the healthcare settings and the methods used for their management.

Course objectives: The objective of this section is to enable the student to provide quality service to the patients along with preventing harm to workers, property, the environment and the general public.

Course Outcomes: On completion of this course, the student will be able to attain knowledge on the various methods and techniques to be implemented in managing the biomedical wastes generated in their work setting.

Total Credits: 4 (L+T+P= 4+0+0) Total Contact hrs: 64 hrs

Detailed Syllabus:

Sl.No.	Topics	Contact Hrs
1.	Biomedical Waste: Definition, Sources, Categorization of biomedical waste in India Liquid BMW, Radioactive waste, Metals / Chemicals / Drugwaste Colour coding schedule	10 [10(L)+0(P)]
2.	Waste minimization: Definition, benefits Policies and practices that encourages waste minimization Role of healthcare providers in waste minimization	10 [10(L)+0(P)]
3.	Biomedical Waste Management in India – Segregation: definition, benefits Collection and Storage of biomedical wastes Transportation: methods of transportation of biomedical wastes Treatment and disposal (including color coding): 5 Processes: chemical, thermal, mechanical, irradiation & biological.	20 [20(L)+0(P)]
4.	BMW Management & methods of disinfection: Modern technology for handling BMW	10 [10(L)+0(P)]
5.	Personal protective equipment (PPE): specifications, uses.	4 [4(L)+0(P)]

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6.	Monitoring & controlling of cross infection: Definition, causes, types, symptoms Methods/ routes of transmission and prevention of cross infection Protective clothing Standard precautions for cross infection	10 [10(L)+0(P)]
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HEALTH PSYCHOLOGY

Course objective: To make the students aware of psychological reactions to health and sickness.

Course outcome:

At the end of the course, the candidate will-

Be able to define the term Psychology & its importance in the Health delivery System & will gain knowledge of Psychological maturation during human Development & growth & alterations during aging process.

Be able to understand the importance of psychological status of the person in Health & disease, environmental & emotional influence on the mind & personality.

Acquire the Knowledge as to how to deal with the patients.

Socio economic and cultural differences and Socioeconomic and cultural issues related to morbidity owing to the physical disability and handicaps.

Total Credits: 4 (L+T+P= 4+0+0) Total Contact hrs: 64 hrs

Module no.	Module	Hours of teaching/learning
		Theory
1.	Introduction to Psychology Definition and nature of Psychology, Fields & subfields of psychology. School of thoughts	5
2.	Developmental Psychology Definition & its Theories - Physiological and psychological changes during Infancy, Early & Late childhood, adolescent stage, Puberty, adulthood & old age	5
3.	Definitions: IQ, Mental Age, List of various intelligence tests- WAIS, WISC, Bhatia's performance test, Raven's Progressive Matrices test.	2

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4.	Attention & perception - Nature of attention, Nature of perception, Memory- Definition and nature, types of memory and forgetting cause . Learning : Definition and theories, conditioning, Role of learning in human life . Abnormal Psychology: Deference between normal & Abnormal, Causes of abnormality .	5
5.	EMOTIONS □ Definition: Differentiate from feelings, physiological changes of emotion, Role of RAS, hypothalamus, cerebral cortex, sympathetic nervous system, adrenal gland, heredity and emotion, Nature and control of anger, fear and anxiety.	4
6.	Psychological Reactions of a Patient: Psychological reactions of a patient during admission and treatment anxiety, shock, denial, suspicion, questioning, loneliness, regression, shame, guilt, rejection, fear, withdrawal, depression, egocentricity, concern about small matters, narrowed interests, emotional overreactions, perpetual changes, confusion, disorientation, hallucinations, delusions, illusions, anger, hostility, loss of hope.	7
7.	Reactions to Loss: Reactions to loss, death and bereavements shock and disbelief, development of awareness, restitution, resolution. Stages of acceptance as proposed by Kubler – Ross.	5
8.	Stress: Physiological and Psychological relation to health and sickness: psychosomatic, professional stress burnout.	4
9.	Behavior Modifications: Application of various conditioning and learning principles to modify patient behaviours. Personality Styles: Different personality styles of patients.	4
10.	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 Incontinence Mental illness	10
11.	GERIATRIC PSYCHOLOGY Specific psychological reactions and needs of geriatric patients.	4
12.	PAEDIATRIC PSYCHOLOGY Specific psychological reactions and needs of Pediatric patients	4
13.	SUBSTANCE ABUSE: Psychological aspects of substance abuse: smoking,	5

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	alcoholism	
	drug addiction	

Books :

- Morgan C.T. & King R. A. Introduction to Psychology – 7 th edn [Tata McGraw-Hill publication]
 Hurlock, E.B, (2005). Developmental Psychology – A life span Approach. (5th Ed.) Tata McGraw Hill Publication, New Delhi
 Feldman, R.S. (1997). Understanding Psychology, (4th Ed), Tata McGraw Hill Publication, New Delhi

THIRD SEMSTER

PATHOLOGY

Course objective - Pathology involves the study of causes and mechanisms of diseases. The knowledge and understanding Pathology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient.

Course outcome :

- CO1: understand pathogenesis and clinic pathological correlation of common infections & non- infections disease.
 CO2. Illustrate the knowledge of cell injury and its healing process.
 CO3. Describe normal and altered different organ system in different diseases and their clinical significance
 CO4: Learn the pathological changes in various conditions, diseases and disorders, which are commonly treated by physiotherapy.
 CO3: Understand how to protect themselves and their patients from infections during their interactions.
 Total Credits: 4 (L+T+P= 4+0+0) Total Contact hrs: 64hrs

Detailed Syllabus:

64 hours

MODULE NO.	MODULE	Contact Hrs
1.	General Pathology Introduction to Pathology	1

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2.	<p>Cell injuries :</p> <p>Aetiology and Pathogenesis with a brief recall of important aspects of normal cell structure. Reversible cell injury: Types, Sequential changes, Cellular swellings, vacuolation, Hyaline changes, Mucoïd changes. Irreversible cell injury: Types of Necrosis & Gangrene, Autolysis. Pathologic calcification: Dystrophic and Metastatic. Intracellular Accumulations - Fatty changes, Protein accumulations, Glycogen accumulations. Pigments - Melanin / Hemosiderin. Extra cellular accumulations: Amyloidosis - Classification, Pathogenesis, Pathology including special stains.</p>	4
3.	<p>Inflammation and Repair :</p> <p>Acute inflammation: features, causes, vascular and cellular events. Inflammatory cells and Mediators. Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples. Repair, Wound healing by primary and secondary union, factors promoting and delaying the process. Healing in specific site including bone healing.</p>	3

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4.	<p>Immunopathology: Immune system: General concepts. Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples. . Secondary immunodeficiency including HIV infection. Auto-immunedisorders: Basic concepts and classification, SLE. AIDS-Aetiology, Modes of transmission, Diagnostic procedures, handling of infected material and health education.</p>	4
5.	<p>Infectious diseases : Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis. Bacterial disease: Pyogenic, Diphtheria, Gram negativeinfection, Bacillary dysentery. Viral diseases: Poliomyelitis, Herpes, Rabies, Measles,Rickttsia, Chlamydial infection, HIV infection. Fungal disease and opportunistic infections. Parasitic diseases: Malaria, Filaria, Amoebiasis, Kala-azar,Cysticercosis, Hydatid cyst.</p>	5
6.	<p>Circulatory Disturbances : Hyperemia/Ischemia and Haemorrhage Edema: Pathogenesisand types. Chronic venous congestion: Lung, Liver, Spleen, Systemic Pathology Thrombosis and Embolism: Formation, Fate and Effects. Infarction: Types, Common sites. Shock: Pathogenesis, types, morphologic changes.</p>	3
7.	<p>Growth Disturbances and Neoplasia: Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, Metaplasia, Malformation, agenesis, dysplasia. Precancerous lesions. Neoplasia: Definition, classification, Biological ehavior :Benign and Malignant, Carcinoma and Sarcoma.</p>	3
	<p>Malignant Neoplasia: Grades and Stages, Local & Distant spread. Carcinogenesis: Environmental carcinogens, chemical, viral, occupational. Heredity and cellular oncogenes and preventionof cancer. Benign & Malignant epithelial tumours Eg. Squamous papilloma, Squamous cell carcinoma, Malignant melanoma. Benign & Malignant mesenchymal tumours Eg: Fibroma, Lipoma, Neurofibroma, Fibrosarcoma, Liposarcoma, Rhabdo-myosarcoma, Teratoma.</p>	5
8.	<p>Nutritional Disorders : Protein energy malnutrition: Marasmus, Kwashiorkor, and Vitamin deficiency disorders, classification with specific examples</p>	2
9.	<p>Genetic Disorders : Basic concepts of genetic disorders and some common examples and congenital malformation.</p>	1

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10.	<p>Systemic Pathology</p> <p>Hematology :</p> <p>Constituents of blood and bone marrow, Regulation of hematopoiesis.</p> <p>Anemia: Classification, clinical features & labdiagnosis.</p> <p>Nutritional anemias: Iron deficiency anemia, Folic acid, Vit. B12 deficiency anemia including pernicious anemia. Hemolytic Anaemias: Classification and Investigations. Hereditary hemolytic anaemias: Thalessemia, Sickle cell anemia, Spherocytosis and Enzyme deficiencies.</p> <p>Acquired hemolytic anaemias:</p> <p>Alloimmune, Autoimmune</p> <p>Drug induced, Microangiopathic Pancytopenia - Aplastic anemia.</p> <p>Hemostatic disorders, Vascular and Platelet disorders & labdiagnosis.</p> <p>Coagulopathies –</p> <p>Inherited</p> <p>Acquired with lab diagnosis.</p> <p>Leukocytic disorders: Leukocytosis, Leukopenis, Leukemoid reaction.</p> <p>Leukemia: Classification, clinical manifestation, pathology and Diagnosis.</p> <p>Multiple myeloma and disproteinemias.</p> <p>Blood transfusion; Grouping and cross matching, untoward reactions, transmissible infections including HIV & hepatitis,</p> <p>Blood-components & plasma-pheresis.</p>	5
11.	<p>Respiratory System:</p> <p>Pneumonia, Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases</p>	2
12.	<p>Cardiovascular Pathology:</p> <p>Congenital Heart disease: Atrial septal defect, Ventricular septal defect, Fallot's tetralogy, Patent ductus arteriosus.</p> <p>Endocarditis. Rheumatic Heart disease.</p> <p>Vascular diseases: Atherosclerosis, monckeberg's medial calcification, Aneurysm and Arteritis and tumours of Bloodvessels.</p> <p>Ischemic heart Disease: Myocardial infarction. Hypertension and hypertensive heart Disease.</p>	4
13.	<p>Alimentary tract:</p> <p>Oral Pathology: Ulcers, leukoplakia, Carcinoma, oral cavity diseases and tumour of salivary gland & esophagus and precancerous lesions, Esophagus inflammatory, functional disorders and tumours.</p> <p>Stomach: Gastritis, Ulcer & Tumours.</p> <p>Tumours and tumour like condition of the small and large Intestine: Polyps, carcinoid, carcinoma, Lymphoma.</p> <p>Pancreatitis and pancreatic tumours : i) Exocrine, ii) Endocrine</p> <p>Salivary gland tumours : Mixed, Warthin's</p>	4

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14.	Hepato – biliary pathology: Jaundice: Types, aetio-pathogenesis and diagnosis. Hepatitis: Acute, Chronic, neonatal. Alcoholic liver disease Cirrhosis: Postnecrotic, Alcoholic, Metabolic and Portal hypertension Liver abscesses; Pyogenic, parasitic and Amoebic. Tumours of Liver	3
15.	Lymphatic System: Diseases of the gall bladder: Cholecystitis, Cholelithiasis, Carcinoma. Lymphadenitis - Nonspecific and granulomatous. Causes of Lymph Node enlargements. Reactive Hyperplasia, Primary Tumours - Hodgkin's and Non Hodgkin's Lymphomas, Metastatic Tumours. Causes of Splenic Enlargements	3
16.	Musculoskeletal System: Osteomyelitis, acute, chronic, tuberculous, mycetoma Metabolic diseases: Rickets/Osteomalacia, osteoporosis, Hyperparathyroidism, Paget's disease. Tumours Classification: Benign, Malignant, Metastatic and synovial sarcoma. Arthritis: Suppurative, Rheumatoid. Osteoarthritis, Gout, Tuberculous.	3
17.	Endocrine pathology: Diabetes Mellitus: Types, Pathogenesis, Pathology, Laboratory diagnosis Non-neoplastic lesions of Thyroid: Iodine deficiency goiter, autoimmune Thyroiditis, Thyrotoxicosis, myxedema, Hashimoto's thyroiditis.	3
	Tumours of Thyroid: Adenoma, Carcinoma: Papillary, Follicular, Medullary, Anaplastic. Adrenal diseases: cortical hyperplasia, atrophy, tuberculosis, tumours of cortex and medulla.	2
18.	Neuropathology: Inflammations and Infections: TB Meningitis, Pyogenic Meningitis, viral meningitis and Brain Abscess Tuberculosis, Cysticercosis CNS Tumors, Astrocytoma, Neuroblastoma, Meningioma, Medulloblastoma	2
19.	Dermatopathology: Skin tumors: Squamous cell carcinoma, Basal cell carcinoma, Melanoma	2

Practical:

Demonstration of Slides – The students may be demonstrated the common histopathological, hematological and cytological slides and specimens and charts and their interpretations.

Suggestive readings:

Essential pathology for physiotherapy by Harshmohan
Textbook of pathology for BPT students by Ramdas nayak

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MICROBIOLOGY

Course objective : To impart knowledge of the basic principles of bacteriology, virology, mycology, immunology and parasitology including the nature of pathogenic microorganisms, pathogenesis, laboratory diagnosis, transmission, prevention and control of diseases.

Course outcome :

CO1. Know about prevalent communicable diseases

CO 2. Describe the agents responsible for causing clinical infection to CNS, Musculoskeletal Respiratory, and Genitourinary system.

CO 3. Illustrate the best method to prevent the development of infection.

CO 4. Understand to recognize the sign and symptom considered red flag for serious diseases.

Total Credits: 4 (L+T+P= 3+0+1) Total Contact hrs: 80 hrs

Detailed Syllabus:

MODULE NO.	MODULE	Contact Hrs
1.	<p>General Microbiology: Definitions: infections, parasite, host, vector, fomite, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate. Normal flora of the human body. Routes of infection and spread; endogenous and exogenous infections; source at reservoir of infections. Bacterial cell. Morphology limited to recognizing bacteria in clinical samples Shape, motility and arrangement. Structures, which are virulence, associated. Physiology: Essentials of bacterial growth requirements. Sterilization, disinfection and universal precautions in relation to patient care and disease prevention. Definition of asepsis, sterilization, disinfection. Antimicrobials: Mode of action, interpretation of susceptibility tests, resistance spectrum of activity.</p>	L5+P5

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2.	<p>Immunology: Basic principles of immunity immunobiology: lymphoid organs and tissues. Antigen, Antibodies, antigen and antibody reactions with relevance to pathogenesis and serological diagnosis. Humoral immunity and its role in immunity Cell mediated immunity and its role in immunity. Immunology of hypersensitivity, Measuring immune functions.</p>	L7
3.	<p>Bacteriology: Morphology, classification according to pathogenicity, mode of transmission, methods of prevention, collection and transport of samples for laboratory diagnosis, interpretation of laboratory reports. Staphylococci, Streptococci and Pneumococci. Mycobacteria: Tuberculosis, M.leprae, atypical mycobacteria, Enterobacteriaceae, Vibrios: V. cholerae and other medically important vibrios, Campylobacters and Helicobacters, Pseudomonas. Bacillus anthracis, Sporing and non-sporing anaerobes: Clostridia, Bacteroides and Fusobacteria.</p>	L5+P5

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4.	General Virology: General properties: Basic structure and broad classification of viruses. Pathogenesis and pathology of viral infections. Immunity and prophylaxis of viral diseases. Principles of laboratory diagnosis of viral diseases. List of commonly used antiviral agents.	L5+P5
5.	Mycology: General properties of fungi. Classification based on disease: superficial, subcutaneous, deep mycoses opportunistic infections including Mycotoxins, systemic mycoses. General principles of fungal diagnosis, Rapid diagnosis. Method of collection of samples. Antifungal agents.	L5+P5
6.	Clinical/Applied Microbiology: Streptococcal infections: Rheumatic fever and Rheumatic heart disease, Meningitis. Tuberculosis, Pyrexia of unknown origin, leprosy, Sexually transmitted diseases, Poliomyelitis, Hepatitis, Acute-respiratory infections, Central nervous System infections, Urinary tract infections,	L5+P5
	Pelvic inflammatory disease, Wound infection, Opportunistic infections, HIV infection, Malaria, Filariasis, Zoonotic diseases	L7

Practicals:

Demonstration of Microscopes and its uses
Principles, uses and demonstration of common sterilization equipment
Demonstration of common culture media
Demonstration of motility by hanging drops method
Demonstration of Gram Stain, ZN Stain
Demonstration of Serological test: ELISA
Demonstration of Fungus

Suggestive readings:

Textbook of microbiology for physiotherapist by Dr. C.P Baveja
Textbook of microbiology by C. K. Jayaram panikar
PHARMACOLOGY

Course objective - This course will introduces the student to basic pharmacology of common drugs used, their importance in the overall

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treatment including Physiotherapy. The student after completing the course will be able to understand the general principles of drug action and the handling of drugs by the body. The student will be aware of the contribution of both drug and physiotherapy factors in the outcome of treatment.

Course outcome:

CO – 1. Know about history, routes of drugs administration, source and classification of drugs. CO – 2. Understand the basic knowledge of pharmacology including physiological response and adverse effects of drugs

CO – 3. Describe pharmacological effects of commonly used drugs by patient referred for physiotherapy

CO – 4. Identify the pharmacology drugs that interfere with the therapeutic response.

Total Credits: 4

(L+T+P= 4+0+0)

Total Contact hrs: 64 hrs

Detailed Syllabus:

MODULE NO.	MODULE	Contact Hrs
1.	General Pharmacology : Introduction, Definitions, Classification of drugs, Sources of drugs, Routes of drug administration, Distribution of drugs, Metabolism and Excretion of drugs Pharmacokinetics, Pharmacodynamics, Factors modifying drug response, Adverse effects.	8
2.	Autonomic Nervous system : General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System Cholinergic and Anti-Cholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants.	8

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3.	<p>Cardiovascular Pharmacology :</p> <p>Drugs used in the treatment of heart failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors</p> <p>Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators</p> <p>Antiarrhythmic Drugs</p> <p>Drugs used in the treatment of vascular disease and tissue ischemia : Vascular Disease, Hemostasis Lipid-Lowering agents, Antithrombotics, Anticoagulants and Thrombolytics</p> <p>Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers, Cerebral Ischemia Peripheral Vascular Disease.</p>	8
4.	<p>Neuropharmacology :</p> <p>Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines</p> <p>Antianxiety Drugs: Benzodiazepines, Other Anxiolytics</p> <p>Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium</p> <p>Antipsychotic drugs</p>	8
5.	<p>Disorders of Movement:</p> <p>Drugs used in Treatment of Parkinson 's disease</p> <p>Antiepileptic Drugs</p> <p>Spasticity and Skeletal Muscle Relaxants</p>	8
6.	<p>Inflammatory/Immune Diseases:</p> <p>Non-narcotic Analgesics and Nonsteroidal Anti- Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Nonaspirin NSAIDs, drug Interactins with NSAIDs</p> <p>Glucocorticoids: Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids</p> <p>Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout</p> <p>Drugs Used in the Treatment of Neuromuscular</p> <p>Immune/Inflammatory Diseases: Myasthenia gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythematosus, Scleroderma, Demyelinating Disease</p> <p>Respiratory Pharmacology: Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis</p>	8
7.	<p>Digestion and Metabolism:</p>	8

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	Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemic	
8.	Geriatrics : Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension.	8

Suggestive readings:

1. Pharmacology for medical graduates by Tara v Shanbh

BIOMECHANICS AND KINESIOLOGY

Course objective : The primary objective of Biomechanics is to gain a better understanding of the cause-effect mechanisms of motions of the human body . The basis for the field of Biomechanics is that the laws of mechanics apply to living organisms just as well as they do to inanimate objects. the general purpose of Biomechanics is to understand the mechanical cause-effect relationships that determine the motions of living organisms. "In Human Performance, Biomechanics contributes to the description, explanation, and prediction of the mechanical aspects of human exercise, sport and play.

