



MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

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Curriculum for Bachelor of Physiotherapy (BPT)

Amended upto BOM 57/2019, Dated 26/04/2019

Amended History

1. Amended upto Resolution No. 3.7 b, BOM – 40/2015, dated 13/03/2015.
2. Amended upto Resolution No. 3.1.13.1, Resolution No. 3.1.13.2; BOM-51/2017, dated 28/08/2017.
3. Amended upto Resolution No. 3.11.2, BOM-52/2018, dated 13/01/2018.
4. Amended upto Resolution No. 4.6.2, Resolution No. 4.6.3; BOM-53/2018, dated 19/05/2018.
5. Amended upto Resolution No. 4.4.2.1, Resolution No. 4.13 BOM-55/2018, dated 27/11/2018.
6. Amended upto Resolution No. 3.2.2.2, Resolution No. 3.2.2.10; BOM-57/2019, dated 26/04/2019.



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University Department of Physiotherapy
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Sector 1, Plot No. 1 & 2, Kamothe, Navi Mumbai 410209

SYLLABUS FOR
BACHELOR OF PHYSIOTHERAPY (BPT)
DEGREE COURSE

KL
02.02.2016
Registrar
MGM INSTITUTE OF HEALTH SCIENCES
(DEEMED UNIVERSITY u/s 3 of UGC Act, 1956)
KAMOTHE, NAVI MUMBAI

PHYSIOTHERAPY

DEFINITION:

'Physiotherapy' is a branch of modern medical science which includes examination, assessment, interpretation, physical diagnosis, planning and execution of treatment and advice to any person for the purpose of preventing, correcting, alleviating and limiting dysfunction, acute and chronic bodily malfunction including life saving measures via chest physiotherapy in the intensive care unit, curing physical disorders or disability, promoting physical fitness, facilitating healing and pain relief and treatment of physical and psychological disorders through modulating psychological and physical response using physical agents, activities and devices including exercise, mobilization, manipulations, therapeutic ultrasound, electrical and thermal agents and electrotherapy for diagnosis, treatment and prevention.

(Definition as per the Maharashtra State Council for Occupational therapy & Physiotherapy, 2004)

'Physiotherapist' is a qualified professional who has acquired all the above mentioned knowledge and skills for entry into practice after being awarded a bachelor degree in the subject of " Physiotherapy" from a recognised institute affiliated to the University conducting a fulltime course not less than four years and six months of internship.

PREAMBLE

Physiotherapy or Physical Therapy (P.T.) is a **Movement Science** with an established theoretical and scientific base and widespread clinical applications in the **Prevention, Restoration & Rehabilitation, Maintenance and Promotion of optimal physical function**. Physiotherapists **diagnose and manage movement dysfunction** and enhance physical and functional abilities. This physical dysfunction may be the sequelae of involvement of any of the systems like Musculoskeletal, Neurological, Cardiovascular, Respiratory or other body systems.

These practitioners contribute to society and the profession through practice, teaching, administration, and the discovery and application of new knowledge about physiotherapy experiences of sufficient excellence and breadth by research to allow the acquisition and application of essential knowledge, skills, and behaviors as applied to the practice of physiotherapy. Learning experiences are provided under the guidance and supervision of competent faculty, in both, classroom as well as in clinic. The designed curriculum will prepare the entry-to-practice physiotherapist (PT), to be an autonomous, effective, safe and compassionate professional, who practices collaboratively in a variety of healthcare set ups such as neonatal to geriatric, from critical care to community fitness to sports training and is responsive to the current and future needs of the health care system.

VISION: To create a best possible environment to prepare physiotherapist who shall lead to serve & heal in a variety of healthcare and social settings to provide best quality of life to an individual.

MISSION: To graduate **knowledgeable, service-oriented, self-assured, adaptable, reflective practitioners** who, by virtue of critical and integrative thinking along with clinical reasoning, lifelong learning, and ethical values, render independent judgments concerning patient /person needs those are supported by evidence; promote the health of the patient or person; and enhance the professional, contextual, and collaborative foundations for physiotherapy practice.

ESSENTIAL REQUIREMENTS

The following "essential requirements" specify those attributes that the faculty consider necessary for completing the professional education enabling each graduate to subsequently enter clinical practice. The purpose of this curriculum is to delineate the cognitive, affective and psychomotor skills deemed essential for completion of this program and to perform as a competent physiotherapist who will be able to evaluate, plan & execute physiotherapy treatment independently.