Course outcome:

CO – 1. Know about the introduction of biomechanics
CO – 2. Understand the principles of biomechanics
CO- 3. Acquire the knowledge of kinetics and kinematics

CO – 4. Acquire the knowledge of musculoskeletal movement during normal gait and ADL
CO – 5. Recall axes and plane of spine and extremities

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Total Credits: 4

(L+T+P= 4+0+1)

Total Contacthrs: 96hrs

Detailed Syllabus:

MODULENO.	MODULE	ContactHrs
1.	Biomechanics of the vertebral column - General structure and function Regional structure and function – Cervical region, thoracic region, lumbar region, sacral region Muscles of the vertebral column General effects of injury and aging	16+16
2.	Biomechanics of the peripheral joints - The shoulder complex: Structure and components of the shoulder complex and their integrated function The elbow complex: Structure and function of the elbow joint – humeroulnar and humeroradial articulations, superior and inferior radioulnar joints; mobility and stability of the elbow complex; the effects of immobilization and injury. c. The wrist and hand complex: Structural components and functions of	16+16
	the wrist complex; structure of the hand complex; functional position of the wrist and hand. The hip complex: structure and function of the hip joint; hip joint pathology- arthrosis, fracture, bony abnormalities of the femur: The knee complex: structure and function of the knee joint – tibiofemoral joint and patellofemoral joint; effects of injury and disease. The ankle and foot complex.: structure and function of the ankle joint, subtalar joint, talocalcaneonavicular joint, transverse tarsal joint, tarsometatarsal joints, metatarsophalangeal joints, interphalangeal joints, structure and function of the plantar arches, muscles of the ankle and foot, deviations from normal structure and function – Pes Planus and Pes	

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	Cavus	
3.	Analysis of Posture and Gait – Static and dynamic posture, postural control, kinetics and kinematics of posture, ideal posture analysis of posture, effects of posture on age, pregnancy, occupation and recreation; general features of gait, gait initiation, kinematics and kinetics of gait, energy requirements, kinematics and kinetics of the trunk and upper extremities in relation to gait, stair case climbing and running, effects of age, gender, assistive devices, disease, muscle weakness, paralysis, asymmetries of the lower extremities, injuries and malalignments in gait; Movement Analysis : ADL activities like sitting – to standing, lifting, various grips , pinches.	16+16

PRACTICAL- shall be conducted for various joint movements and analysis of the same. Demonstration may also be given as how to analyze posture and gait. The student shall be taught and demonstrated to analysis for activities of daily living

– ADL – (like sitting to standing, throwing, lifting etc.) The student should be able to explain and demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced, and mention the axis and planes through which the movements occur. The demonstrations may be done on models or skeleton.

Suggestive readings :

Basic biomechanics of the musculoskeletal system by Margareta Nordin

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Clinical biomechanics of the spine by Auustus A. White III
Joint structure and function by Cinthia C. Norkin

FOUNDATION OF AND THERAPEUTIC MASSAGE

Course objective: to learn the principles and effects of exercise as a therapeutic modality and to learn the techniques in the restoration of physical functions.

Course outcome :

CO1: To understand the basics of exercise therapy and patient assessment. CO2: Practice various assessment strategies like Goniometry, Tone assessment, Muscle power assessment etc for detailed learning.

CO3: Understand principles and procedures, indications, contraindications and precautions, appropriate methods of application of each of the assessment strategy and treatment techniques hands on and on models.

Total Credits: 5

(L+T+P= 4+0+1)

Total Contact hrs: 96 hrs

Detailed Syllabus:

MODULE NO.	MODULES	Contact Hrs
1.	Introduction to Exercise Therapy : The aims of Exercise Therapy The techniques of Exercise Therapy Approach to patient's problems Assessment of patient's condition – Measurements of Vital parameters Starting Positions – Fundamental positions & derived Positions Planning of Treatment	5+5

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2.	<p>Methods of Testing: Functional tests Measurement of Joint range: ROM-Definition, Normal ROM for all peripheral joints & spine Goniometer-parts, types, principles, uses, Limitations of goniometry Techniques for measurement of ROM for all peripheral joints Tests for neuromuscular efficiency Electrical tests Manual Muscle Testing: Introduction to MMT, Principles & Aims, Indications & Limitations, Techniques of MMT for group & individual: Techniques of MMT for upper limb / Techniques of MMT for lower limb / Techniques of MMT for spine. Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf Static power Test Dynamic power Test Endurance test Speed test Tests for Co-ordination Tests for sensation Pulmonary Function tests Measurement of Limb Length: true limb length, apparent limb length, segmental limb length Measurement of the angle of Pelvic Inclination</p>	5+5P
3.	<p>Relaxation: Definitions: Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism Indications of relaxation Methods & techniques of relaxation-Principles & uses: General, Local, Jacobson's, Mitchell's, additional methods.</p>	5+5P

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4.	Passive Movements: Causes of immobility Classification of Passive movements Specific definitions related to passive movements Principles of giving passive movements Indications, contraindications, effects of uses Techniques of giving passive movements.	5+5P
5.	Active Movements: Definition of strength, power & work, endurance, muscle actions. Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction & relaxation, muscle fiber type, motor unit, force gradation. Causes of decreased muscle performance Physiologic adaptation to training: Strength & Power, Endurance. Types of active movements	5+5L
6.	Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses	5+5P
7.	Active Assisted Exercise: principles, techniques, indications, contraindications, effects and uses Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses Resisted Exercise: Definition, principles, indications, contraindications, precautions & techniques, effects and uses	5+5P
8.	Types of resisted exercises: Manual and Mechanical resistance exercise, Isometric exercise, Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Isokinetic exercise, Open-Chain and Closed-Chain exercise.	5+5P

Therapeutic Massage		
Sl.No.	Topics	Contact Hrs
1.	History and Classification of Massage Technique	10 L + 6 P
2.	Principles, Indications and Contraindications	
3.	Technique of Massage Manipulations	
4.	Physiological and Therapeutic Uses of Specific Manipulations	

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Practical:

Different test methods

Demonstrate relaxation techniques.

Demonstrate to apply the technique of passive movements

Demonstrate various techniques of Active movements

Demonstrate massage technique application according to body

Suggestive readings:

Therapeutic exercise by Carolyn Kisner

Principles of exercise therapy by M. Dena Gardiner

HOSPITAL MANAGEMENT

Course objective

Students can explore public policy, community relations, human resource management, hospital finance, fundraising, physician relations and collective bargaining after completing 80 hours of teaching.

Course Outcomes:

To understand the concept of principles of management

To be well versed in the types of management

To clearly explain the research methods for management

To be well versed in Hospital Architecture, planning and Design

To be well versed in Ethics and laws in Hospital management Total Credits: 4 (L+T+P= 4+0+0) Total Contact hrs: 64 hrs

Module No.	Module	CONTACT HRS
1	PRINCIPLES OF MANAGEMENT Principles of Management Organizational Behaviour	4

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2	<p>TYPES OF MANAGEMENT</p> <p>Accounting and Finance for Managers</p> <p>Marketing Management</p> <p>Human Resource Management</p> <p>Quantitative Techniques for Management</p>	15
3	<p>IMPORTANCE OF MANAGEMENT</p> <p>Research Methods for Management</p> <p>Corporate Communication</p> <p>Operations Management</p>	15
4	<p>ETHICS AND LAWS IN HOSPITAL</p> <p>Bio-Sciences & Epidemiology</p> <p>Hospital Information System</p> <p>Health Laws & Policies</p> <p>Hospital Environment and Ethics</p>	15
5	<p>MANAGEMENT</p> <p>Hospital Architecture, Planning And Design</p> <p>Materials Management</p> <p>Hospital Operation – I (Patient Care)</p> <p>Hospital Operation – II (Supportive Services)</p>	15

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Applied physics

Course objective:

The objective of this course is that after 100 hours of L,D,P the student shall be able to understand the basic knowledge about the forces acting in human body, gravity, electricity and magnetism.

Course Outcomes:

Students will know about the human body functions applied by the force gravity

Recognize how observation, experiment & theory work together to continue to expand the frontiers of knowledge of the physical universe

Analyze interpret and evaluate scientific hypotheses and theories, laws using rigorous methods

Students can understand the basic scientific principles, theories & laws as was as an awareness of the changing nature of science

Students aid gain knowledge about the current elasticity to differentiate the mode of transmission

Total Credits: 4 (L+T+P= 3+0+1) Total Contact hrs: 80 hrs

Module No.	Module	CONTACT HOURS
1	Introduction Forces in human body Gravity, LOG, COG Levers of the body Anatomical pulleys Body torque Types of motion, Planes of motion, Axis, direction and quality of motion	15+1
2	MUSCLES Elasticity- Hook's law. Stress / strain curve Angle of pull & the mechanical efficiency of muscle Types of muscle work Structure and function of muscle	15+1
3	HYDROTHERAPY Laws of hydrotherapy & its application Heat & its application	15+1

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4	ELECTRICITY Static electricity Current electricity Working & importance of current in clinical practice Electromagnetic spectrum	15+1
5	MAGNETISM Definition Properties of magnets Electromagnetic induction Magnetic forces and field Applied magnetism	15+1

Text Books:

Claytons, Electrotherapy Explained – CBS, 9 Ed, 2013

John Low and Anee Reed, Electrotherapy Explained –, Butterworth Heinmann pub, 1Ed,2000

Dena Gardiner, Principles of Exercise therapy, Bell and Hymes, 4th Ed, 1981.

YOGA

Course Objective

The objective of this course is that after 32 hours of lectures & demonstrations, the student will be able to understand the basic concepts about Asanas and its effects, therapeutic effects of Yoga.

Course Outcomes:

Demonstrate the introduction and principles of yoga.

Knowledge of history of yoga and yoga in modern India.

Outline of yoga background and importance of yoga in modern world.

Learning the types and forms of asanas and description of physiological effect of yoga.

Understanding the role of yoga in physiotherapy.

Total Credits: 4 (L+T+P= 3+0+1) Total Contact hrs: 80 hrs

Sl.No	Module	CONTACT HOURS

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1	Introduction to Yoga Introduction to Yoga Principles of Yoga	5
2	Patanjali History of Yoga Yoga in Ancient and Modern India	5
3	Folds of Yoga Types & Forms of Yoga Asanas & its physiological effects	30
4	Yogic Science Scientific background of Yoga Yoga in modern world	5
5	Advantages of Yoga Physiological Effects of Yoga Therapeutic Uses of Yoga	35

Suggested Books:

BKS Iyengar, Light of Yoga, JP, 1st Ed, 2012.

Payal Gidwani Tiwari, Body Gaurders, CBS, 2nd Ed, 2009.

ORTHOSIS & PROSTHOSIS

Course Objectives:

To describe the various exercise induced physiological changes.
To illustrate the basic concepts of cardiopulmonary exercise testing

Course Outcomes:

At the end of this module, the student must be able to

Visualise the physiological changes in various systems produced during exercise
Understand the potential uses of cardiopulmonary exercise testing

Credit Distribution: 3(L) + 1(P) = 4 Credit, Total Contact hrs: 80 hrs

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	Module	CONTACT HOURS
1.	Definition, Background or History , Classification of Orthoses and prostheses.	20
2	Biomechanical principles of orthotic and prosthetic application	30
3	Designing, Composition of upper extremity lower extremity and spinal orthosis and prostheses, indications and check out	30

Recommended Readings:

Physical Rehabilitation, 7th Edition, Susan B. O Sullivan, Thomas J. Schmitz, George D Fulk, Jaypee Publishers
 Orthoses, Prostheses & Assistive Devices for Physiotherapist, Akhoury Gourang Sinha, Subrat Kumar Tripathy, Raju Sharma, Jaypee Publishers
 Essentials of Prosthetics & Orthotics, A K Agarwal, Jaypee Publishers
 Orthotics & Prosthetics in Rehabilitation, 3rd Edition, Michelle M Lusardi, Milagros Jorge, Elsevier

FITNESS

Course Objectives: the objective of this course is to make the student able to understand about the importance of fitness, exercise and its importance to human body

Course Outcomes:

- CO 1: Definition of fitness, principles of exercises and testing of endurance and strength.
- CO 2. Understand the types of exercises and detail knowledge of aerobics and anaerobic exercises. CO 3. Knowledge of appropriate selection of exercises and advantages of exercises.
- O 4. Understand the different type of muscle strengthening.

At the end of this module, the student must be able to

Credit Distribution: 3(L) + 1(P) = 4 Credit

Total Contact hrs: 80 hrs

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MODULE NO.	MODULE	CONTACT HOURS
1.	INTRODUCTION TO FITNESS Fitness - Introduction to health Fitness testing Principles of exercise, tests of endurance & strength	16
2	FITNESS AND EXERCISE Types of exercises Aerobic Anaerobic	16
3	IMPORTANCE OF EXERCISE IN FITNESS Selection of appropriate exercises Beneficial & adverse effect of exercise	16
4	FITNESS TRAINING Resistance Training CWT Incremental exercise Agility	16
5	FORMS OF FITNESS Aerobic Dance Zumba	16

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EXERCISE PRESCRIPTION IN WOMEN HEALTH

EXERCISE PESCRIPTION IN WOMEN HEALTH

Course description: This course involves the knowledge about relevant aspects of Obstetrics and Gynaecological conditions. The student will have a general understanding of the diseases a women would encounter in her life.

Course objectives: The objective of this course is to enable the student to assess and provide basics of physiotherapeutic treatment in Obstetrics and Gynaecological conditions for relief of pain, relaxation, conditioning and posture

Course Outcomes: At the end of the course the students will be able to:

CO1. Facilitate the awareness of the multi-dimensional and multi-disciplinary aspects for women as general & geriatric population.

CO2. Evaluate a variety of evidence based approaches to Women's Health and Geriatrics with the aim of enhancing clinical practice and patient care in the discipline of Physiotherapy.

CO3. Plan realistic goals for Women's health and geriatrics conditions, Prescribe appropriate and safe physiotherapy interventions with clinical reasoning for the same.

Total Credits: 4 (L+T+P= 3+0+1) Total Contact hrs: 80 hrs

Detailed Syllabus:

Sl.No.	Topics	Contact Hrs
1.	Introduction to Obstetrics and Gynaecology: Clinical anatomy of the female reproductive system, pelvic floor, etc Menstrual cycle and its disorders. Physiological Changes During Pregnancy and its effects on various systems.	4 [4(L)+0(P)]
2.	Cancer of the female reproductive organs-management, Infections and sexually transmitted disease in female	4 [4(L)+0(P)]
3.	Malnutrition and deficiencies in females. Hormonal disorders of females-obesity and female hormones	4 [4(L)+0(P)]
4.	Common Gynaecological Conditions (Including Dysmenorrhoea, Uterine Prolapsed) and their management. Incontinence – Types, Causes, Assessment and Management	8 [4(L)+4(P)]
5.	ANTENATAL: Physiological changes and Bio-Mechanical changes during Pregnancy Physiotherapy Intervention. General Physiotherapy Intervention in Antenatal Period. Relaxation, Postural training, Pelvic floor stretching and strengthening Role of Aerobic Exercises and Yoga during all Trimesters of Pregnancy Complications of Pregnancy and their management	16 [8(L)+8(P)]
6.	Child birth/ Labour: Stages - complications-investigations-management – Pain relief in	8 [3(E)+3(P)]

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	labour Role of Physiotherapy during labour	
7.	Electrotherapeutic Intervention in Antenatal, Postnatal and Menopause. obstetric and gynaecological conditions	8 [4(L)+4(P)]
8.	POST NATAL: Post Natal Physiotherapy in Normal Delivery, Caesarean Section, High Risk Pregnancy Postural advice in Post Natal (Nurturing the child, resting positions) PUERPERIUM- Physiotherapy Intervention	12 [6(L)+6(P)]
9.	Menopause - its effects on emotions and musculoskeletal system Physiotherapy implications during climacteric, Menopause and Post Menopausal Period. Osteoporosis –Physiotherapy	6 [3(L)+3(P)]
10.	Role of Physiotherapy in Women's Health-Puberty, Pregnancy Menopause. Dietary Advices and Specifications during Pregnancy, Lactation and Menopause.	4 [4(L)+0(P)]
11.	PT. management- common gynecological surgeries: Definition, Indications and Management of the following surgical procedures – Hysterosalphyngography, Dilatation and Curettage, Laproscopy, Colposcopy, Hysterectomy	8 [4(L)+4(P)]

Suggestive Readings:

Physiotherapy in Obstetrics and Gynecology by Polden

Cash's Text book of General Medicine and Surgical conditions for Physiotherapists

FOURTH SEMESTER

THERAPEUTIC EXERCISE AND HEALTH PROMOTION

Course objective: To understand the different types of exercise for the benefit of patient indifferent situations and conditions both in health and disease or disorder.

Course outcome:

CO1: Explain the physiological and therapeutic effects of exercise therapy techniques

CO2: Perform the physical assessments methods prior to the application of exercise therapy modalities

CO3: Apply appropriate exercise therapy modalities in patients with various disorders who are indicated for exercise therapy treatments

CO4: Demonstrate the effective exercise therapeutic skills with strong theoretical knowledge on patients

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CO5: Undertake necessary precautions and privacy measures while practicing exercise therapy techniques inpatients and models

Total Credits: 6 (L+T+P= 4+0+2) Total Contact hrs: 128

Detailed Syllabus:

MOD ULE NO.	MODULE	Contact Hrs
1.	Specific exercise regimens <ul style="list-style-type: none">• Isotonic: de Lormes, Oxford, MacQueen, Circuit weight training• Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle• Isometrics Isokinetic regimens	8 L
2.	Proprioceptive Neuromuscular Facilitation	4L + 4P

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3.	Suspension Therapy Definition, principles, equipments & accessories, Indications & contraindications, Benefits of suspension therapy Types of suspension therapy: axial, vertical, pendular Techniques of suspension therapy for upper limb Techniques of suspension therapy for lower limb	4L + 4P	
4.	Functional Re-education Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lower limb and Upper limb activities.	4L + 4P	
5.	Aerobic Exercise Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.	4L + 4P	
6.	Stretching Definition of terms related to stretching; Tissue response towards immobilization and elongation, Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures, Precautions and contraindications of stretching, Techniques of stretching.	4L + 4P	
7.	Manual Therapy & Peripheral Joint Mobilization Schools of Manual Therapy, Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn,	4L + 4P	
	Mulligan Biomechanical basis for mobilization, Effects of joint mobilisation, Indications and contraindications, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.		
8.	Balance - Definition Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output Components of balance (sensory, musculoskeletal, biomechanical) Causes of impaired balance, Examination & evaluation of impaired balance, Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types Balance retraining	4L + 4P	
9.	Co-ordination Exercise Anatomy & Physiology of cerebellum with its pathways Definitions: Co-ordination, Inco-ordination Causes for Inco-ordination, Test for co-ordination: equilibrium test, non-equilibrium test Principles of co-ordination exercise. Frenkel's Exercise: uses of Frenkel's exercise, technique of Frenkel's exercise, progression, home exercise.	4L + 4P	

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10.	Posture Definition, Active and Inactive Postures, Postural Mechanism, Patterns of Posture, Principles of re-education: corrective methods and techniques, Patient education.	4L +4P
11.	Walking Aids Types: Crutches, Canes, Frames; Principles and training with walking aids	4L +4P
12.	Basics in Manual Therapy & Applications with Clinical reasoning Examination of joint integrity Contractile tissues Non contractile tissues Mobility - assessment of accessory movement & End feel Assessment of articular & extra-articular soft tissue status Myofascial assessment Acute & Chronic muscle hold Tightness Pain-original & referred Basic principles, Indications & Contra-Indications of mobilization skills for joints & soft tissues. Maitland Mulligan Mckenzie Muscle Energy Technique Myofascial stretching	4L +4P
	Cyriax Neuro Dynamic Testing	
13.	Hydrotherapy Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Use of special equipment, techniques, Effects and uses, merits and demerits	4L +4P
14.	Individual and Group Exercises Advantages and Disadvantages, Organization of Group exercises, Recreational Activities and Sports	4L +4P
15.	Introduction to Yoga Asanas – Principles and elements Pranayamas – Principles, Methods and Techniques	4L +5P
	Traction- Rationale, Indications and contraindications, Techniques, Effects and uses [JMIU] Gymnasium: Introduction to the gym equipments, Types of Gym & gym equipments Placement and setup of gym equipments. [JMIU]	

Practical:

The students of exercise therapy are to be trained in Practical Laboratory work for all the topics discussed in theory. The student must be able to evaluate and apply judiciously the different methods of exercise therapy techniques on the patients. They must be able to

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Demonstrate the technique of measuring using goniometry
Demonstrate muscle strength using the principles and technique of MMT
Demonstrate the techniques for muscle strengthening based on MMT grading
Demonstrate the PNF techniques
Demonstrate exercises for training co-ordination – Frenkel's exercise
Demonstrate the techniques of massage manipulations
Demonstrate techniques for functional re-education
Assess and train for using walking aids
Demonstrate mobilization of individual joint regions
Demonstrate to use the technique of suspension therapy for mobilizing and strengthening joints and muscles
Demonstrate the techniques for muscle stretching
Assess and evaluate posture and gait
Demonstrate techniques of strengthening muscles using resisted exercises
Demonstrate techniques for measuring limb length and body circumference

Suggestive readings:

Therapeutic exercise by Carolyn Kisner
Principles of exercise therapy by M. Dena Gardiner

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BIO PHYSICS

Course objective: To understand the concept and basic principles to know electrotherapy equipments.