COGNITIVE LEARNING SKILLS: The student must demonstrate the ability to receive, interpret, remember, reproduce and use information in the cognitive, psychomotor, and affective domains of learning to solve problems, evaluate work, and generate new ways of processing or categorizing similar information listed in course objectives.

PSYCHOMOTOR SKILLS: The student must demonstrate the following skills.

1. Locomotion ability:

Get to lecture, laboratory and clinical locations, and move within rooms as needed for changing groups, partners and work stations. Move quickly in an emergency situation to protect the patient (e.g. from falling).

2. Manual tasks:

- a. Maneuver another person's body parts to effectively perform evaluation techniques.

Manipulate common tools used for screening tests of the cranial nerves, sensation, range of motion, blood pressure, e.g., cotton balls, safety pins, goniometers, Q-tips, sphygmomanometer. Safely and effectively guide, facilitate, inhibit, and resist movement and motor patterns through physical facilitation and inhibition techniques (including ability to give timely urgent verbal feedback).

Manipulate another person's body in transfers, gait, positioning, exercise, and mobilization techniques. Manipulate evaluation and treatment equipment safely and accurately apply to patients. Manipulate bolsters, pillows, plinths, mats, gait assistive devices, and other supports or chairs to aid in positioning, moving, or treating a patient effectively.

- c. Competently perform and supervise cardiopulmonary resuscitation

3. Fine motor/hand skills:

- a. Legibly record thoughts for written assignments (including diagrams) and tests. Document evaluations, patient care notes, referrals, etc. in standard medical charts in hospital/clinical settings in a timely manner and consistent with the acceptable norms of clinical settings.
- b. Safely apply and adjust the dials or controls of therapeutic modalities.
- c. Safely and effectively position hands and apply mobilization and therapeutic techniques.

4. Visual acuity to:

- a. Read written and illustrated material in the English language, in the form of lecture handouts, textbooks, literature and patient's chart.
- b. Observe active demonstrations in the classroom.
- c. Visualize training videos, projected slides/overheads, X-ray pictures, and notes written on a blackboard/whiteboard.
- d. Receive visual information from patients, e.g., movement, posture, body mechanics, and gait necessary for comparison to normal standards for purposes of evaluation of movement dysfunctions.
- e. Receive visual information from treatment environment, e.g., dials on modalities and monitors, assistive devices, furniture, flooring, structures, etc.
- f. Receive visual clues as to the patient's tolerance of the intervention procedures. These may include facial grimaces, muscle twitching, withdrawal etc.

5. Auditory acuity to:

- a. Hear lectures and discussion in an academic and clinical setting.
- b. Distinguish between normal and abnormal breathing, lung and heart sounds using a stethoscope.

6. Communication:

- a. Effectively communicate information and safety concerns with other students, teachers, patients, peers, staff and personnel by asking questions, giving information, explaining

conditions and procedures, or teaching home programs. These all need to be done in a timely manner and within the acceptable norms of academic and clinical settings.

- b. Receive and interpret written communication in both academic and clinical settings in a timely manner.
- c. Receive and send verbal communication in life threatening situations in a timely manner within the acceptable norms of clinical settings.
- d. Physiotherapy education presents exceptional challenges in the volume and breadth of required reading and the necessity to impart information to others. Students must be able to communicate quickly, effectively and efficiently in oral and written English with all members of the health care team.

7. Self care:

Maintain general good health and self care in order not to jeopardize the health and safety of self and individuals with whom one interacts in the academic and clinical settings.

AFFECTIVE LEARNING SKILLS: The student must be able to:

1. Demonstrate respect to all people, including students, teachers, patients and medical personnel, without showing bias or preference on the grounds of age, race, gender, sexual preference, disease, mental status, lifestyle, opinions or personal values.
2. Demonstrate appropriate affective behaviors and mental attitudes in order not to jeopardize the emotional, physical, mental, and behavioral safety of patients and other individuals with whom one interacts in the academic and clinical settings and to be in compliance with the ethical standards of the profession.
3. Acknowledge and respect individual values and opinions in order to foster harmonious working relationships with colleagues, peers, and patients.