Course outcome :

CO1: Understand matter and electricity

CO2: Understand use of physical agents and therapeutic electricity

Total Credits: 4(L+T+P= 3+0+1) Total Contact hrs: 80hrs

Detailed Syllabus:

MODULE NO.	MODULE	Contact Hrs
1.	Physical principles	15+1P
	<p>Structure and properties of matter -solids, liquids and gases, adhesion, surface tension, viscosity, density and elasticity. Structure of atom, molecules, elements and compound Electricity: Definition and types. Therapeutic uses. Basic physics of construction. Working Importance of currents in treatment. Static Electricity: Production of electric charge. Characteristic of a charged body. Characteristics of lines of forces. Potential energy and factor on which it depends. Potential difference and EMF. Current Electricity: Units of Electricity: farad, Volt, Ampere, Coulomb, Watt Condensers: Definition, principle, Types- construction and working, capacity & uses. Magnetism: Definition. Properties of magnets. Electromagnetic induction. Transmission by contact. Magnetic field and magnetic forces. Magnetic effects of an electric field. Conductors, Insulators, Potential difference, Resistance and intensity Ohm's law and its application to DC and AC currents. Fuse: construction, working and application. Transmission of electrical energy through solids, liquids, gases and vacuum. Rectifying Devices- Thermionic valves, Semiconductors, Transistors, Amplifiers, transducer and Oscillator circuits. Display devices and indicators- analogue and digital. Transformer: Definition, Types, Principle,</p>	

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	<p>Construction, Eddycurrent, working uses Chokes: Principle, Construction and working, Uses</p>	
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2.	Effects of Current Electricity Chemical effects-Ions and electrolytes, Ionisation, Production of an EMF by chemical actions. Ionization: Principles, effects of various techniques of medical ionization. Electromagnetic Induction. Electromagnetic spectrum.	15+1P
3.	Electrical Supply Brief outline of main supply of electric current Dangers-short circuit, electric shocks: Micro/ Macro shocks Precaution-safety devices, earthing, fuses etc. First aid and initial management of electric shock Burns: electrical & chemical burns, prevention and management	15+1P
4.	Various agents Thermal agents: Physical Principles of cold, Superficial and deep heat. Ultrasound: Physical Principles of Sound Electro-magnetic Radiation: Physical Principles and their Relevance to Physiotherapy Practice Electric Currents: Physical Principles and their Relevance to Physiotherapy Practice.	15+1P
5.	Section II – Therapeutic Electricity	15+1P

Suggestive readings:

Introduction to biophysics by Dr. Pranab Kumar Banerjee

Biophysics: An introduction by Corterill R.

ELECTROTHERAPY

Course objective – To learn the Principles, Techniques, Effects, Indication, Contra-Indication and the dosage parameter for various indications of electrotherapeutic modalities in the restoration of physical function and in various conditions.

Course outcome:

CO-1: Describe the basics of electricity and its therapeutic aspects based on historical perspective of electrotherapy

CO-2: Apply the principles and techniques of different electrotherapy modalities in the clinical population

CO-3: Perform appropriate electrotherapeutic stimulation on patients based on the clinical need of the patients

CO-4: Demonstrate the effective electrotherapy treatment methods with privacy and precautions

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CO-5: Perform accurate electro-diagnostic tests and interpret the its findings prior to the selection of therapeutic currents

CO-6: Describe the effects and uses of various electrical currents in the clinical set-up

Total Credits: 6 (L+T+P= 4+0+2) Total Contact hrs: 128 hrs

Detailed Syllabus:

MODULE NO.	MODULES	Contact Hrs
Section A - Low frequency Currents		
1.	Basic types of current Direct Current: types, physiological&therapeutic effects. Alternating Current	9L
2.	Types of Current used in Therapeutics Modified D.C Faradic Current Galvanic Current Modified A.C Sinusoidal Current Diadynamic Current.	5L+5P
3.	Faradic Current: Definition, Modifications, Techniques of Application of Individual, Muscle and Group Muscle stimulation, Physiological & Therapeutic effects of Faradic Current, Precautions, Indications & Contra-Indications, and Dangers.	5L+5P
4.	Galvanic Current: Definition, Modifications, Physiological & Therapeutic effects of Galvanic Current, Indications & Contra- Indications, Dangers, Effect of interrupted galvanic current on normally innervated and denervated muscles and partially denervated muscles.	1L+1P
5.	Sinusoidal Current & Diadynamic Current in Brief.	1L+1P
6.	HVPGS – Parameters & its uses	1L+1P
7.	Ionization / Iontophoresis: Techniques of Application of Iontophoresis, Indications, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhydrosis, wound healing.	1L+1P
8.	Cathodal / Anodal galvanism.	1L+1P
9.	Micro Current & Macro Current	2L

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10.	Types of Electrical Stimulators NMES- Construction component. Neuro muscular diagnostic stimulator-construction component. Components and working Principles	1L+1P
11.	Principles of Application: Electrode tissue interface, Tissue Impedance, Types of Electrode, Size & Placement of Electrode – Waterbath, Unipolar, Bipolar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance.	1L+1P
12.	Nerve Muscle Physiology: Action Potential, Resting membrane potential, Propagation of Action Potential, Motor unit, synapse, Accommodation, Stimulation of Healthy Muscle, Stimulation of Denervated Muscle, and Stimulation for Tissue Repair.	5P
13.	TENS: Define TENS, Types of TENS, Conventional TENS and Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS. Types of Electrodes & Placement of Electrodes, Dosage parameters, Physiological & Therapeutic effects, Indications &	5L+5P
	Contraindications.	1L+1P
14.	Pain: Define Pain, Theories of Pain (Outline only), Pain Gate Control theory in detail.	1L+1P
Section B - Electro-diagnosis		
1. 2. 3. 4. 5.	FG Test SD Curve: Methods of Plotting SD Curve, Apparatus selection, Characters of Normally innervated Muscle, Characters of Partially Denervated Muscle; Characters of Completely denervated Muscle, Chronaxie & Rheobase. Nerve conduction velocity studies EMG: Construction of EMG equipment. Bio-feed back.	1L+5P
Section C - Medium Frequency		
1. 2. 3.	Interferential Therapy: Define IFT, Principle of Production of IFT, Static Interference System, Dynamic Interference system, Dosage Parameters for IFT, Electrode placement in IFT, Physiological & Therapeutic effects, Indications & Contraindications. Russian Current Rebox type Current	1L+1P

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Section D - Thermo & Actinotherapy (High Frequency Currents)	
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1.	Electro Magnetic Spectrum.	1L+1P
2.	SWD: Define short wave, Frequency & Wavelength of Production of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications & Contraindications, Dangers, Dosage parameters.	1L+1P 1L+1P 1L+1P 1L+1P 1L+1P 1L+1P
3.	Pulsed Electro Magnetic Energy: Principles, Production & Parameters of PEME, Uses of PEME.	1L+1P
4.	Micro Wave Diathermy: Define Microwave, Wave length & Frequency, Production of MW, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications & Contraindications, Dangers of MWD.	1L+1P
5.	Ultrasound: Define Ultrasound, Frequency, Piezo Electric effects: Direct, Reverse, Production of US, Treatment Dosage parameters: Continuous & Pulsed mode, Intensity, US Fields: Near field, Farfield, Half value distance, Attenuation, Coupling Media, Thermal effects, Non-thermal effects, Principles & Application of US: Direct contact, Water bag, Water bath, Solid sterile gel pack method for wound. Uses of US, Indications & Contraindications, Dangers of Ultrasound. Phonophoresis: Define Phonophoresis, Methods of application, commonly used drugs, Uses. Dosages of US.	5L+5P
6.	IRR: Define IRR, wavelength & parameters, Types of IR generators, Production of IR, Physiological & Therapeutic effects, Duration & frequency of treatment, Indication & Contraindication.	1L+1P
7.	UVR: Define UVR, Types of UVR, UVR generators: High pressure mercury vapour lamp, Water cooled mercury vapour lamp, Kromayer lamp, Fluorescent tube, Theraktin tunnel, PUVA apparatus. Physiological & Therapeutic effects. Sensitizers & Filters. Test dosage calculation. Calculation of E1, E2, E3, E4 doses. Indications, contraindications. Dangers. Dosages for different therapeutic effects, Distance in UVR lamp	1L+1P

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8.	LASER: Define LASER. Types of LASER. Principles of Production. Production of LASER by various methods. Methods of application of LASER. Dosage of LASER. Physiological & Therapeutic effects of LASER. Safety precautions of LASER. Classifications of LASER. Energy density & power density	1L+1P
Section E – Superficial heating Modalities		
1.	Wax Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers.	1L+1P
2.	Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications.	1L+1P
3.	Moist Heat Therapy: Hydro collar packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications.	1L+1P
4.	Cyclotherm: Principles of production, Therapeutic uses, Indications & Contraindications.	1L+1P
5.	Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications.	1L+1P
6.	Whirl Pool Bath: Construction, Method of Application, Therapeutic Uses, Indications & Contraindications.	1L+1P
7.	Magnetic Stimulation, Principles, Therapeutic uses, Indications & contraindication.	1L+1P
8.	Cryotherapy: Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, Methods of application with dosages.	1L+1P

Practical:

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

Demonstrate the technique for patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy.

Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.

Demonstrate placement of electrodes for various electrotherapy modalities

Electrical stimulation for the muscles supplied by the peripheral nerves

Faradism under Pressure for UL and LL

Plotting of SD curve with chronaxie and rheobase

Demonstrate FG test

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Application of Ultrasound for different regions-various methods of application
Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
Demonstrate the technique of UVR exposure for various conditions – calculation of test dose
Demonstrate treatment method using IFT for various regions
Calculation of dosage and technique of application of LASER
Technique of treatment and application of Hydrocollator packs, cryotherapy, contrast bath, wax therapy
Demonstrate the treatment method using whirl pool bath
Winding up procedure after any electrotherapy treatment method.

Equipment care -
Checking of equipments
Arrangement of exercise therapy and electro therapy equipment.
Calibration of equipment
Purchase, billing, document of equipment.
Safety handling of equipments.
Research lab equipment maintenance.
Stock register, movement register maintenance

Text Books:

Clayton's Electrotherapy – Therapy and practice – Angela Forster, All India Traveler Bookseller.9th Ed,2012.
John Low and Anee Reed ,Electrotherapy Explained –, Butterworth Heinmann Pub. 4th Ed, 2003
Edward BellisClayton , Nigel Palastanga, Claytons Electrotherapy:Theory and practice, 9th Ed, 1985
Valma, J.Robertson, Elethrotherpy explained, Butterworth , Heinmann, Elsevier, 4th Ed, 2014.

References:

Jagmohan Singh, Electrotherapy, Jaypee Brothers, 2nd Ed, 2012.
Basanta Kumar Nanda, Electrotherpy explained, Jaypee Brothers, 1st Ed, 2006.
Tim Watson Electrotherpay evidence based practice, Churchill Livingston, 12th Ed, 2008.

PROFESSIONAL VALUES & LAWS FOR PHYSIOTHERAPISTS

Course objective : To understand that legal and ethical considerations are inherent and inseparable parts of good medical practice across the whole spectrum.

Course outcome :

CO1: Understand principles of ethics and its history

CO2: Apply rules of ethics in physiotherapy profession

CO3: To understand the importance of confidentiality and responsibility in detail

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CO: To understand the laws affecting physiotherapy practice

Total Credits: 4 (L+T+P= 4+0+0) Total Contact hrs: 64 hrs

Detailed Syllabus:

MODULE NO.	MODULES	Contact Hrs
1.	Medical ethics versus medical law - Definition - Goal – Scope	2
2.	Introduction to Code of conduct	2
3.	Basic principles of medical ethics – Confidentiality	2
4.	Malpractice and negligence - Rational and irrational drug therapy	2
5.	Autonomy and informed consent - Right of patients	2
6.	Care of the terminally ill- Euthanasia	2
7.	Organ transplantation	2
8.	Medical diagnosis versus physiotherapy diagnosis.	2
9.	Medico legal aspects of medical records – Medico legal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects.	2
10.	Professional Indemnity insurance policy	2
11.	Development of standardized protocol to avoid near miss or sentinel Events	2
12.	Obtaining an informed consent.	2
13.	Biomedical ethical principles	2
14.	Code of ethics for physiotherapists	2
15.	Ethics documents for physiotherapists	2
16.	Laws affecting physiotherapy practice	2
	The Physiotherapist as Patient/Client manager Evaluation and diagnosis Diagnosis as clinical decision making Prognosis Discharge planning and discontinuance of care Discontinuance of care Outcomes Clinical decision making Referral relationships Interpersonal relationships Ethical and legal issues Informed consent Managed care and fidelity.	7

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	The Physiotherapist as Consultant Physiotherapy consultation Building a consulting business The consulting process The skills of a good consultant Trust in the consultant/client relationship Ethical and legal issues in consultation Components of a consulting agreement	5
	The Physiotherapist as Critical Inquirer History of critical inquiry Evidence-based practice Outcomes research Whose responsibility is research? Roles of the staff physiotherapist in critical inquiry Collaboration in clinical research	6
	The Physiotherapist as Administrator History of physiotherapy administration Contemporary physiotherapy administration Patient/client management First-line management Midlevel managers and chief executive officers Leadership Ethical and legal issues.	7
	The Physiotherapist as Educator History of physiotherapy education Contemporary educational roles of the physiotherapist Teaching opportunities in continuing education Academic teaching opportunities Theories of teaching and learning in professional education Ethical and legal issues in physiotherapy education	7

Suggestive readings:

Medical ethics by C.M francis.

ELECTRODIAGNOSIS

Course objective : At the end of the course, the candidate will be able to describe neuro physiology of muscle and effect of various therapeutic currents on nerve-muscle complex, use of Tests-Galvanic-Faradic test, Sensory, pain, vibration threshold, Strength duration curves, nerve conduction velocity, needle and surface electromyography

Course outcome :

CO1: describe structure and function of nerve and muscle as a base for understanding the electro-diagnostic assessment
CO2: knowledge regarding advanced methods of electro diagnosis and its application in pediatric and adult neurological conditions
CO3: apply skills of electro-diagnosis (SD Curve), observe needle and surface EMG and NCV studies and analyze test results
CO: interpretation and analysis of assessment and findings

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Total Credits: 4 (L+T+P= 3+0+1) Total Contact hrs: 80 hrs

Detailed Syllabus:

MODULE NO.	MODULES	Contact Hrs
1.	Faradic Galvanic Test S.D.C. Sensory, pain, vibration threshold	60
2.	a) N.C. V Studies	10
3.	a) Surface E.M.G	10

SPLINTING AND BRACING

Course Objectives: To describe the need and importance of splints and brace in different conditions. Course Outcomes:
At the end of this module, the student must be able to
Identify and Prescribe the splints or braces required for the specific condition

Credit Distribution: 3(L) + 1(P) = 4 Credit

	Module	Credit Distribution
1	Introduction to Splinting and Bracing. Baseline materials for Splinting and Bracing. Indications, Contraindications and Complications.	20
2	Upper Limb & Lower Limb Splinting	12
3	Upper limb and Lower Limb Bracing	12
4	Clinical Implication of Splints and Braces in Musculoskeletal disorders, Sports, Neurological and other conditions.	20

Recommended/Suggested Textbooks:

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Physical Rehabilitation, Susan B O Sullivan, Thomas J Schimitz, 5th Edition

Clinical Sports Medicine, Peter brukner, Karim Khan 3rd Edition

PHYSIOTHERAPEUTIC EVALUATION

COURSE OBJECTIVE

The objective of this course is that after 100 hours of lectures & demonstrations, the student will be able to understand the knowledge about Physiotherapy evaluation of various conditions including orthopaedics, neurology, cardio respiratory, sports and Hand conditions.

Course Outcomes:

To understand the importance of evaluation and screening

To be wellversed in PT evaluation in orthopaedic conditions

To understand PT evaluation in cardio-pulmonary conditions

To be wellversed in PT evaluation in Neurological conditions

To clearly explain the concept of PT evaluation in sports and Hand conditions.

Total Credits: 4 (L+T+P= 3+0+1)Total Contact hrs: 80 hrs

MODULE NO.	MODULE	TEAHING/LEARNING HOURS	
1	INTRODUCTION Importance of evaluation Importance of screening Clinical decision making Methods of evaluation General evaluation formats	5	
2	ORTHOPEDIC EVALUATION PT Evaluation in orthopedic conditions Range of motion Limb length measurement End feels	10	10

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3	NEUROLOGICAL EVALUATION PT Evaluation in Neurology conditions Myotomes Dermatomes Reflex testing Tone assessment	10	10
4	CARDIO-PULMONARY EVALUATION PT Evaluation in Cardio-pulmonary conditions Normal & abnormal heart sounds ECG waveforms – normal & abnormal Auscultation techniques	10	10
5	SPORTS EVALUATION PT Evaluation in Sports & Hand conditions Common sports injuries Ergonomic measures	10	5

David Magee, Orthopaedic physical assessment, MCgH, 3rd Ed, 2005.
 Frown Felter, Cardiopulmonary evaluation, ELBS, 2nd Ed, 1997.
 Lindsay, Neurology Assessment – Mosby, 3rd Ed, 2009.
 David, Sports Injuries assessment and Rehab – CBS, 1st Ed, 2004.

MANUAL THERAPY

Course Objectives:

To describe the various school concepts of manual therapy
 To illustrate the basic concepts of manual therapy

Course Outcomes:

At the end of this module, the student must be able to

Select the technique and grades of manual therapy for the specific case.
 Understand the potential uses of manual therapy

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Credit Distribution: 3(L) + 1(P) = 4 Credit

	Module	Credit Distribution
1	Definition, Classification, Indications and Contraindications of Manual Therapy	12
2	Various School of Thoughts: McKenzie Maitland Kaltenborn Mulligan Cyriax Butler	26
3	Physiological and Accessory movements, Grades of Mobilization, Concave Convex Rule	14
4	Clinical Implication of manual Therapy in different clinical cases.	12

Recommended/Suggested Textbooks:

The Mulligan Concept of manual therapy, Wayne hing, Toby Hall, Brian Mulligan
Principles of Manual Therapy, 3rd Edition, Deepak Sebastian
Diagnostic process for Physiotherapist using Manual therapy in Clinical Practice, Pearlson K
Orthopaedic Manual Physical Therapy, From Art to Evidence, Christopher H. Wise

FIRST AID AND EMERGENCY MANAGEMENT

COURSE OBJECTIVE:

At the end of the course student ill acquire knowledge about first aid and emergency servicesCOURSE OUTCOME:

CO 1: To learn about various emergencies and the emergency care

CO2: To learn medical Triage and the instruments used during the care.

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Total Credits: 4 (L+T+P= 3+0+1) Total Contact hrs: 80 hrs

Module no.	Module	Hours of teaching/learning	
		Theory	Practical
1	Introduction to First Aid - Assessment, immediate actions and the priorities within first aid Vital signs	5	5
2	Importance of First aid in Physiotherapy	2	4
3	Bandages – Types, binders, splints & slings. Examination of Vital Signs.	2	4
4	First Aid - RTA including fractures and spinal cord injuries Cardiac arrest Respiratory failure Burns Shock- Electric, Hypovolemic and control of Bleeding, Hypothermia and Hyperthermia Drowning Poisoning, Snake Bite.	20	
2	Medical Triage- concept of Emergency: Definition importance and rules, code tags and triage terminology.	20	3
3	Instruments used in First Aid (First Aid kit).	2	2
4	CPR Indication of CPR. Assessment and technique of CPR.	4	5
	Artificial ventilation.	2	2

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Recommended Textbooks

First aid in emergency – St-john. Ambulance Association.

Physiotherapy for burns & Reconstruction – Glassey.

Surgical & Medical Procedures for Nurses & Paramedical staff – Nathan.

First aid & management of general injuries & common ailments-Gupta & Gupt

PHYSIOTHERAPY IN GERIATICS

Course Objectives:

To describe the various physiological changes because of Aging

To describe the Legal right and benefits of aging

Course Outcomes:

At the end of this module, the student must be able to

Apply the knowledge of changes and help the geriatric population in activities of Daily life.

Help to prevent the complications in Geriatric Population Credit Distribution: 3(L) + 1(P) = 4 Credit,

	Module	Credit
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		Distribution
1	Geriatrics: Definition: gerontology, geriatrics, aging, senior citizen in India, NGO's, legal rights, and benefits.	20
2	Institutional community based elderly. Old age homes. Physiology of aging: changes in various systems: musculoskeletal, cardio-pulmonary, neurological, special senses	28
3	Clinical implication, strategies for improvement. Compensatory approaches and physiotherapy management. Theories of aging	16

Recommended Readings:

Park's textbook of preventive and Social Medicine, K Park
 Textbook of Community Medicine, Preventive and Social Medicine, Sinder Lal, Adarsh, pankaj, 6th Edition, CBS Publishers & Distributors Pvt Ltd
 2nd Edition, Current Diagnosis & Treatment Geriatrics, Lange

FIFTH SEMESTER

Core Course(s)(CC)						
Code	Course	Teaching Scheme			Contact Hours	Credits
		L	T	P		
BPTC5501	Clinical Orthopaedics & Traumatology	5	-	-	5	5
BPTC5502	General Surgery and Obstetrics & Gynaecology	5	-	-	5	5
BPTC5503	General Medicine, Paediatrics & Psychiatry	5	-	-	5	5
BPTC5604	Physiotherapy in Sports Medicine	4	-	2	8	6
BPTC5405	Introduction to Quality and Patient safety	4	-	-	4	4
Discipline Specific Elective(DSE) Course(s)						
BPTD5406	Exercise Physiology	3	-	1	5	4
BPTD5407	Sports Psychology	4	-	-	4	4
BPTD5408	Occupational Health	3	-	1	5	4
BPTD54099	Bronchial Hygiene Techniques	3	-	1	5	4
Ability Enhancement(AE) Course(s)						
CP-V	Clinical Postings-V	-	-	2	4	2
Skill Enhancement(AE) Course(s)						
CP-VI	Clinical Postings-VI	-	-	2	4	2
Total:					40	29

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CLINICAL ORTHOPEDICS & TRAUMATOLOGY

Course description - This subject follows the basic science subjects to provide the knowledge about orthopedic conditions the therapist would encounter in their practice. The objective of this course is that after completion of the lectures and discussion the student will be able to demonstrate an understanding of orthopedic conditions causing disability, list the etiology, clinical features and methods of investigations and management.

Course Objective: The course enables the students to understand about the mechanism of injuries in orthopedics and should be able to understand the management orthopedics, traumatology and sports related injuries, with emphasis on medical and surgical management.

Course Outcomes: On completion of this subject, the students will be able to:

CO1: understand the basic orthopaedic conditions which commonly cause disability and their management. CO2: Know the aetiology, Classification, Pathology, Clinical Features, Relevant Investigations, Complications, Surgical & Non Surgical Management of various Orthopaedic Conditions.

CO3: Assess and provide physiotherapeutic techniques in Sports conditions for relief of pain, relaxation, conditioning and posture.

Total Credits: 5 (L+T+P= 5+0+0) Total Contact hrs: 80 hrs

Detailed Syllabus:

MODULE NO.	MODULE	Contact Hrs
1.	Introduction: Introduction to orthopaedics. Clinical examination in an Orthopedic patient. Common investigative procedures. Radiological and Imaging techniques in Orthopaedics. Inflammation and repair, Soft tissue healing.	2L [2(L)+0(P)]

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2.	Traumatology: Fracture: definition, types, signs and symptoms. Fracture healing. Complications of fractures. Conservative and surgical approaches. Principles of management – reduction(open/closed,immobilization etc). Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative).	4 L [4(L)+0(P)]
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3.	<p>Fractures and Dislocations of Upper Limb:</p> <p>Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:</p> <p>Fractures of clavicle and scapula.</p> <p>Fractures of greater tuberosity and neck of humerus.</p> <p>Fracture shaft of humerus.</p> <p>Supracondylar fracture of humerus.</p> <p>Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles.</p> <p>Side swipe injury of elbow.</p> <p>Both bone fractures of ulna and radius.</p> <p>Fracture of forearm – Monteggia, Galeazzi fracture – dislocation.</p> <p>Chauffer's fracture.</p> <p>Colle's fracture.</p> <p>Smith's fracture.</p> <p>Scaphoid fracture.</p> <p>Fracture of the metacarpals.</p> <p>Bennett's fracture.</p> <p>Fracture of the phalanges. (Proximal and middle.)</p> <p>Dislocations of Upper Limb –</p> <p>Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates maneuver), surgical management (Putti-Platt, Bankart's) etc.</p> <p>Recurrent dislocation of shoulder.</p> <p>Posterior dislocation of shoulder – mechanism of injury, clinical features and management.</p> <p>Posterior dislocation of elbow – mechanism of injury, clinical feature, complications & management.</p>	6 L [6(L)+0(P)]
4.	<p>Fracture of Spine:</p> <p>Fracture of Cervical Spine - Mechanism of injury, clinical feature, complications (quadriplegia); Management- immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia).</p> <p>Clay shoveller's fracture.</p> <p>Hangman's fracture.</p> <p>Fracture odontoid.</p> <p>Fracture of atlas.</p> <p>Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, and management— conservative and surgical of common fractures around thoracic and lumbar regions.</p> <p>Fracture of coccyx.</p> <p>Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.</p>	4 L [4 (L)+0(P)]

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5.	<p>Fractures and Dislocations of Lower Limb: Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: Fracture of pelvis. Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical Fractures of trochanters. Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical. Supracondylar fracture of femur. Fractures of the condyles of femur. Fracture patella. Fractures of tibial condyles. Both bones fracture of tibia and fibula. Dupuytren’s fracture Maisonneuve’s fracture. Pott’s fracture – mechanism of injury, management. Bimalleolar fracture Trimalleolar fracture Fracture calcaneum – mechanism of injury, complications and management. Fracture of talus. Fracture of metatarsals—stress fractures jone’s fracture. Fracture of phalanges. Dislocations of Lower Limb - mechanism of injury, clinical features, complications, management of the following dislocations of lower limb:</p>	10 L [10(L)+0(P)]
	<p>Anterior dislocation of hip. Posterior dislocation of hip. Central dislocation of hip. Dislocation of patella. Recurrent dislocation of patella.</p>	
6.	<p>Soft Tissue Injuries - Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. Mechanism of injury of each, clinical features, managements-conservative and surgical of the following soft tissue injuries: Meniscal injuries of knee. Cruciate injuries of knee. Medial and lateral collateral injuries of knee. Lateral ligament of ankle. Wrist sprains. Strains- quadriceps, hamstrings, calf, biceps, triceps etc. Contusions- quadriceps, gluteal, calf, deltoid etc. Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc.</p>	8 L [8 (L)+0(P)]

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7.	Hand Injuries - mechanism of injury, clinical features, and management of the following – Crush injuries. Flexor and extensor injuries. Burn injuries of hand.	4L [4(L)+0(P)]
8.	Amputations - Definition, levels of amputation of both lower and upper limbs, indications, complications.	4L [4(L)+0(P)]
9.	Traumatic Spinal Cord Injuries - Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia	4L [4(L)+0(P)]
10.	Deformities - clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities: Congenital Deformities – CTEV. CDH. Torticollis. Scoliosis. Flat foot. Vertical talus. Hand anomalies- syndactyly, polydactyly and ectrodactyly. Arthrogyrosis multiplex congenita(amyoplasia congenita). Limb deficiencies- Amelia and Phocomelia.Klippel feilsyndrome. Osteogenesis imperfecta(fragile ossium). Cervical rib.	4L [4(L)+0(P)]
	b. Acquired Deformities – Acquired Torticollis. Scoliosis. Kyphosis. Lordosis. Genu varum. Genu valgum. Genu recurvatum Coxa vara. Pes cavus. Hallux rigidus. Hallux valgus. Hammer toe. Metatarsalgia.	

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11.	Disease of Bones and Joints: Causes, Clinical features, Complications, Management- medical and surgical of the following conditions: Infective conditions: Osteomyelitis (Acute / chronic). Brodie's abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc. Arthritic conditions: Pyogenic arthritis. Septic arthritis. Syphilitic infection of joints. Bone Tumors: classification, clinical features, management -medical and surgical of the following tumors: Osteoma. Osteosarcoma, Osteochondroma. Enchondroma. Ewing's sarcoma. Giant cell tumor. Multiple myeloma. Metastatic tumors. Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis. Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia. Osteoporosis.	4L [4(L)+0(P)]
12.	Inflammatory and Degenerative Conditions: causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions: Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis Gouty arthritis. Psoriatic arthritis. Hemophilic arthritis. Still's disease (juvenile rheumatoid arthritis). Charcot's joints. Connective Tissue Disorders- Systemic Lupus Erythematosus, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)	4L [4(L)+0(P)]
13.	Syndromes: Causes, Clinical features, complications, management- conservative and surgical of the following: Cervico brachial syndrome. Thoracic outlet syndrome. Vertebro- basilar syndrome. Scalenus syndrome. Costo clavicular syndrome. Levator scapulae syndrome. Piriformis syndrome.	4L [4(L)+0(P)]
14.	Neuromuscular Disorders: Definition, causes, clinical feature, complications, management. (Multidisciplinary approach) medical and surgical of the following conditions: Cerebral palsy. Poliomyelitis. Spinal Dysraphism. Leprosy.	2L [2(L)+0(P)]

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15.	Cervical and Lumbar Pathology: Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following: Prolapsed intervertebral disc (PID), Spinal Canal Stenosis. Spondylosis (cervical and lumbar) Spondylolysis.Spondylolisthesis .Lumbago/ Lumbosacral strain. Sacralisation. Lumbarisation. Coccydynia. Hemivertebra.	4L [4(L)+0(P)]
16.	Orthopedic Surgeries: Indications, Classification, Types, Principles of management of the following Surgeries: Arthrodesis. Arthroplasty (partial and total replacement). Osteotomy, External fixators. Spinal stabilization surgeries (Harrington's, Luque's, Steffiplate) etc , Limb re attachments.	6L [6(L)+0(P)]
17.	Regional Conditions: Definition, Clinical features and management of the following regional conditions Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotatorcuff tendinitis. Supraspinatus Tendinitis. Infraspinatus Tendinitis. Bicipital Tendinitis. Subacromial Bursitis. Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis(student's elbow). Triceps Tendinitis. Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture. Pelvis and Hip: IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis. Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome). Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis.	6L [4(L)+0(P)]
	Metatarsalgia. Morton's Neuroma.	

Suggested Readings:

Jayant Joshi and P Kothwal. Essential Orthopaedics and applied physiotherapy –India, Elsevier, 1999(Reprint-2008,ISBN-978-81-8147-215-1)

David Hamblen, Hamish Simpson. Adams's outline of fractures- 12th ed, Philadelphia. Churchill Livingstone, 2007(ISBN-13: 978-0-443-10297-4, ISBN-10: 0-443-10297-X)

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3. David Hamblen , Hamish Simpson Adams's outline of orthopaedics. Churchill Livingstone, 2009, (ISBN- 13: 978-0-7020-3061-1,ISBN-10: 0-7020-3061-9)

4. J. Maheswari. Essential Orthopaedics, 3rd ed,New Delhi,Mehta Publishers,2002(ISBN:81-88039-00-04)

5. David J. Magee, Orthopedic Physical Assessment; 5th Revised ed, London, Saunders,2008, (ISBN-10: 0721605710 ,ISBN-13: 9780721605715)

Louis Solomon, David J Warwick. Apley's Concise System of Orthopaedics and Trauma, 3rd Revised ed, London, Hodder Arnold.2003(ISBN-10: 0340809841,

2. Fred R.T Nelson, Carolyn Taliaferro Blauvelt. A Manual of Orthopaedic Terminology. 7th Revised ed, St Louis, Mosby, 2007 (ISBN-10: 0323045030)

3. Terry Malone, Thomas McPoil. Orthopedic and Sports Physical Therapy. St.

11. Louis,3rd Revised ed, Mosby ,1997(ISBN-10: 0815158866,ISBN-13: 9780815158868)

12. 4. Ronald McRae. Clinical Orthopaedic Examination, 6th ed, Churchill Livingstone,13. 2010(ISBN:9780702033933)

5. Graham Apley, Louis Solomon. Physical Examination in Orthopaedics, Hodder Arnold

15. Publications ,1997(ISBN: 13: 9780750617666)

GENERAL SURGERY & OBSTETRICS AND GYNECOLOGY

Subject description - This subject follows the basic science subjects to provide the knowledge about relevant aspects of general surgery. The student will have a general understanding of the surgical conditions the therapist would encounter in their practice. The objective of this course is that after 80 hrs of lectures and discussion the student will be able to list the indications for surgery, etiology, clinical features and surgical methods for various conditions.

Course Objective: The course enables the students to understand about the causes of disorders of different systems of body and enable to understand the principles behind the management of disorders related to above said areas.

Course Outcomes: On completion of this subject, the students will be able to:

CO1: demonstrate a general understanding of the diseases that therapists would encounter in their practice.

CO2: Understand the etiology and pathology, the patient's symptoms and the resultant functional disability.

CO3: Understand the limitations imposed by the diseases on any therapy.

Total Credits: 5 (L+T+P= 5+0+0) Total Contact hrs: 80hrs

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Detailed Syllabus:

GENERAL SURGERY INCLUDING BURNS AND PLASTIC SURGERY:

MOD ULE NO.	MODULE	ContactHrs
1.	Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management ; Nutrition in the surgical patient ; Wound healing – basic process involved in wound repair, basic phases in the healing process, clinical management of wounds, factors affecting wound healing, Scars – types and treatment. Hemostasis – components, hemostatic disorders, factors affecting bleeding during surgery. Transfusion therapy in surgery – blood components, complications of transfusion ; Surgical Infections ; General Post – Operative Complications and its management.	3
2.	Reasons for Surgery; Types of anaesthesia and its affects on the patient; Types of Incisions; Clips Ligatures and Sutures; General Thoracic Procedures – Radiologic Diagnostic procedures, Endoscopy – types, Biopsy – uses and types. Overview and Drainage systems and tubes used in Surgery.	2
3.	Causes, Clinical Presentation, Diagnosis and treatment of the following Thoracic Trauma situations – Airway obstruction, Pnuemothorax, Hemothorax, Cardiac Tamponade, Tracheobronchial disruption, Aortic disruption, Diaphragmatic disruption, Esophageal disruption, Cardiac and Pulmonary Contusions.	2
4.	Surgical Oncology – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer.	2
5.	5. Disorders of the Chest Wall, Lung and Mediastinum	2
6.	Thoracic surgeries – Thoracotomy – Definition, Types of Incisions with emphasis to the site of insision, muscles cut and complications. Lung surgeries: Pnumonectomy, Lobectomy, segmentectomy – Indications, Physiological changes and Complications; Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung. Cardiac surgeries – An overview of the Cardio-Pulmonary Bypass Machine – Extracardiac Operations, Closed Heart surgery, Open Heart surgery. Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications.	2

7.	Diseases of the Arteries and Veins : Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases : Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease, Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins.	2
8.	Definition, Indication, Incision, Physiological changes and Complications following Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy Mastectomy, Nephrectomy, Prostatectomy.	2
9.	Burn: Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management. Skin Grafts – Types, Grafting Procedures, Survival of Skin Graft ; Flaps – Types and uses of Flaps.	2
10.	ENT: Common problems of ear, otitis media, Otosclerosis, functional deafness and deafness, management facial palsy classification, medical and surgical management of lower motor neuron type of facial palsy.	2
11.	Ophthalmology: Ophthalmologic surgical conditions, refraction's, conjunctivitis, glaucoma, corneal ulcer, iritis, cataract, retinitis, detachment of retina, defects of extra-ocular muscles-surgical management.	2

Suggested Readings:

Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston. Davidson's Principles and Practice of Medicine. 21th ed Churchill Livingstone, 2010(ISBN: 9780702030857)

Anthony S. Fauci, Eugene Braunwald, Dennis L. Kasper, Stephen L. Hauser, Dan L.Longo, J. Larry Jameson, Joseph Loscalzo. Harrison's Principles of Internal Medicine, 17th ed. McGraw Hill Professional, 2008 (ISBN:0071466339 / 9780071466332)

Michael Swash, Michael Glynn. Hutchinson's Clinical Methods. An Integrated Approach to Clinical Practice. Saunders, 2007 (ISBN-13: 978-0-7020-2799-4, ISBN-10:0-7020-2799-5)

Krishna Das. Text book of medicine. 5th ed New Delhi, Jaypee Brothers Medical Publishers(P) Ltd. 2009 (ISBN:81-8061-615-0)

Thappa Essentials in Dermatology. 2nd ed, New Delhi, Jaypee Brothers Medical Publishers(P) Ltd. 2005 (ISBN:978-81-84448-558-5).

Aggarwal Emergency Medicine. 1st ed, New Delhi, Jaypee Brothers Medical Publishers(P) Ltd. 2005 (ISBN:81-8061-558-8).
S. Das .A concise textbook of surgery. 5th ed. S Das Publications.

Norman S. Williams, Christopher J.K. Bulstrode, P. Ronan O'Connell. Bailey and Love's Short Practice of Surgery 25th ed, Hodder Arnold, 2008 (ISBN13:9780340939321, ISBN10: 034093932)

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OBSTETRICS AND GYNECOLOGY :

At the end of the course the candidate will be able to:

Describe the normal and abnormal physiological events during the puberty, labor, puerperium, post – natal stage and menopause.

Discuss the various complications during pregnancy, labour, puerperium and post – natal stage, pre and post-menopausal stage and various aspects of urogenital dysfunction and their management in brief.

Acquire the skill of clinical examination of pelvic floor

Acquire the skill of clinical examination of pregnant woman.