FRAMEWORK OF THE CURRICULUM

COURSE DURATION: Four years and Six months of Internship.

I BPT

- a. Deals with the basic foundation in medical as well as physiotherapy subjects. The foundation of human body structure & function & energy utilization is achieved by studying the subjects Human Anatomy, Physiology, and Biochemistry.
- b. Students knowledge of Physics i.e. – Mechanics, Electricity, Water , Sound & Light is recalled to apply it on human body in understanding movements and the various physiotherapeutic modalities under the subject of Fundamentals of Electrotherapy & Fundamentals of Kinesiology & Kinesiotherapy.

II BPT

- a. Deals with understanding of altered physiology by studying pathology & Microbiology.
- b. The students get oriented to various Pharmacotherapeutic agents used along with their effects by studying Pharmacology.
- c. The students will study about normal and altered human mind & behavior by studying Psychology & Psychiatry. They will also learn skills required for effective communication with the patients and care givers.
- d. Students will acquire the knowledge of Biomechanics as applicable to human body in the context of Kinetics & kinematics of Joints, Movements & Daily activities under subject of Kinesiology and shall acquire knowledge and learn various physiotherapeutic skills on models in subject of Kinesiotherapy.
- e. In the subject of Electrotherapeutics, students will acquire knowledge and learn application & uses of various electrotherapeutic modalities on models.

III BPT

- a. Students acquire knowledge of all the clinical subjects like Orthopaedics, General Surgery, Medicine, Neurology, Paediatrics, Dermatology & Gynecology & Obstetrics, Community Medicine and Sociology.
- b. Students will acquire knowledge about the principles of International Classification of Functioning (I.C.F.) and its applicability in context to movement dysfunctions.
- c. Students will learn the physiotherapeutic evaluation skills including electrodiagnosis on patients to arrive at a Functional/ Physical Diagnosis in Neuromuscular, Cardiovascular & Respiratory dysfunction. They will also acquire knowledge of various specialized manual therapy and neurodevelopmental techniques and practice these skills on models under the subject of functional diagnosis and physiotherapeutic skills.

IV BPT

- a. Students will revise, recall and integrate the knowledge of previous years to evaluate, functionally diagnose, plan and execute short and long term management of various musculoskeletal, neurological & cardiovascular- respiratory dysfunctions in hospital and community settings.
- b. Students also acquire knowledge pertaining to health promotion & disease prevention throughout lifespan in the community. They will also be able to analyse, prevent and treat problems associated with various industries in community physiotherapy.
- c. Students will also acquire knowledge about biomechanical principles & application of variety of aids & appliances used for ambulation, protection & prevention by studying Bioengineering.
- d. Professional Practice and ethics as a subject will be studied in continuum from first year, so students will acquire the knowledge of ethical code of professional practice, as well as its moral & legal aspects. The principles of Hospital Administration, Management & Marketing will be studied separately.
- e. Students will also acquire knowledge of Research Methodology and Biostatistics and apply the knowledge in project work in community physiotherapy.

INTERNSHIP

- a. A period of 6 months (26 weeks) of continuous clinical practice to enhance the clinical reasoning, judgment, programme planning, intervention, evaluation of intervention, follow up and referral skills of all the dysfunctions and impairments learnt throughout the curriculum of four years.
- b. Those candidates declared to have passed the final year examination in all subjects shall be eligible for internship.
- c. Internship shall be done in a teaching hospital recognized by the University. A degree certificate shall be awarded ONLY on successful completion of six months of internship.
- d. The Internship will be rotatory and shall cover clinical branches concerned with Physiotherapy such as Orthopaedics, Cardiovascular & Respiratory including ICU, Neurology & Neurosurgery Paediatrics, General Medicine, Surgery, Obstetrics and Gynecology both inpatient and outpatient services.
- e. Successful Completion: The student must maintain a logbook. On completion of each posting, the same will have to be certified by the faculty in charge of the posting for both attendance as well as work done. On completion of all the postings, the duly completed logbook will be submitted to the Principal/Head of program to be considered as having successfully completed the internship program.