MODULE NO.	MODULE	ContactHrs
1.	Anatomy and physiology of the female reproductive organs. Pubertydynamics	2
2.	Physiology of menstrual cycle – ovulation cycle, uterine cycle, Cx cycle, duration, amount Hormonal regulation of menstruation,	2

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3.	3. Hormonal disorders of females-obesity and female hormones	2
4.	Pregnancy Diagnosis of pregnancy Abortion Physiological changes during pregnancy Importance of antenatal care exercise High risk pregnancy, prenatal common complications – investigation and management Musculoskeletal disorders during pregnancy Multiple child birth Normal labor	2
5.	Child birth complications, investigation and management	2
6.	Normal puerperium, lactation and importance of post-natal exercises	2
7.	Family planning.	2
8.	Medical termination of pregnancy	2
9.	Infection of female genital tract including sexually transmitted diseases, low backache	2
10.	Prolapse of uterus and vagina	2
11.	Principle of common gynaecological operations – hysterectomy, D&C, D&E, Pap smear	2
12.	Menopause: Its effect on emotions and musculoskeletal system	2
13.	Urogenital dysfunction – pre and post-natal condition	2
14.	Sterility: Pathophysiology, investigations, management, Malnutrition and deficiencies in females.	2
15.	Surgical procedures involving child birth. a. Definition, Indications and Management of the following surgical procedures – pelvic repair, caesarian section, nephrectomy, Hysterosalpingography, Dilatation and Curettage, Laproscopy, Colposcopy, Hysterectomy.	2
16.	Carcinoma of female reproductive organs – surgical management in brief Mastectomy – Simple, radical. Hysterectomy.	2
17.	17. Incontinence – Types, Causes, Assessment and Management.	2

GENERAL MEDICINE, PAEDIATRICS AND PSYCHIATRY

Subject description - This subject follows the basic science subjects to provide the knowledge about relevant aspects of general medicine.

Course Objective: The objective of this course is to provide a general understanding of the diseases the therapist would encounter in their practice.

Course Outcome: At the completion of this course, the student will be able to:

CO1: list the etiology, pathology, clinical features and treatment methods for various medical conditions.

CO2: Acquire skill of clinical examination of the diseases of the various systems of the human body including skin diseases.

Total Credits: 5 (L+T+P= 5+0+0) Total Contact hrs: 80 hrs

Detailed Syllabus:

MODULE No.	Topics	Contact Hrs
1.	Infection : Effects of Infection on the body – Pathology – source and spread of infection – vaccinations – generalized infections – rashes and infection – food poisoning and gastroenteritis – sexually transmitted diseases – HIV infections and Aids.	13
2.	Poisoning: Clinical features – general management – common agents in poisoning – pharmaceutical agents – drugs of misuse – chemical pesticides – Envenomation.	13
3.	Food and Nutrition: Assessment – Nutritional and Energy requirements; Deficiency diseases – clinical features and treatment; Protein – Energy Malnutrition: Clinical features and treatment; Obesity and its related disorders: Causes – Complications – benefits of weight loss – management of Obesity – diet, exercise and medications.	13
4.	Endocrine diseases: Common presenting symptoms of Endocrine disease – common classical disease presentations, clinical features and its management; Diabetes Mellitus: Etiology and pathogenesis of diabetes – clinical manifestations of the disease – management of the disease – Complications of diabetes.	13
5.	Diseases of the blood: Examinations of blood disorders – Clinical manifestations of blood disease; Anemia – signs and symptoms – types and management ; Hemophilia - Cause – clinical features severity of disease – management – complications due to repeated hemorrhages – complications due to therapy.	15

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6.	Diseases of the digestive system : Clinical manifestations of gastrointestinal disease – Etiology, clinical features, diagnosis, complications and treatment of the following conditions : Reflux Oesophagitis, Achlasia Cardia, Carcinoma of Oesophagus, GI bleeding, Peptic Ulcer disease, Carcinoma of Stomach, Pancreatitis, Malabsorption Syndrome, Ulcerative Colitis, Peritonitis, Infections of Alimentary Tract ;Clinical manifestations of liver diseases - Aetiology, clinical features, diagnosis, complications and treatment of the following conditions : Viral Hepatitis, Wilson’s Disease, Alpha1-antitrypsin deficiency, Tumors of the Liver, Gall stones, Cholecystitis	13
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Physiotherapy in Sports Medicine

Course Description: The course introduces to general orthopedics, traumatology and sports medicine, with emphasis on medical and surgical management of the above said fields.

Course Objective: The course enables the students to understand about the mechanism of injuries in orthopedics and should be able to understand the management orthopedics, traumatology and sports related injuries, with emphasis on medical and surgical management. **Course Outcomes:** On completion of this subject, the students will be able to:

CO1: Understand the basic orthopaedic conditions which commonly cause disability and their management.

CO2: Know the aetiology, Classification, Pathology, Clinical Features, Relevant Investigations, Complications, Surgical & Non Surgical Management of various Orthopaedic Conditions.

CO3: Assess and provide physiotherapeutic techniques in Sports conditions for relief of pain, relaxation, conditioning and posture.

Total Credits: 6 (L+T+P= 4+0+2) Total Contact hrs: 128 hrs

Detailed syllabus

Sl. no	MODULE	Contact Hours
1.	Sports Medicine Team Members: Sports Medicine Team Model	10 hours [10(L)+0(P)]

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2	Introduction to Sports Sciences Nutritional considerations Protective Equipments Environmental factors and Sports performance Body composition and Sports Performance Special Considerations for Female Athletes	15 hours [7(L)+8(P)]
3	Preventive Aspects of Sports Injury : Causes of Sports Injury Principles of training method and exercise prescription Pre participation and Athlete evaluation Therapeutic and Preventive intervention Taping: Principles, Indications, Contraindications, Types of Tapes , Techniques Sports massage, bandaging, Cryotherapy etc. Emergency care and On field injury, assessment and management Psychological aspects of sport injuries	38 hours [18(L)+20(P)]
4	Sports Traumatology and Management: Physiotherapeutic Aims and Objectives of injured athlete Decision making and safe return to play criteria	42 hours [20(L)+22(P)]
	Common Sports injuries Spine injury patterns assessment and pattern Shoulder joint injuries: Conservative, surgical and return to sports Elbow , Wrist & Hand Joint injuries: Conservative, surgical and return to sports Hip, Pelvis and Knee joint Injuries: Conservative, surgical and return to sports Foot and Ankle Joint: Conservative, surgical and return to sports	
4	An introduction to exercise and sports physiology: Cardio respiratory function and performance Cardiovascular control during exercise Respiratory regulation during exercise Cardio respiratory adaptation to training	23 hours [15(L)+8(P)]

Suggested Readings:

- Jayant Joshi and P Kothwal. Essential Orthopaedics and applied physiotherapy –India, Elsevier, 1999(Reprint-2008,ISBN-978-81-8147-215-1)
2. David Hamblen, Hamish Simpson. Adams's outline of fractures- 12th ed, Philadelphia.Churchill Livingstone, 2007(ISBN-13: 978-0-443-10297-4, ISBN-10: 0-443-10297-X)
- David Hamblen , Hamish Simpson Adams's outline of orthopaedics. Churchill Livingstone, 2009, (ISBN-13:978-0-7020-3061-1,ISBN-10: 0-7020-3061-9)

J. Maheswari. Essential Orthopaedics, 3rd ed, New Delhi, Mehta Publishers, 2002 (ISBN: 81-88039-00-04)
 David J. Magee, Orthopedic Physical Assessment; 5th Revised ed, London, Saunders, 2008, (ISBN-10: 0721605710, ISBN-13: 9780721605715)
 Louis Solomon, David J Warwick. Apley's Concise System of Orthopaedics and Trauma, 3rd Revised ed, London, Hodder Arnold, 2003 (ISBN-10: 0340809841,
 Fred R.T Nelson, Carolyn Taliaferro Blauvelt. A Manual of Orthopaedic Terminology, 7th Revised ed, St Louis, Mosby, 2007 (ISBN-10: 0323045030)
 Terry Malone, Thomas McPoil. Orthopedic and Sports Physical Therapy. St. Louis, 3rd Revised ed, Mosby, 1997 (ISBN-10: 0815158866, ISBN-13: 9780815158868)
 Ronald McRae. Clinical Orthopaedic Examination, 6th ed, Churchill Livingstone, 2010 (ISBN: 9780702033933)
 Graham Apley, Louis Solomon. Physical Examination in Orthopaedics, Hodder Arnold Publications, 1997 (ISBN: 13: 9780750617666)

INTRODUCTION TO QUALITY AND PATIENT SAFETY

Course objective: To give a basic insight into the main features of quality of services of health along with the various quality assessment tools and patient safety aspects.

Course outcome:

CO1: understand the health care system

CO2: understand the basic skills of emergency CO3: Understand environment safety

CO4: Understand emergency management

CO5: infection prevention and control and role of antibiotics

Total Credits: 4 (L+T+P= 4+0+0) Total Contact hrs: 64 hrs

Detailed Syllabus:

Sl.No.	Topics	Contact Hrs
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	<p>Quality assurance and management - The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system.</p> <p>Concepts of Quality of Care Quality Improvement Approaches Standards and Norms Quality Improvement Tools Introduction to NABH guidelines</p>	14
2.	<p>Basics of emergency care and life support skills - Basic life support (BLS) is the foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. Topics to be covered under the subject are as follows:</p> <p>Vital signs and primary assessment Basic emergency care – first aid and triage Ventilations including use of bag-valve-masks (BVMs) Choking, rescue breathing methods One- and Two-rescuer CPR Using an AED (Automated external defibrillator). Managing an emergency including moving a patient At the end of this topic, focus should be to teach the students to perform the maneuvers in simulation lab and to test their skills with focus on airways management and chest compressions. At the end of the foundation course, each student should be able to perform and execute/operate on the above mentioned modalities.</p>	10
3.	<p>3. Bio medical waste management and environment safety- The aim of this section will be to help prevent harm to workers, property, the environment and the general public. Topics to be covered under the subject are as follows:</p>	10
	<p>Definition of Biomedical Waste Waste minimization BMW – Segregation, collection, transportation, treatment and disposal (including color coding) Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste BMW Management & methods of disinfection Modern technology for handling BMW Use of Personal protective equipment (PPE) Monitoring & controlling of cross infection (Protective devices)</p>	

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4.	Infection prevention and control - The objective of this section will be to provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes. Concepts taught should include – Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)], Prevention & control of common healthcare associated infections, Components of an effective infection control program, and Guidelines (NABH and JCI) for Hospital Infection Control	10
5.	Antibiotic Resistance- History of Antibiotics How Resistance Happens and Spreads Types of resistance- Intrinsic, Acquired, Passive Trends in Drug Resistance Actions to Fight Resistance Bacterial persistence Antibiotic sensitivity Consequences of antibiotic resistance Antimicrobial Stewardship- Barriers and opportunities, Tools and models in hospitals	10
6.	Disaster preparedness and management- The objective of this section will be to provide knowledge on the principles of on-site disaster management. Concepts to be taught should include- Fundamentals of emergency management, Psychological impact management, Resource management, Preparedness and risk reduction, Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms.	10

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EXERCISE PHYSIOLOGY

Course Objectives:

To describe the various exercise induced physiological changes.
 To illustrate the basic concepts of cardiopulmonary exercise testing

Course Outcomes:

At the end of this module, the student must be able to

Visualise the physiological changes in various systems produced during exercise
 Understand the potential uses of cardiopulmonary exercise testing

Credit Distribution: 3(L) + 1(P) = 4 Credit, CONTACT HRS : 80

MODULE NO.	Module	CONTACT HOURS
Unit I	Cardio respiratory response to exercise Cardiac response to acute exercise. Effect of exercise on blood flow distribution Blood pressure response to acute exercise	20
Unit II	Regulation of ventilation during exercise Skeletal muscle response and regulation during exercise & recovery	20
Unit III	The brain as a regulator of exercise Concept of fatigue Central vs peripheral fatigue High and low frequency fatigue Models of peripheral fatigue Models of central fatigue Central governor theory Central vs peripheral control of exercise	20
Unit IV	Cardiopulmonary exercise testing- indications, types and interpretation.	20

Recommended/Suggested Textbooks:

George Brooks, Thomas Fahey, Kenneth Baldwin. Exercise Physiology: Human Bioenergetics and Its Applications. (4th Edition).
 Jack H. Wilmore, David L. Costill. Physiology of Sport and Exercise. (3rd Edition).
 Katch and Katch Exercise Physiology

Sports Psychology

Course Objective: To understand the various psychological aspects during play

: To understand the different methods used in specific situation of games

Course Outcome: The students will be able to understand and help athletes in motivating, Arousal Regulation and Goal Setting

Credit Distribution: L+T+P=4+0+0=4, CONTACT HRS : 64

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MODULE NO.	Module	CONTACT HOURS
1	Introduction of Sports Psychology, Early history, Evolution of Psychology as profession	4
2	Techniques/ methods of Training: Visualization, Self talk, Goal Setting, Arousal Regulation	30
3	Clinical Implication of methods in different situations of Sports	30

Recommended readings:

Sports Psychology, Dr. Goraksha Vithalrao Pargaonkar
 Sport Psychology, A complete introduction, Dr. JohnPerry, Univeristy of Hull
 Psychological Perspectives of Sports, Dr Agya Jit Singh
 Clinical Sportd Medicine, 3rd Edition, Peter Brukner and Karim Khan

OCCUPATIONAL HEALTH

Course Objectives:

To understand the various aspects occupational hazards.
 To illustrate various safety precautions and understand the details of compensation

Course Outcomes:

At the end of this module, the student must be able to

Identify the hazards specific to fiffereent occupations and take safety measurements.
 Understand the potential use of compensation acts
 Credit Distribution: 3(L) + 1(P) = 4 Credit
 CONTACT HRS : 80

Sl. No	Module	Credit Distribution
1	Occupational environment, Occupational hazards, Occupational diseases	20
2	Prevention of occupational diseases.	40
3	Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts	20

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Recommended/Suggested Textbooks:

Occupational Health and Safety for the 21st Century, Robert H. FRIIS
 Introduction to Health and Safety at Work, 6th Edition, Phil Hughes MBE and Ed Ferrett
 Handbook of Occupational Safety and Health, 3rd Edition, S. Z Mansoorf
 Occupational Health and Safety management, A practical Approach, 3rd edition Charles D Reese

BRONCHIAL HYGIENE TECHNIQUES

Course description: This course includes the detailed knowledge on the various aspects of bronchial hygiene techniques that are to be applied in a patient with any pathology that might lead to secondary pulmonary complications.. The student will have a general understanding of the diseases a women would encounter in her life. Course objectives: The objective of this course is to enable the student to learn the various treatment techniques that are indicated for the maintainance of the bronchial hygiene of a patient

Course Outcomes: At the end of the course the students will be able to: CO1. Assess and determine the bronchial health status of a patient.

CO2. Provide preventive and curative treatment for maintainance of bronchial hygiene in a patient. CO3. Plan appropriate and safe physiotherapy interventions with clinical reasoning for the same.

Total Credits: 4 (L+T+P= 3+0+1) Total Contact hrs: 80 hrs

Detailed Syllabus:

Sl.No.	Topics	Contact Hrs
1.	Introduction: Brief anatomy and physiology of pulmonary system. Methods of evaluation and investigations of pulmonary diseases e.g. radiograph, auscultation, PFT, ABG etc. Bedside assessment of the patient-Adult & Pediatric	12 [6(L)+6(P)]
2.	Describe the following in details: Management of endotracheal tubes, Tracheal suction, weaning the patient from ventilator, Extubation and post-extubation care.	10 [6(L)+4(P)]
3.	Principles and techniques of: Breathing exercises Inspiratory muscle training PNF respiration. Humidification and aerosol therapy	14 [8(L)+6(P)]
4.	Airway clearance devices: Flutter, Thera PEP, Acapella, High frequency chest wall oscillation (HFCWO), Intrapulmonary percussive ventilation (IPV), Insufflation/exsufflation- assisted cough, IPPB	8 [6(L)+2(P)]
5.	Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises,	22 [12(L)+10(P)]

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	Postural Drainage, Manual hyperinflation Chest Tapotement techniques – Percussion, Vibration and Shaking, Rib Springing, etc. Neuro Physiological Facilitation Controlled Mobilization ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Coughing and Huffing, Suctioning- Types, techniques, indications & contraindications. Selection of airway clearance technique	
6.	Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, Mechanical aids – IPPB, CPAP, BiPAP	10 [6(L)+4(P)]
7.	Drug therapy – Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers	4 [4(L)+0(P)]

Suggestive Readings:

Essentials of Cardio Pulmonary Physical Therapy by Hillegass and Sadowsky
 Cardio pulmonary Symptoms in physical Therapy practice Cohen and Michel
 8. Chest Physiotherapy in Intensive Care Unit by Mackenzi
 Tidy's physiotherapy.
 Cash's Text Book of Chest, Heart, Vascular Disorders for Physiotherapists.
 The Brompton Guide to chest physiotherapy DU Gasket [Completed]

SIXTH SEMESTER

PHYSIOTHERAPY IN ORTHOPEDICS & SPORTS

V

Subject description - The subject serves to integrate the knowledge gained by the students in orthopedics and traumatology with skills to apply these in clinical situations of dysfunction and musculoskeletal pathology.

Course Objective:

The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to

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identify disabilities due to musculoskeletal dysfunction, plan and set treatment goals and apply the skills gained in exercisetherapy and electrotherapy in these clinical situations to restore musculoskeletal function.

Course Outcome: On completion of this subject, the students will be able to:

CO1: integrate the knowledge gained by the students in clinical orthopaedics with skills gained to apply these in

clinical situation of dysfunction and musculo-skeletal pathology.

CO2: Identify disability due to musculo- skeletal dysfunction, set treatment goals and apply their skills gained in exercise therapy, electrotherapy and massage in clinical situations to restore musculoskeletal function.

Total Credits: 7 (L+T+P= 5+0+2) Total Contact hrs: 144 hrs

Detailed Syllabus:

Sl.No.	MODULE	ContactHrs
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1.	<p>PT assessment for Orthopedic conditions –SOAP format.</p> <p>Subjective - history taking, informed consent, personal, past, medical and socioeconomic history, chief complaints, history of present illness. Pain assessment- intensity, character, aggravating and relieving factors, site and location.</p> <p>Objective-on observation –body built swelling, muscle atrophy, deformities, posture and gait.</p> <p>On palpation- tenderness-grades, muscle spasm, swelling- methods of swelling assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances.</p> <p>On examination–ROM–active and passive, resisted isometric tests, limb length-apparent, true and segmental, girth measurement, muscle length testing-tightness, contracture and flexibility, manual muscle testing, peripheral neurological examination-dermatomes, myotomes and reflexes, special tests and functional tests. Prescription of home program.</p> <p>Documentation of case records, and follow up.</p>	3+3
2.	<p>Fractures:</p> <p>Types, classification, signs and symptoms, complications.</p> <p>Fracture healing-factors affecting fracture healing.</p> <p>Principles of fracture management - reduction - open and closed, immobilization -sling, cast, brace, slab, traction-manual, mechanical, skin, skeletal, lumbar and Cervical traction, external fixation, functional cast bracing.</p> <p>PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and malunion, RSD, myositis ossificans, AVN, pressure sores etc.</p> <p>Physiotherapy assessment in fracture cases. Aims of PT management in fracture cases-short and long term goals.</p> <p>Principles of PT management in fractures-Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period.</p>	3+3

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3.	Specific fractures and dislocations: PT assessment and management of upper limb fractures and dislocations. PT assessment and management of lower limb fractures and dislocations including pelvis. PT assessment and management spinal fractures.	3+3
4.	Selection and application of physiotherapeutic techniques, maneuvers, modalities for preventive, curative and rehabilitative means in all conditions.	3+3
5.	Principles of various schools of thought in manual therapy. (Briefly Maitland and McKenzie).	3+3
6.	Degenerative and inflammatory conditions: Definition, signs and symptoms, clinical features, pathophysiology, radiological features, deformities, medical, surgical management. Describe the PT assessment and management and home program for the following conditions – Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritic shoulder.	3+3
7.	Infective conditions: Definition, signs and symptoms, clinical features, pathophysiology, radiological features, medical, surgical management. Describe PT assessment and management for following conditions – Osteomyelitis – acute and chronic, Septic arthritis, pyogenic arthritis, TB spine and major joints – knee and hip.	3+3
8.	Define, review the postural abnormalities of spinal column, clinical features, deformities, medical and surgical management. Describe PT assessment and management and home program.	3+3
9.	Deformities: Review in detail the causes, signs and symptoms, radiological features, medical and surgical management. Describe the PT assessment and management of the following conditions: Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum.	3+3
10.	Cerebral palsy : Definition, etiology, classification, clinical features, complications, deformities, medical and surgical management and home program with special emphasis on carrying techniques. PT management after surgical corrections	3+3
11.	Poliomyelitis: Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management. PT assessment and management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program.	3+3

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12.	<p>Leprosy: Definition, cause, clinical features, medical and surgical management. PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and postoperatively.</p>	3+3
13.	<p>Amputations: Definition, levels, indications, types, PT assessment, aims, management pre and postoperatively. PT management with emphasis on stump care and bandaging. Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management.</p>	3+3
14.	<p>Spinal conditions: Review the causes, signs and symptoms, investigations, radiological features, neurological signs. PT assessment, aims, and management and home program of the following conditions: Cervical spondylosis, Lumbar spondylosis, Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina bifida occulta.</p>	3+3
15.	<p>Effects of spinal traction, types of traction, modes of application, indications for spinal traction, contraindications, precautions, limitations of traction.</p>	3+3
16.	<p>Osteoporosis-causes, predisposing factors, investigations and treatment.</p>	3+3
17.	<p>Orthopedic surgeries: Pre and post-operative PT assessment, goals, precautions and PT management of following surgeries such as : Arthrodesis, Osteotomy, Arthroplasty- partial and total - Excision arthroplasty, excision arthroplasty with implant, interpositional arthroplasty and total replacement; Tendon transplant, Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Re-attachment of limbs, External fixators, Synovectomy.</p>	3+3
18.	<p>Shoulder joint: Shoulder instabilities, TOS, RSD, Impingement syndrome-conservative and post-operative PT management. Total shoulder replacement and Hemi replacement. –Post operative PT management. AC joint injuries-rehabilitation. Rotator cuff tears-conservative and surgical repair. Subacromial decompression-Postoperative PT management.</p>	3+3 <i>P Chaudhri</i> 8/08/2022

19.	Elbow and forearm: Excision of radial head-Post operative PT management. Total elbow arthroplasty- Postoperative PT management.	3+3
20.	Wrist and Hand: Total wrist arthroplasty. Repair of ruptured extensor tendons. Carpal tunnel syndrome. Flexor and extensor tendon lacerations - Post operative PT management.	3+3
21.	Hip: Joint surgeries-hemi and total hip replacement- Postoperative PT management Tendonitis and bursitis.-Management.	3+3
22.	Knee: Lateral retinacular release, chondroplasty-Postoperative management. Realignment of extensor mechanism. ACL and PCL reconstruction surgeries-Post operative rehabilitation. Meniscectomy and meniscal repair-Postoperative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome-conservative management. TKR-rehabilitation protocol. Patellar tendon ruptures and Patellectomy-rehabilitation.	3+3
23.	Ankle and foot: Ankle instability. Ligamentous tears-Postoperative management.	3+3
24.	Introduction to Bio-Engineering: Classification of Orthoses and prostheses Biomechanical principles of orthotic and prosthetic application Designing of upper extremity, lower extremity and spinal orthosis, indications and checkout Designing of upper extremity and lower extremity prostheses, indications and checkout Psychological aspects of orthotic and prosthetic application Prescription and designing of footwear and modifications Designing and construction of adaptive devices.	3+3

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25.	Applied Yoga in orthopedic conditions.	3+3
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Practical:

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

Bedside case presentations and case discussions

Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Suggestive Readings:

Orthopaedic Physical Therapy. 4th Edition. Authors: Robert Donatelli Michael Wooden. ISBN:9781455757022

Cash's Textbook of Orthopaedics and Rheumatology for Physiotherapists by Patricia A. Downie; Edition:1st; ISBN13:9780723418330; Publisher: Jaypee Brothers

Manual mobilization of extremity joints by Fredy Kaltenborn, Maitland. Vol. 1:Extremities, 8th Edition.

Therapeutic Exercise by Kolby and Kisner

Therapeutic Exercises by O'Sullivan

Taping Techniques – Rose Mac Donald

Neural tissue mobilization -Butler.

Zulunga et al. Sports Physiotherapy-W.B.Saunders.

Brokner and Khan, Clinical sports medicine -McGraw Hill

Reed Sports injuries, Assessment and Rehabilitation- W.B. Saunders.

Gould: Orthopedic sports physical therapy

PHYSIOTHERAPY IN GENERAL MEDICINE & GENERAL SURGERY

Subject description: The students will be able to understand the anatomy, physiology and various Conditions in Medicine relevant to Physiotherapy

Course Objective: to educate the student with the anatomy, physiology and various conditions in Medicine relevant to Physiotherapy and enable her to Assess and provide physiotherapeutic techniques in Obstetrics and Gynaecological conditions for relief of pain, relaxation, conditioning and posture

Course Outcome - At the end of the course the candidate will be able to:

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CO1: Identify discuss and analyze cardiovascular and pulmonary dysfunctions based on pathophysiological principles and arrive at appropriate functional diagnosis.

CO2: Acquire knowledge of rationals of basic investigative approaches in the medical system and surgical intervention, regimes in general surgeries (special emphasis on abdominal surgeries)

CO3: Execute effective physiotherapeutic measures (with appropriate clinical reasoning) and exercise, conditioning in general medical and surgical conditions.

CO4: Acquire knowledge of the overview of patient's care in the I.C.U. for bronchial hygiene and continuous monitoring of the patient in I.C.U.

CO5: Select strategies for cure, care and prevention, adopt restorative and rehabilitative measures for maximum possible functional independence of a patient at home, work and in community.

CO6: Acquire the knowledge of evaluation and physiotherapeutic treatment for obstetric and gynecological conditions

CO7: Acquire the knowledge of various conditions where physiotherapy plays a vital role in the rehabilitation (psychiatry, dermatology, geriatric and ENT conditions)

CO8: Evaluate, grade and treat non healing wounds.

Total Credits: 7 (L+T+P= 5+0+2) Total Contact hrs: 144 hrs

Detailed Syllabus:

Sl.No.	MODULE	ContactHrs
1.	Physiotherapy in mother and child care – ante and post-natal management, early intervention and stimulation therapy in childcare (movement therapy)	15 [10(L)+5(P)]
2.	Geriatrics – handling of old patients and their problems.	15 [10(L)+5(P)]
3.	Complication common to all operations	
4.	Abdominal incisions.	
5.	Physiotherapy in pre and post-operative stages.	
6.	Operations on upper G.I.T.-oesophagus, stomach, duodenum	
7.	Operations on large and small intestine – Appendectomy, cholecystectomy, partial colectomy, ileostomy, hernia and herniotomy, hernioraphy, hernioplasty.	15 [10(L)+5(P)]
8.	Physiotherapy in dentistry	15 [9(L)+6(P)]
9.	Burns and its treatment – physiotherapy in burns, skin grafts, and reconstructive surgeries.	14 [9(L)+5(P)]

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10.	Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars-U.V.R and other electro therapeutics for healing of wounds, prevention of Hyper-granulated Scars Keloids, Electrotherapeuticsmeasuresforreliefofpainduringmobilizationofscarstissues	15 [9(L)+6(P)]
11.	Physiotherapy intervention in the management of Medical, Surgicaland Radiation Oncology Cases.	15 [9(L)+6(P)]
12.	Physiotherapy in dermatology -Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skinconditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhydrosis. Massage maneuvers for cosmeticpurpose of skin; use of specific oil as medium; Care of anesthetic handand foot; Evaluation, planning and management of leprosy-prescription, fitting and training with prosthetic and orthotic devices.	20 [12(L)+8(P)]
13.	ENT–sinusitis, non-suppurativeandchronicsuppurativeotitismedia, osteosclerosis, labrynthitis, mastoidectomy, chronic rhinitis, laryngectomy, pharyngeo – laryngectomy, facialpalsy	20 [12(L)+8(P)]

Suggestive Readings:

Paz, Jaime C.; West, Michele, Acute Care Handbook for Physical Therapists 3rd edition, Saunders, London

Chest Physiotherapy in intensive care Unit – Mackenzie et al Williams and Wilkins.

Cash text books of General medical and surgical conditions for physiotherapist, Downie
-Jaypee Brother

Tidys Physiotherapy by Porter, 15th edition. Paperback ISBN: 9780702043444-Elsevier

P saunder's manual of physiotherapy. ISBN/ISSN. 0721636713.

Therapeutic Exercise by Kolby and Kisner

Therapeutic Exercises by O'Sullivan

Physiotherapy in Gynaecological and Obstetrical conditions by Poldon- 2nd ed. ISBN**9780750622653**- Jaypee

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CLINICAL NEUROLOGY & NEUROSURGERY

Subject description - This subject follows the basic science subjects to provide the knowledge about relevant aspects of neurology & neurosurgery. The student will have a general understanding of the diseases the therapist would encounter in their practice.

The objective of this course is that after 64 hrs of lectures and discussion the student will be able to list the etiology, pathology, clinical features and treatment methods for various neurological conditions.

Course Description: The course introduces to principles of clinical neurosciences with emphasis on surgical and medical management of common disorders of nervous system.

Course Objective: The course enables the students to understand about the causes of nervous system and psychiatric disorders and enables to understand the medical and surgical management of nervous system.

Course Outcomes: On completion of this subject, the students will be able to:

CO1: understand the basic neurological conditions which commonly cause disability and their management. CO2: Know the aetiology, Classification, Pathology, Clinical Features, Relevant Investigations, Complications, Surgical & Non Surgical Management of various Neurological Conditions.

Total Credits: 4 (L+T+P= 4+0+0)

Total Contact hrs: 64 hrs

Detailed Syllabus:

Sl.No.	Topics	Contact Hrs
1.	Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping.	4L
2.	Classification of neurological involvement depending on level of lesion.	1L

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3.	Neurological assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system.	3L
4.	Investigations: principles, methods, views, normal/abnormal values/features, types of following investigative procedures- skull x-ray, CT, MRI, evoked potentials, lumbar puncture, CSF examination, EMG, NCV	3L
5.	Neuro-ophthalmology: Assessment of visual function – acuity, field, colour vision, Pupillary reflex, accommodation reflex, abnormalities of optic disc, disorders of optic nerve, tract, radiation, occipital pole, disorders of higher visual processing, disorders of pupil, disorders of eye movements, central disorders of eye movement.	3L
6.	Deafness, vertigo, and imbalance: Physiology of hearing, disorders of hearing, examination & investigations of hearing, tests of vestibular function, vertigo, peripheral vestibular disorders, central vestibular vertigo.	3L
7.	Lower cranial nerve paralysis – Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, trigeminal sensory neuropathy, lesions in facial nerve, facial palsy, bell's palsy, hemi facial spasm, Glossopharangeal neuralgia, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve. Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia.	3L
8.	Cerebro-vascular diseases: Define stroke, TIA, RIA, stroke in evolution, multi infarct dementia and Lacunar infarct. Classification of stroke – Ischemic, hemorrhagic, venous infarcts. Risk factors, cause of ischemic stroke, causes of hemorrhagic stroke. Classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndrome, investigations, differential diagnosis, medical and surgical management.	3L
9.	Head injury: Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.	2L
10.	Higher cortical, neuro psychological and neurobehavioral disorders: Causes of blackouts, physiological nature of Epilepsy, classification, clinical features, investigations, medical & surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizures, and Epilepsy syndromes in adult. Classification and clinical features of Dyssomnias, Parasomnias, Dementia, Obsessive-compulsive disorders. Neural basis of consciousness, causes & investigations of Coma, criteria for diagnosis of Brain death. Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Perceptual disorders and Speech disorders.	4L

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11.	Movement disorders: Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Parkinson’s disease, Dystonia, Chorea, Ballism, Athedosis, Tics, Myoclonus and Wilson’s disease.	2L
12.	Cerebellar and coordination disorders: Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich’s ataxia, Ataxia talangiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis.	2L
13.	Spinal cord disorders: Functions of tracts, definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Spinal cord injury, Compression by IVD prolapse, Spinal epidural abscess, Transverse myelitis, Viral myelitis, Syringomyelia, Spina bifida, Sub acute combined degeneration of the cord, Hereditary spastic paraplegia, Radiation myelopathy, Progressive encephalomyelitis, Conus medullaris syndrome, Bladder & bowel dysfunction, and Sarcodosis.	4L
14.	Brain tumors and spinal tumors: Classification, clinical features, investigations, medical and surgical management.	2L
15.	Infections of brain and spinal cord: Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Meningitis, Encephalitis, Poliomyelitis and Post-polio syndrome. Complications of systemic infections on nervous system – Septic encephalopathy, AIDS, Rheumatic fever, Brucellosis, Tetanus, and Pertussis.	3L
16.	Motor neuron diseases: - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders - Amyotrophic lateral sclerosis, Spinal muscular atrophy, Hereditary bulbar palsy, Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy.	2L
17.	Multiple sclerosis - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications.	1L
18.	Disorders of neuromuscular junction – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism.	1L
19.	Muscle diseases: Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy, Non-dystrophic myotonia.	2L <i>PChandhvi</i> <i>8/08/2022</i>

20.	Polyneuropathy – Classification of Polyneuropathies, Hereditary motor sensory neuropathy, hereditary sensory and Autonomic neuropathies, Amyloid neuropathy, acute idiopathic Polyneuropathies. Guillain-Barre syndrome – Causes, clinical features, management of GBS, Chronic Idiopathic Polyneuropathies, diagnosis of polyneuropathy, nerve biopsy.	3L
21.	Focal peripheral neuropathy: Clinical diagnosis of focal neuropathy, neurotmesis, Axonotmesis, Neuropraxia. Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – RSD, Nerve tumors, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & Intercostal nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, Sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, Pudental nerve palsy.	4L
22.	Paediatric neurology: Neural development, Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders - Cerebral palsy, Hydrocephalus, Arnold-chiari malformation, Basilar impression, Klippel-Feil syndrome, Achondroplasia, Cerebral malformations, Autism, Dandy walker syndrome and Down's syndrome.	4L
23.	Toxic, metabolic and environmental disorders: Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – Encephalopathy, Alcohol toxicity, Recreational drug abuse, Toxic gases & Asphyxia, Therapeutic & diagnostic agent toxicity, Metal toxicity, Pesticide poisoning, Environmental & physical insults, Pant & Fungal poisoning, Animal poisons, & Complications of organ transplantation.	2L
24.	Introduction, Indications and Complications of following Neuro surgeries: Craniotomy, Cranioplasty, Stereotactic surgery, Deep brain stimulation, Burr-hole, Shunting, Laminectomy, Hemilaminectomy, Rhizotomy, Microvascular decompression surgery, Endarterectomy, Embolization, Pituitary surgery, Ablative surgery - Thalamotomy and Pallidotomy, Coiling of aneurysm, Clipping of aneurysm, and Neural implantation.	3L

Suggestive Readings:

Brain. Aids to the Examination of the Peripheral Nervous System, 4th Revised ed, London. Saunders(W.B.) 2000 (ISBN-10:0702025127 ,ISBN-13:9780702025129)
Geraint Fuller, Neurological Examination Made Easy, 4th Revised ed, London,

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Churchill Livingstone,2008 (ISBN-10: 0443069646, ISBN-13: 9780443069642).

Allan Ropper,Daryl R Gress. Neurological and Neurosurgical Intensive Care, 4th Revised ed Philadelphia, Lippincott Williams and Wilkins, 2003(ISBN-10: 0781731968 ISBN-13: 9780781731966)

Roger Barker, S Barasi,. Neuroscience at a Glance, 2nd Revised ed, Oxford, Blackwell Publishing Ltd 2003(ISBN-10: 1405111240, ISBN-13: 9781405111249)

Michael Donaghy, Brain's Diseases of the Nervous System, 11th ed, Oxford university press, 2001 (ISBN-10: 0192626183, ISBN-13: 9780192626189)

Kumar Neurosurgery review. 1st ed, New Delhi, Jaypee Brothers Medical Publishers(P)Ltd. 2009. (ISBN: 978-81-8448-652-0).

DIAGNOSTIC IMAGING AND RECORD KEEPING

Subject description - This course covers the study of common diagnostic and therapeutic imaging tests.

Course Objective: To provide the student with the knowledge of the various diagnostic procedures and tools used by the health professionals.

Course Outcome: At the end of the course students will be:

CO1: aware of the indications and implications of commonly used diagnostic imaging tests as they pertain to patient's management.

CO2: attain knowledge on that how X-Ray, CT, MRI, Ultrasound and Other Medical Images are created and how they help the health professionals to save lives.

Total Credits: 4 (L+T+P= 1+0+0) Total Contact hrs: 64 hrs

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DetailedSyllabus:

MODULE No.	MODULE	ContactHrs
1.	Image interpretation: History A New Kind of Ray How a Medical Image Helps What Imaging Studies Reveal Radiography(x-rays) Fluoroscopy Computed Tomography(CT) Magnetic Resonance Imaging(MRI) Ultrasound Endoscopy.	8L
2.	Radiography and mammography: Equipment components Procedures for Radiography & Mammography Benefit versus Risks and Costs Indications and contraindications.	8L
3.	Fluoroscopy: What is Fluoroscopy? Equipment used for fluoroscopy Indications and Contraindications How it helps in diagnosis The Findings in Fluoroscopy Benefit versus Risks and Costs.	8L
4.	Computed tomography(ct): What is Computed Tomography? Equipment used for Computed Tomography Indications and Contraindications How it helps in diagnosis The Findings in Computed Tomography Benefits versus Risks and Costs.	8L
5.	Magnetic resonance imaging(mri) What is MRI? Equipment used for MRI Indications and Contraindications How it helps in diagnosis The Findings in MRI Benefit versus Risks and Costs Functional MRI.	8L

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6.	Ultrasound: What is Ultrasound? Equipment used for Ultrasound Indications and Contraindications How it helps in diagnosis The Findings in Ultrasound	8L
	Benefits versus Risks and Costs.	8L
7.	Endoscopy: What is Endoscopy? Equipment used for Endoscopy Indications and Contraindications How it helps in diagnosis The Findings in Endoscopy Benefits versus Risks and Costs.	8L
8.	Nuclear medicine: What is Nuclear Medicine? Equipment used for Nuclear Medicine Indications and Contraindications How it helps in diagnosis. Benefits versus Risks and Costs.	8L

Suggestive readings:

Fundamentals of Diagnostic imaging by Anne Marie Dixon

ERGONOMICS

Total Credits: 4 (L+T+P= al Contact hrs: 64 hrs

Course objective

The objective of this course is that after 32 hours of lectures & demonstrations, the student will be able to understand the knowledge about ergonomics issues, evaluation and safe practice standards.

Course Outcomes:

Student should have understood the different types of work nature and its impact towards the human body.

Student should have understood how to perform the ergonomic evaluation & should also be aware of mandatory questions which needed to be asked related to the profession.

Student should also be aware of pre examination procedures and examination for a person before appointing them in to the work.

Student should be aware to perform a workplace assessment for all the profession

& should have understood about all nature of work how it affects the normal system, body mechanics, and psychological level of the person.

Students should have understood what are the legal bodies existing in constructing the work place.

Total Credits: 1

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(L+T+P= 4+0+0)
Total Contact hrs:
64hrs

MODULE NO.	MODULES	CONTACT HOURS
1	Introduction History of ergonomics Need of ergonomics Domains in ergonomics	12
2	Ergonomic Assessment Ergonomic cycle Evaluation of ergonomic issues Assessment tools Exit assessment	16
3	Job analysis Requirement of job Profile and candidate selection Pre - employment screening	12
4	Analysis Job site analysis Job task analysis Avenues and benefits of ergonomics	12
5	Current Trends in Ergonomics Software in ergonomics Regulatory bodies	12

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	Professionals in ergonomics	
	Legal issues and insurance policies	

Textbook:

1. Salvendy, Handbook of Human Factors and Ergonomics, Mosby, 1Ed, 2012

Reference:

Valevie, J Berg rice ergonomics in health care & rehabilitation, butter worth, 1998.

HAND AND FOOT REHABILITATION

HAND REHABILITATION

Total Credits: 4

(L+T+P= 3+0+1)

Total Contact hrs: 80hrs

Hand Rehabilitation	
Credit per Semester	2 credits
Course Learning Outcomes: The student will be able to	

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CO 1: Identify, evaluate, analyze and discuss primary and secondary dysfunction related to Wrist and hand complex based on kinesiological and pathophysiological principles

CO 2: Apply theoretical basis of physiological effects and best available evidence on effectiveness, efficacy and safe application of management guidelines

CO 3: Prescribe and train for appropriate prosthesis and orthosis based on dysfunction of wrist and hand complex

CO 4: Acquire ethical skills by demonstrating safe and effective performance of physical handling techniques taking into account patient's clinical condition, need for privacy, resources available and environment

Unit	Topics	Hours
1	Anatomy of Wrist and Hand Complex	02
	Basic Structure Bony Landmarks Muscles Ligaments Nerve supply Blood supply Surface Anatomy Applied Anatomy	
2	Clinical Biomechanics	05
	Biomechanics of Wrist and Hand Complex Kinetics Kinematics Pathomechanics Function and Architecture of Hand Functional positions of wrist and hand	
3	Examination	3
	Specific History taking Differential Diagnosis based on History Screening for Red and Yellow flags Assessment Neurological Screening Special tests	
4	Traumatic Injuries of Hand	5
	Flexor tendon injuries Extensor tendon injuries Crush Injury Fractures around the Wrist and Hand complex	

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5	Overuse Injuries Carpal tunnel syndrome de Quervain's tenosynovitis	2
6	Special Considerations Complex Regional Pain Syndrome(CRPS) Rheumatoid hand Dupuytren's Contracture	3
	Practical : Case presentations, evaluation and management of aboveconditions	14
	Total	34

REFERENCE BOOKS

Rehabilitation of the Hand: Surgery and Therapy- James M.Hunter.
 Rehabilitation of Hand and Upper extremity – Terri M.Skirven.
 Examination of the Hand and Wrist- RaoulTubiana.
 Hand and Upper extremity Rehabilitation- Rebecca J.Saunders.
 Management of Common Musculoskeletal disorders- Randolph M.Kessler
 Oatis- Kinesiology: The mechaniscs and pathomechanics of HumanMovement.
 Clinical Anatomy by regions- Richard S.Snell

FOOT REHABILITATION

Name of the Programme	Bachelor of Physiotherapy (BPT)
Name of the Course	Foot Rehabilitation
Credit per Semester	2 credits
Course Learning Outcomes: The student will be able to	

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CO 1 : Identify, evaluate, analyze and discuss primary and secondary dysfunction related to ankle and foot complex based on kinesiological and pathophysiological principles

CO 2: Apply theoretical basis of physiological effects and best available evidence on effectiveness, efficacy and safe application of management guidelines

CO 3: Prescribe and train for appropriate prosthesis and orthosis based on dysfunction of ankle and foot complex

CO 4: Acquire ethical skills by demonstrating safe and effective performance of physical handling techniques taking into account patient's clinical condition, need for privacy, resources available and environment

MODUL ES	MODULE NO.	Hours
1	Anatomy of Ankle and Foot Complex	03
	<ul style="list-style-type: none"> • Basic Structure • Bony Landmarks • Muscles • Ligaments • Nerve supply • Blood supply • Surface Anatomy • Applied Anatomy 	
2	Clinical Biomechanics	05
	<ul style="list-style-type: none"> • Biomechanics of Ankle and Foot Complex • Kinetics and Kinematics • Pressure distribution studies • Pathomechanics 	
	<ul style="list-style-type: none"> • Function and Architecture of Foot Arches 	
3	Examination	3
	<ul style="list-style-type: none"> • Specific History taking • Differential Diagnosis based on History • Screening for Red and Yellow flags • Assessment • Neurological Screening • Special tests 	
4		3

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	Tendoachilles rupture Crush Injury Fractures around the Ankle and Foot Complex	
5	Overuse Injuries	3
	Tarsal Tunnel Syndrome Shin splints Plantar fasciitis Tendoachilles tendinitis	
6	Special Considerations	3
	Congenital Taliopo Equino Varus(CTEV) Pes Planus, Pes Cavus, Hallux Valgus, Hallux Rigidus RAFoot	
	Practical : Case presentations, evaluation and management of above conditions	10
	Total	30

SUGGESTIVE READINGS:

Management of Common Musculoskeletal disorders- Randolph M.Kessler
Carol Oatis- Kinesiology: The mechanics and pathomechanics of Human Movement.
Clinical Anatomy by regions- Richard S.Snell

NEUROPHYSIOLOGICAL TECHNIQUES

Total Credits: 4
(L+T+P= 3+0+1)
Total Contact hrs: 80hrs

Module	Modules	Contact hours
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no.		
1.	Neuro Muscular system	20
2.	CNS problems	20
3.	Bobath's approach (Normal movement concept)	10
4.	Motor Relearning process (MRP)	10
5.	Vojta approach	10
6.	Clinical reasoning and clinical decision and clinical making in neurological conditions.	10

PHYSIOTHERAPY IN I.C.U

Course description: This course involves a description of the assessment and treatment of patients with complications admitted in the I.C.U.

Course objectives: The student will be able to conduct a safe and effective treatment of patients in the I.C.U.

Course Outcomes: On completion of this subject, the students will be able to integrate the knowledge gained and apply these in clinical situations of dysfunctions in the I.C.U.

Total Credits: 4 (L+T+P= 3+0+1) Total Contact hrs: 80 hrs

Detailed Syllabus:

Sl.No.	Topics	Contact Hrs
1.	Assessment of critically ill patient in the ICU, ICU Monitoring: Apparatus, Airways and Tubes used in the ICU	10 [6(L)+4(P)]
2.	Demonstration, application and Interpretation of medical investigations: ECG Interpretation of arterial blood gas disorders PFT Chest x-ray	10 [6(L)+4(P)]
3.	Mechanical ventilation: implications for physiotherapy. Demonstration, setting up of invasive and non invasive ventilators Management of endotracheal tubes, Tracheal suction, Weaning the patient from ventilator, Extubation and post-extubation care.	10 [6(L)+4(P)]
4.	Demonstration, and Interpretation of auscultation: breath sounds, added sounds, vocal resonance, heart sounds	10 [6(L)+4(P)]
5.	Demonstration and application: airway clearance techniques	10 [6(L)+4(P)]

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	techniques of breathing exercises monitoring devices in ICU	
6.	Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, RibSpringing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning	10 [6(L)+4(P)]
7.	Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP,IPPB	10 [6(L)+4(P)]
8.	Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock;	10 [6(L)+4(P)]
9.	Dealing with an Emergency Situation in the ICU: Describe the principles of cardiopulmonary resuscitation, cardiac massage, artificial respiration, defibrillators and their use Demonstrate and practice of CPR Emergencies in the neonatal unit	10 [6(L)+4(P)]

Suggestive Readings:

Pryor, Jennifer A.; Prasad, Ammani S. *Physiotherapy for Respiratory and Cardiac Problems: Adults and Paediatrics (Physiotherapy Essentials)* 4th edition, 2008, Churchill Livingstone (London) (ISBN-10: 0080449859 ISBN-13: 9780080449852)

Donna Frownfelter & Elizabeth dean. *Cardiovascular and pulmonary physical therapy evidence and practice*, 4th edn. Mosby.

Downie PA. *Cash's Text books of chest heart and vascular Disorders for physiotherapist*, Japee Brother.

Corne, Jonathan. *Chest X-Ray Made Easy (Made Easy)* 3rd Revised edition, 2009, Churchill Livingstone (London) (ISBN-10: 0443069220 ISBN-13: 9780443069222)

Smith, Mandy; Ball, Valerie *Cardiovascular/Respiratory Physiotherapy* 1998, Mosby (London), ISBN-10: 0723425957 ISBN-13: 9780723425953)

Porter, Stuart. *Tidy's Physiotherapy (Physiotherapy Essentials)*, 14th revised edition, 2008 Churchill Livingstone (London); (ISBN-10: 0443103925, ISBN-13: 9780443103926)

Chest Physiotherapy in Intensive Care Unit by Mackenzi

SEVENTH SEMESTER

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PHYSIOTHERAPY IN NEUROLOGY & PSYCHOSOMATIC DISORDERS

Total Credits: 4

(L+T+P= 5+0+2)

Total Contact hrs: 144hrs

Subject description - The subject serves to integrate the knowledge gained by the students in neurology and neurosurgery with skills to apply these in clinical situations of dysfunction and neurological pathology. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

Detailed Syllabus:

160=(L)96+(P)64

Sl.No.	Topics	Contact Hrs
1.	Neurological Assessment: Required materials for examination, Chief complaints, Historytaking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment, Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes – Developmental reflexes, deep tendon reflexes, Superficial reflexes, Sensory examination – Superficial, Deep and Cortical sensations, Special tests – Romberg's, Kernig's sign, Brudzki sign, Tinels's sign, Slum test, Lehermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc, Balance examination, coordination examination, Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis), Functional Analysis, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading. Differential diagnosis.	8+8P

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2.	Neuro physiological Techniques: Concepts, Principles, Techniques, Effects of following Neurophysiological techniques- NDT, PNF, Vojta therapy, Rood's Sensory motor Approach,	8+8P
	Sensory Integration Approach, Brunnstorm movement therapy, Motor relearning program, Contemporary task oriented approach, Muscle re-education approach and Constraint induced movement therapy.	8+8P
3.	Paediatric Neurology: Paediatric Examination- Developmental milestones, Developmental reflexes, Neuro developmental screening tests. Evaluation & Management – History, Observation, Palpation, Milestone Examination, Developmental reflex Examination, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, Short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in- Risk babies, Minimum brain damage, Developmental disorders- Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Chorea, Spina bifida, and Syringomyelia.	8+8P

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4.	<p>Evaluation and Management of Brain and Spinal Cord Disorders : History, Observation, Palpation, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differentialDiagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management ofMechanical Complications, Use of various Neurophysiological approaches& Modalities in- Cerebro vascular Accident, Meningitis,</p>	8+8P
	<p>Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Amyotrophic lateral sclerosis, and Multiple sclerosis.</p>	8+8P
5.	<p>Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders : History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differentialDiagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management ofMechanical Complications, Use of various Neurophysiological approaches& Modalities in- Ataxia, Sensory Ataxia, Parkinson’s disease, Muscular dystrophy (DMD), Myasthenia Gravis, Eaton-Lambert Syndrome, Spinal tumors, Spinal cord injury, Transverse myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis and Post-Polio Syndrome.</p>	8+8P

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6.	<p>Evaluation and Management of Peripheral Nerve Injuries and Disorders : History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in- Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & intercostals nerve lesions,</p>	8+8P
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	<p>Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, Sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, and Pudental nerve palsy.</p>	8+8P
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7.	<p>Assessment and management of Neurological gaits: Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following Neurological Gaits – Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait.</p>	8+8P
8.	<p>Pre and post-surgical assessment and treatment following conditions: Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson's disease, Chorea, Hemiballism, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis , Arteriovenous malformations, and Spina bifida.</p>	8+8P

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9.	Applied Yoga in Neurological conditions.	8+8P
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Practical:

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

Bedside case presentations and case discussions

Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

BIOSTATISTICS AND RESEARCH METHODOLOGY

Course objective: - The objective of this module is to help the students understand the basic principles of research and methods applied to draw inferences from the research findings.

Total Credits: 4 (L+T+P= 4+0+0) Total Contact hrs: 64 hrs

Course outcome

CO 1. To help students get acquainted with basic concept of statistics

CO 2. To help in understanding statistical analysis during research project

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- CO 3. Use of appropriate statistical technique to answer questions of medical and physiotherapy field.
- CO 4. Learn use of statistical software for statistical analysis and data management
- CO 5. Interpret results of statistical analysis
- CO 5. Effective Communication with statisticians
- CO 6. Designed to teach entry level PT' students fundamentals of reading, and understanding research methods, designs and statistics.
- CO 7. Students should be able to plan and execute a research study or a clinical trial including review literature, formulate hypothesis, collect data, write a research proposal.

Detailed Syllabus:

Research Methodology		
Module no	Module	Contact Hrs
1.	Introduction to Research methodology: Meaning of research, objectives of research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research, Problems encountered by researchers in India.	4L
2.	Research problem: Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem	2L
3.	Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design	4L
4.	Sampling Design: Criteria for selecting sampling procedure, Implications for sample design, Steps in sampling design, Characteristics of good sample design, Different types of sample design	2L
5.	Measurement & scaling techniques: Measurement in research- Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification. Important scaling techniques.	4L

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6.	Methods of data collection: Collection of primary data, Collection data through questionnaires & schedules, Difference between questionnaires & schedules.	6L
7.	Sampling fundamentals: Need for sampling & some fundamental definitions, Important sampling distributions.	2L
8.	Processing & analysis of data:	4L
	Processing operations, problems in processing, Types of analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship.	
9.	Testing of hypothesis: What is hypothesis? Basic concepts concerning testing of hypothesis, Procedure of hypothesis testing, measuring the power of hypothesis test, Tests of hypothesis, limitations of the tests of hypothesis.	4L
10.	Computer technology: Introduction to Computers, computer application in research, computers & researcher.	2L
Biostatistics		
1.	Introduction: Meaning, definition, characteristics of statistics, Importance of the study of statistics, Branches of statistics, Statistics and health science including physiotherapy, Parameters and Estimates, Descriptive and inferential statistics, Variables and their types, Measurement scales	6L
2.	Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, Cumulative frequency curve, Normal probability curve	4L
3.	Measure of Central Tendency: Need for measures of central Tendency, Definition and calculation of mean – ungrouped and grouped, Meaning, interpretation and calculation of median ungrouped and grouped, Meaning and calculation of mode, Comparison of the mean, median and mode, Guidelines for the use of various measures of central tendency.	6L

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4.	Probability and Standard Distributions: Meaning of probability of standard distribution, The binominal distribution, the normal distribution, Divergence from normality – skew ness, kurtosis.	4L
5.	Sampling techniques: Need for sampling - Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling designs errors, Sampling variation and tests of significance.	4L
6.	Analysis of variance & covariance:	4L
	Analysis of variance & covariance: Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Co variance (ANACOVA).	
7.	Format of scientific documents. (Structure of protocols, formats reporting in scientific journals, systematic reviews and meta-analysis).	2L

Suggested Readings/Reference Books

An introduction of Bio-Statistics: Sunder Rao. PSS

Methods in Bio-Statistics .7th Ed. 2010. B.K. Mahajan

Fundamentals of Research . 4TH ED. David J. Fox

Elements of Health Statistics : Rao NSN

Basic Statistics . 3rd Ed. Simpsory G Kaftha

Research methods for clinical therapists: Applied project Design and Analysis. Carolyn MHicks.

CLINICAL CARDIOVASCULAR AND PULMONARY SYSTEMS

Total Credits: 45(L+T+P= 5+0+0) Total Contact hrs: 80 hrs

Course description: Following the basic science and clinical sciences course, this course introduces the Student to cardio-thoracic conditions which commonly causes disability.

Course objective: The objective of this course is that after lectures and demonstration in addition to clinics the student will be able to demonstrate an understanding of Cardio-thoracic conditions causing disability and their management. This course explores selected systemic diseases focusing on epidemiology, pathology, histology, etiology as well as primary and secondary clinical characteristics and their management.

Course Outcome :

At the end of the course the student should be able to

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- CO 1. Describe etiology, pathophysiology, Signs and symptoms, along with management and treatment of diseases of Cardio-vascular and Respiratory System.
- CO 2. Acquire skill of history taking and clinical examination as part of clinical teaching.
- CO 3. Interpret Auscultatory findings.
- CO 4. Study Chest X-Ray, PFT & haematological studies
- CO 5. Describe principles of management at ICU
- CO 6. Acquire the basic skills of BLS
- CO 7. Knowledge about different classes of drugs used and its effect and uses during therapy.

Detailed Syllabus:

Module no	Module	ContactHrs
1.	Anatomy and Physiology a. Respiratory system Upper respiratory tract Lower respiratory tract – Trachea, Bronchial tree, Bronchopulmonary segments Respiratory unit, hilum of lung. Muscles of respiration Pleura, intra pleural space, intra pleural pressure, surfactant	20
	Mechanics of respiration – Chest wall movements, lung & chest wall compliance V/Q relationship, airway resistance Respiratory centre, Neural & chemical regulation of respiration Lung volumes and lung capacities, Spiro meter, lung function test Pulmonary circulation, Lung sounds, cough reflex b. Cardiovascular systems Chambers of heart, semi lunar and atria ventricular valves Coronary circulation, conductive system of heart Cardiac cycle, ECG, Heart sounds Blood pressure, pulse, cardiac output	

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2.	<p>Cardio Vascular system Define, etiology, pathogenesis, clinical features, complications, Conservative and surgical management of the following conditions Ischemia heart disease Myocardial infarction Heart failure Cardiac arrest Rheumatic fever Hypertension Infective endocarditis Myocarditis & cardiomyopathy c. Cardiovascular Disease : Examination of the Cardiovascular System Investigations : ECG, Exercise Stress Testing, Radiology ; Clinical manifestations of Cardiovascular disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases and disorders of the heart : Pericarditis, Myocarditis, Endocarditis, Rheumatic Fever – resulting in valve disorders, Ischemic Heart Disease, Coronary Valve Disease, Congenital disorders of the Heart, Cardiac Arrest ; Examination and Investigations of diseases of arteries and veins ; Hypertension : Definition, causes, classification, types, assessment, investigations and management. d. Disorders of the Heart – Definition, Clinical features, diagnosis and choice of management for the following disorders : Congenital Heart diseases – Acyanotic congenital heart disease & Cyanotic congenital heart disease : Patent Ductus Arteriosus, Coarctation of Aorta, Atrial Septal Defect, Ventricular Septal Defect, Tetralogy of Fallot, Transposition of Great Vessels ; Acquired Heart Disease – Mitral Stenosis & Insufficiency, Aortic Stenosis and Insufficiency, Ischemic Heart Disease – Coronary Artery Disease, Cardiac tumors.</p>	30
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3.	<p>Respiratory System</p> <p>Respiratory Disease : Examination of the Respiratory System – Investigations : Chest Radiographs, Pulmonary Function Testing, Arterial Blood Gas Analysis ; Clinical manifestations of Lung disease ; Patterns of lung disease – Chronic Obstructive Lung Disease and Restrictive Lung Disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following lung diseases : Chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic Fibrosis, Upper Respiratory Tract Infections, Pneumonia, Tuberculosis, Fungal Diseases, Interstitial Lung Diseases, Diseases of the pleura, diaphragm and chest wall ; Respiratory failure – Definition, types, causes, clinical features, diagnosis and management.</p> <p>Chest wall disorders- Definition, Clinical features, diagnosis and choice of management for the following disorders – chest wall deformities, chest wall tumors, Spontaneous Pneumothorax, Pleural Effusion, Empyema Thoracis, Lung abscess, Bronchiectasis, Tuberculosis, Bronchogenic Carcinoma, Bronchial Adenomas, Metastatic tumors of the Lung, tracheal Stenosis, Congenital tracheomalacia, Neoplasms of the trachea, Lesions of the Mediastinum. Carcinoma of the female breast.</p>	30
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Suggestive readings:

Cash's textbook of Chest, heart and vascular disorders for physiotherapist
 Tidys physiotherapy

COMMUNITY MEDICINE

Subject description -This subject follows the basic science subjects to provide the knowledge about conditions the therapist would encounter in their practice in the community.

Course Objective: The objective of this course is that after 64 hrs of lectures and discussion the student will be able to demonstrate an understanding of various aspects of health and disease list the methods of health administration, health education and disease preventive measures.

Course Outcome: After completion of the course the student will be able to: CO1: assume wider responsibilities at all levels of health services

CO2: improve their performance through better understanding of the health services at all the levels of the community.

Total Credits: 4 (L+T+P= 4+0+0) Total Contact hrs: 64 hrs

Detailed Syllabus

Sl.No.	MODULE	Contact Hrs
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1.	<p>Health and Disease: Definitions, Concepts, Dimensions and Indicators of Health Concept of well-being Spectrum and Determinants of Health Concept and natural history of Disease Concepts of disease control and prevention Modes of Intervention Population Medicine The role of socio-economic and cultural environment in health and disease.</p>	4L
2.	<p>Epidemiology, definition and scope. Principles of Epidemiology and Epidemiological methods: Components and Aims Basic measurements, Methods Uses of Epidemiology Infectious disease epidemiology Dynamics and modes of disease transmission Host defenses and Immunizing agents Hazards of Immunization Disease prevention and control Disinfection Screening for Disease: Concept of screening Aims and Objectives Uses and types of screening.</p>	6L

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3.	<p>Epidemiology of communicable disease: Respiratory infections Intestinal infections Arthropod-borne infections Zoonoses Surface infections Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardio vascular diseases: Coronary heart disease Hypertension Stroke Rheumatic heart disease Cancer Diabetes Obesity Blindness Accidents and Injuries.</p>	10L
4.	<p>Public health administration- an overview of the health administration set up at Central and state levels. The national health programme-highlighting the role of social, economic and cultural factors in the implementation of the national programmes. Health problems of vulnerable groups- pregnant and lactating women, infants and pre-school children, occupational groups.</p>	3L
5.	<p>Health programmes in India: Vector borne disease control programme National leprosy eradication programme National tuberculosis programme National AIDS control programme National programme for control of blindness Iodine deficiency disorders (IDD) programme Universal Immunisation programme Reproductive and child health programme National cancer control programme National mental health programme National diabetes control programme National family welfare programme National sanitation and water supply programme Minimum needs programme.</p> <p style="text-align: right;"><i>P Chaudhuri</i> 8/08/2022</p>	10L

6.	Demography and Family Planning: Demographic cycle Fertility Family planning- objectives of national family planning programme and family planning methods A general idea of advantage and disadvantages of the methods	4L
7.	Preventive Medicine in Obstetrics, Paediatrics and Geriatrics: MCH problems Antenatal, Intranatal and post-natal care Care of children, Child health problems, Rights of child and National policy for children MCH services and indicators of MCH care Social welfare programmes for women and children Preventive medicine and geriatrics.	4L
8.	Nutrition and Health: Classification of foods, Nutritional profiles of principal foods Nutritional problems in public health Community nutrition programmes.	4L
9.	Environment and Health: Components of environment Water and air pollution and public health: Pollution control Disposal of waste Medical entomology	2L
10.	Hospital waste management: Sources of hospital waste Health hazards Waste management	2L
11.	Disaster Management: Natural and man-made disasters Disaster impact and response Relief phase Epidemiologic surveillance and disease control Nutrition, Rehabilitation, Disaster preparedness.	2L

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12.	Occupational Health: Occupational environment Occupational hazards Occupational diseases Prevention of occupational diseases Social security and other measures for the protection from occupational hazard accidents and diseases Details of compensation acts	5L
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13.	Mental Health: Characteristics of a mentally healthy person Types of mental illness Causes of mental ill health, Prevention Mental health services Alcohol and drug dependence Emphasis on community aspects of mental health Role of Physiotherapist in mental health problems such as mental retardation	4L
14.	Health Education: Concepts, aims and objectives Approaches to health education Models of health education Contents of health education Principles of health education Practice of health education	4L

Suggestive Readings:

Park's Textbook of Preventive & Social Medicine- K. Park
 Textbook of Preventive & Social Medicine- P.K Mahajan & M.C Gupta
 Essential of Community Medicine- Baride & Kulkarni

Evaluation Methods & Outcome Measures

Course Objective: To educate the student to Implement methods to assess individual and collective outcomes of patients/clients with disorders of the musculoskeletal, neuromuscular, cardiovascular-pulmonary and integumentary systems using valid and reliable measures that take into account the setting in which patients/clients receive services, the variables of cultural competence, and the effect of societal factors.

Course Outcome: At the end of this course, the student will be able to:

CO1: assess individuals with disorders of the musculoskeletal, neuromuscular, cardiovascular-pulmonary and integumentary systems using valid and reliable measures

CO2: achieve collective outcomes of patients/clients with disorders of the various systems.

Total Credits: 4 (L+T+P= 3+0+1)

Total Contact hrs: 80hrs

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MODULE NO.	MODULE	Contact Hours
1	Introduction of Outcomes Measures and test, need and its limitations, Importance of Reliability and Validity	7+8
2	Special test for Upper limb, Lower limb and Spine	5+8
3	Outcome Measures for Adult Motor & Functional Activity Measures : Timed Up and Go Motor Assessment Scale Chedoke Mc Master Stroke Assessment Berg Balance Scale The Barthel Index Functional Independence Measure Latz Index of Activities of daily living Rivermead Motor Assessment Scale	5+8
4	Back and / or Pain Measures : Visual Analog Scale Numeric Pain Rating Scale Sickness Impact Profile Oswestry Low back pain Disability Questionnaire	5+8

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	Modified Schober Method of measuring Spinal Mobility Neck Disability Index	
5	Cardiopulmonary Measures: Chronic Respiratory Disease Questionnaire Visual Analog Scale for Dyspnea Six Minute Walking test Peak Expiratory Flow Rate Self Paced Walking test to predict VO2 max	5+8
6	Developmental Measure: Alberta Infant Motor Scale Bayley Scales of Infant Development Peabody Development Motor Scales Test of Motor Impairment Test of motor and Neurological Functions	5+8

EIGHT SEMESTER

PHYSIOTHERAPY IN CARDIOVASCULAR, PULMONARY & INTENSIVE CARE

Course description – This course includes a study of applied anatomy and physiology of the Cardio-vascular and respiratory system along with pathological changes and patho -mechanics.

Course objective: The subject is designed to provide knowledge in assessing and planning physiotherapy interventions for various General, Medical and Surgical conditions. This course

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focuses on maximizing functional independence and well-being and emphasizes on different tests, assessment tools and outcome measures for differential diagnosis and also for determining impairment.

The student must be able to reassess the patient as necessary, to monitor the patient in regard to treatment, to monitor the patient's vital signs, student must know emergency drugs indication and contra- indication, care in intensive care unit (ICU) and to provide appropriate interventions to the patient.

Course Outcomes :

- CO 1. Student will be able to identify and analyze cardiovascular and pulmonary dysfunction, co-relate with clinical findings, assessment, examination, investigation and arrive at a diagnosis using clinical reasoning
- CO 2. Plan realistic goals and aims of treatment based on knowledge of prognosis of disease and prescribe appropriate, safe evidence-based physiotherapy interventions with clinical reasoning.
- CO 3. To develop psychomotor skills to implement Timely appropriate PT assessment tools/techniques to ensure holistic approach to patient evaluation to prioritize patient's problems.
- CO 4. Students should be able to plan and implement the best treatment strategy based on individual patient's problems and to modify the treatment approach based on the need of the patients.
- CO 5. Develop behavioral skills and a humanitarian approach towards patient, their families and care-givers
- CO 6. Apply the skills gained in clinical cardiovascular and pulmonary systems to benefit the patient and use appropriate physiotherapy techniques to maximize patient recovery.
- CO 7. Utilize skills of cardiac, vascular and pulmonary rehabilitation.

Total Credits: 7 (L+T+P= 5+0+2) Total Contact hrs: 144 hrs

Detailed Syllabus:

Module no	Module	Contact Hrs
1.	Anatomical and Physiological differences between the Adult and Pediatric lung.	4+3P
2.	Bedside assessment of the patient-Adult & Pediatric	4+3P
3.	Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG, Hematological and Biochemical Tests.	6+3P
4.	Physiotherapy techniques to increase lung volume – Controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP, IPPB.	6+3P

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5.	Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, Mechanical aids – IPPB, CPAP, BiPAP.	3+3P
6P.	Physiotherapy techniques to clear secretions –Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning.	3+3P
7.P	Drug therapy – Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers.	3+3P
8.P	Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal	3+3P
P	disorders, Emergencies in the neonatal unit.	3+3P
9P.	Physiotherapy in Obstructive lung conditions.	3+3P
10P.	Physiotherapy in Restrictive lung conditions.	3+3P
11.P	Management of breathlessness.	3+3P
12.P	Pulmonary Rehabilitation.	3+3P
13.	Physiotherapy following Lung surgeries	3+3P
14.	Respiratory failure – Oxygen Therapy and Mechanical Ventilation.	3+3P
15.	Introduction to ICU : ICU monitoring –Apparatus, Airways and Tubes used in the ICU Physiotherapy in the ICU – Common conditions in the ICU –Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU.	3+3P

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16.	Physiotherapy management following cardiac surgeries.	3+3P
17.	Cardiac Rehabilitation.	3+3P
18.	Physiotherapy management following PVD.	3+3P
19.	Abdominal Surgeries – Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax.	3+3P
20.	Management of Amputations following Diabetes, PVD- Prosthesis in amputations of lower limbs following ulcers and gangrenes.	3+3P
21.	Home program and education of family members in patient care.	3+3P
22.	Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity.	3+3P

Practical:

Practical shall be conducted for all the relevant topics discussed in theory in the following forms: Bedside case presentations and case discussions

Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Reference books :

Chest Physiotherapy & Intensive Care – Colin McKenzie
Physiotherapy in Respiratory & Cardiac Problem - Pryor & Prasad
Physiotherapy in Cardio-Vascular Rehabilitation - Webber
Essentials of Cardiopulmonary Physiotherapy - Hillgass & Sodosky
Exercise Testing & Prescription - Skinner
Fundamental's of Respiratory Care - Egan's

COMMUNITY PHYSIOTHERAPY

Course objective: The subject serves to integrate the knowledge gained by the students in community medicine and other areas with Physiotherapy skills and knowledge to apply these in clinical situations of health and disease and its prevention.

Course Outcomes:

Co 1. The objective of the course is that after the specified hours of lectures and demonstrations

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the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease conditions.

CO 2. Plan and set treatment goals and apply the skills gained in rehabilitating and restoring functions.

CO 3. Understand on Physical Fitness

CO 4. Understand Physiology of aging process and its influence on Physical Fitness. CO 5. National policies for rehabilitation of disabled and the role of physiotherapists. CO 6. Evaluation of disability and planning for prevention and rehabilitation.

CO. 7. Rehabilitation in Urban and Rural Set-up

CO 8. Able to be a part of decision making team regarding the policies for the welfare of special communities & on issues of disabilities.

CO.9 to gain the ability to collaborate with other health professionals for effective service delivery & community satisfaction.

CO 10. Use clinical reasoning to identify prevailing contextual factors causing high risk responsible for various dysfunctions and morbidity related to sedentary life style and specific community like women, children, geriatric, industrial workers and high risk population. to describe and implement interventional policies to combat such problems at community level.

CO 11. Assess working environment, suggest and implement ergonomic changes

Total Credits: 6(L+T+P= 4+0+2)

Total Contact hrs: 96 hrs

Detailed Syllabus:

Module no	Module	Contact Hrs
1.	Rehabilitation: Definition, Types.	3L
2.	Community: Definition of Community, Multiplicity of Communities, The Community based approach, Community Entry strategies, CBR and Community development, Community initiated versus community oriented programme, Community participation and mobilization.	5L
3.	Introduction to Community Based Rehabilitation: Definition, Historical review, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR.	5L

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4.	Principles of Community based Rehabilitation. W.H.O.`s policies-about rural health care concept of primary /tertiary health centers-district hospitals etc Role of P.T.-Principles of a team work of Medical person/P.T./ O.T. audiologist/speech therapist /P.&O./vocational guide in C.B.R. of physically handicapped person , Agencies involved in rehabilitation of physical handicapped -Legislation for physically handicapped. Concept of multipurpose health worker. Role of family members in the rehabilitation of a physicallyhandicapped	5 L
5.	Planning and management of CBR Programmes,CBR Programmed planning and management, Ownership and Governance, Decentralization and CBR, Management of CBR, Programmed sustainability, Communication and Coordination, Community participation, mobilization and awareness, CBR programme influence on promoting and developing public policies.	5L
6.	Disability: Definition of Impairment, Handicap and Disability, Difference between impairment, handicap and disability, Causes of disability, Types of disability, Prevention of disability, Disability in developed countries, Disability indeveloping countries. Disability Surveys: Demography. Screening: Early detection ofdisabilities and developmental disorders, Prevention of disabilities- Types and levels	15
7.	Disability Evaluation: Introduction, What, Why and How to evaluate, Quantitative versus Qualitative data, Uses of evaluationfindings	5P
8.	Role of Government in CBR: Laws, Policies, Programmes, Human Rights Policy, Present rehabilitation services, Legal aspects of rehabilitation.	5L
9.	Role of Social work in CBR: Definition of social work, Methods of social work, History ofsocial work, Role of social worker in rehabilitation.	5L

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10.	Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies – National level and International NGO's, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockefeller, Ford foundation, CARE, RED CROSS.	5L
11.	National District Level Rehabilitation Programme: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker	5L + 5P
12.	Role of Physiotherapy in CBR: Screening for disabilities, Prescribing exercise programme, Prescribing and devising low cost locally available assistive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation programmes for various neuro-musculoskeletal and cardiothoracic disabilities.	5L + 5P
13.	Extension services and mobile units: Introduction, Need, Camp approach.	5L + 2P
14.	Vocational training in rehabilitation: Introduction, Need, Vocational evaluation, Vocational rehabilitation services	5L + 2P

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15.	<p>Geriatrics- Physiology of Aging /degenerative changes-Musculoskeletal /Neuromotor /cardio – respiratory-/Metabolic, Endocrine,Cognitive, Immune systems. Role of Physio Therapy in Hospital based care, Half-wayhomes, Residential homes, Meals on wheels etc. Home for the aged, Institution based Geriatric Rehabilitation.Few conditions:- Alzheimer’s disease, Dementia, Parkinson’sDisease, Incontinence, Iatrogenic drug reactions, etc. Ethics of Geriatric Rehabilitation</p>	5L + 5P
16.	<p>Industrial Health & Ergonomics [10 hours] – Occupational Hazards in the industrial area -- Accidents due to Physical agents-e.g.-Heat/cold, light, noise, Vibration, U.V. radiation, Ionizing radiation, Chemical agents-Inhalation, local action, ingestion, Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration & ergonomic evaluation of workplace-mechanical stresses per hierarchy – sedentary table work –executives, clerk, inappropriate seating arrangement- vehicledrivers constant standing- watchman- Defense forces,surgeons, Over-exertion in laborers,-common accidents –Role of P.T.-Stress management. Psychological hazards- e.g.-executives, monotonicity & dissatisfaction in job, anxiety ofwork completion with quality, Role of P.T. in Industrial setup & Stress management relaxationmodes. Biological Hazards</p>	5L + 5P

Practical: This will consist of Field visits to urban and rural PHC's., Visits to regional rehabilitation training center, Regular mobile camps, Disability surveys in villages, Disability screening, Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardiorespiratory, paediatric, gynecological and geriatric problems in community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials.

Suggestive readings:

Textbook for community Health for Physiotherapists – Bhaskar Rao
Therapeutic Exercise : Colby & Kisner
Geriatric Physiotherapy Andrew Guccione
Industrial Therapy : Glenda Key

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Textbook of physiotherapy for Obstetrics and Gynaecology : GB Madhuri and Pruthvish. Preventive and social Medicine : Park

PRINCIPLES OF MANAGEMENT AND TEACHING SKILLS

Course objective: The course is intended to provide knowledge about the basic principles of Management.

Course Objectives:

CO 1. Students should learn about management basics in clinical practice, institutional physiotherapy, research and physiotherapy practice.

CO 2. Attain effective communication skills with patients, professionals, care-givers and the community.

CO 3. Develop managerial and management skills and use of IT in professional practice.

CO 4. Develop skill to evaluate plan of management based on socio-cultural values and practice good management strategies

CO 5. Develop behavioral and humanitarian approach while communicating with patients and care-givers

Total Credits: 4 (L+T+P= 2+0+0) Total Contact hrs: 64hrs

Detailed Syllabus:

Module no	Module	Contact Hrs
1.	Introduction to management	2L
2.	Strategic Management	4L
3.	Foundations of Planning	6L
4.	Planning Tools and Techniques	4L
5.	Decision Making, conflict and stress management	2L
6.	Managing Change and Innovation	4L
7.	Understanding Groups and Teams	2L
8.	Leadership	2L
9.	Time Management	2L
10.	Cost and efficiency	4L
11	ADMINISTRATION a. Branches of administration, Nature and scope of administration, How to be an effective administrator, Planning hospital administration as part of a balanced health care program.	16

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	<p>Principles of hospital administration and its applications to physiotherapy.</p> <p>Planning and organization: Planning cycle, Principles of organizational charts, Resource and quality management, planning change - innovation</p> <p>Financial issues including budget and income generation</p> <p>Hospital administration: Organization, Staffing, Information, Communication, Coordination, Cost of services, Monitoring and evaluation.</p> <p>Organization of physiotherapy department: Planning, Space, Manpower, Other basic resources.</p> <p>Organizing meetings, committees, and negotiations</p> <p>Personnel management: Personnel performance appraisal system, Quality care delivery from the staff.</p>	
12	<p>Aims of physiotherapy education</p> <p>Concepts of teaching and learning</p> <p>Curriculum development</p> <p>Principles and methods of academic and clinical teaching</p> <p>Measurement and evaluation</p> <p>Guidance and counseling</p> <p>Faculty development program</p> <p>Administration in clinical setting</p> <p>Use of A-V aids in teaching</p> <p>Taxonomy of education</p>	16

Reference Books : Physical Therapy administration and management by Robert J Hitchcock

EVIDENCE BASED PHYSIOTHERAPY AND CASE PRESENTATION

CLINICAL REASONING AND EVIDENCE BASED PRACTICE

Total Credits: 4 (L+T+P= 2+0+2) Total Contact hrs: 96 hrs

Course Objectives : This course is designed to enable students to use the skill of clinical

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reasoning to guide their assessment, examination, diagnosis goal setting and plan and rehabilitatetreatment process based on evidence based practice.

Course Outcomes:

CO 1. Develop and practice evidence based skills

CO 2. Practice appropriate and safe physiotherapeutic skills based on knowledge and published literature.

CO 3. Use appropriate Measuring outcomes in Health Outcomes and clinical outcomes CO 4. Ability to assess evidence based on intra and inter rater reliability and specificity CO 5. Ability to search, assess and systematically review the evidence:

Co 6. Ability to use Economic evaluation of the evidence

CO 7. Help in Building evidence in practice through Critically Appraised Topics(CATs) Detailed Syllabus:

Module no	Module	Contact Hrs
1.	Introduction to Evidence Based Practice: Definitions, Evidence Based Practice,	3
2.	Concepts of Evidence based Physiotherapy: Awareness, Consultation, Judgement, and Creativity	1
3.	Development of Evidence based knowledge, The Individual Professional, Professionals within a discipline, and Professionals across Discipline	3
4.	Evidence Based Practitioner: The Reflective Practitioner, The E Model, Using the E Model	1
5.	Finding the Evidence: Measuring outcomes in Evidence Based Practice, Measuring Health Outcomes, Measuring clinical outcomes, Inferential statistics and Causation	3
6.	Searching for the Evidence: Asking Questions, Identifying different sources of evidence, Electronic Bibliographic databases and World Wide Web, Conducting a literature search. Step by-step search for evidence	5
7.	Assessing the Evidence: Evaluating the evidence; Levels of evidence in research using quantitative methods, Levels of evidence classification system, Outcome Measurement, Biostatistics, The critical review of research using qualitative methods	6
8.	Systematically reviewing the evidence: Stages of systematic reviews, Meta-analysis, The Cochrane collaboration	6

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9.	Economic evaluation of the evidence: Types of economic evaluation, conducting economic evaluation, critically reviewing economic evaluation, locating economic evaluation in the literature	3
10.	Using the evidence: Building evidence in practice; Critically Appraised Topics(CATs), CAT format, Using CATs, Drawbacks of CATs	5
11.	Practice guidelines, algorithms, and clinical pathways: Recent trends in health care, Clinical Practice Guidelines (CPG), Algorithms, Clinical pathways, Legal implications in clinical pathways and CPG, Comparison of CPGs, Algorithms and Clinical Pathways	3
12.	Communicating evidence to clients, managers and funders: Effectively communicating evidence, Evidence based communication in the face of uncertainty; Evidence based communication opportunities in everyday practice	3
13.	Research dissemination and transfer of knowledge: Models of research transfer, Concrete research transfer strategies, Evidence based policy	4
14	CASE PRESENTATION	50

Reference Books :

The evidence based practice: Stout & Randy A. Hayes

Evidence based practice in nursing and Health Care : B Melnyk & Ellen FO

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