I BPT

TRANSCRIPT HOURS - 1400

Sr. No.	SUBJECTS	Teaching Hrs
	PROFESSIONAL PRACTICE	
1	Professional practice & Ethics	015
	BASIC MEDICAL SCIENCES	
2	Human Anatomy	210
3	Human Physiology	200
4	Biochemistry	050
	PHYSIOTHERAPY	
5	Fundamentals of Kinesiology & Kinesiotherapy	250
6	Fundamentals of Electrotherapy	200
7	Seminar	060
8	Observational clinical practice	415
	TOTAL	1400

II BPT

TRANSCRIPT HOURS- 1400

Sr. No.	SUBJECTS	Teaching Hrs
	PROFESSIONAL PRACTICE	
1	Professional practice & Ethics	015
	MEDICAL SCIENCES	
2	Pathology	050
3	Microbiology	035
4	Pharmacology	050
5	Psychiatry including Psychology	050
	PHYSIOTHERAPY	
6	Kinesiology	080
7	Kinesiotherapy	240
8	Electrotherapy	300
9	Seminar	090
10	Supervised clinical practice	490
	TOTAL	1400

III BPT

TRANSCRIPT HOURS- 1400

Sr. No.	SUBJECTS	Teaching Hrs
	PROFESSIONAL PRACTICE	
1	Professional practice & Ethics	015
	MEDICAL SCIENCES	
2	Surgery-I	055
3	Surgery-II	060
4	Medicine-I	055
5	Medicine-II	065
6	Community Medicine & Sociology	060
7	Obstetrics & Gynaecology	030
8	Dermatology	010
	PHYSIOTHERAPY	
9	Functional Diagnosis & Physiotherapeutic Skills	460
10	Seminar (including I.C.F.)	090
11	Supervised clinical practice	500
	TOTAL	1400

IV BPT

TRANSCRIPT HOURS -1465

Sr. No.	SUBJECTS	Teaching Hrs
	PROFESSIONAL PRACTICE	
1	Professional practice & Ethics	015
2	Administration, Management & Marketing	020
	PHYSIOTHERAPY	
3	Musculoskeletal Physiotherapy	200
4	Neuro Physiotherapy	200
5	Cardiovascular Respiratory Physiotherapy (Including Critical Care)	200
6	Community Physiotherapy	200
7	Principles of Bio-engineering	030
8	Research Methodology & Biostatistics	040
9	Seminar (including I.C.F.)	060
10	Supervised clinical practice	500
	TOTAL	1465

I BPT

SYLLABUS

Transcript Hrs-1400

Sr. No.	Subjects	Didactic Hours	Practical/Demonstration / Clinical Hours	Total Hours
	PROFESSIONAL PRACTICE			
1	Professional practice & Ethics <i>(College Examination in final year)</i>	015	-	015
	BASIC MEDICAL SCIENCES			
3	Human Anatomy	150	60	210
4	Human Physiology	150	50	200
5	Biochemistry	046	004	050
	PHYSIOTHERAPY			
6	Fundamentals of Kinesiology & Kinesiotherapy	100	150	250
7	Fundamentals of Electrotherapy	095	105	200
8	Seminar (including introduction to terms of I.C.F. definition of Structural and Functional impairments as applied to Anatomical structures and Physiological functions) <i>(not for examination)</i>	-	60	060
9	Observational Clinical Practice ➤ He /She shall observe and note technical aspects of fixation of electrotherapeutic modalities, basic movements and starting positions used, learn bedside manners and communication skills with the seniors, peers and patients	-	415	415

PROFESSIONAL PRACTICE AND ETHICS

(COLLEGE EXAMINATION IN FINAL YEAR)

TOTAL -15 HRS

COURSE DESCRIPTION:

This subject will be taught in continuum from first year to final year. An exam will be conducted only in final year. Professional and ethical practice curriculum content addresses the Knowledge, Skills and Behaviors required of the physiotherapist in a range of practice relationships and roles. The course will discuss the role, responsibility, ethics administration issues and accountability of the physical therapists. The course will also cover the history and change in the profession, responsibilities of the professional to the profession, the public and to the health care team. This includes the application of professional and ethical reasoning decision-making strategies and professional communication.

OBJECTIVES:

At the end of the course, the student will be compliant in following domains:

Cognitive: The student will

- a) Be able to understand the moral values and meaning of ethics.
- b) Acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.

Psychomotor: The student will be able to:

- Develop psychomotor skills for physiotherapist-patient relationship.

SYLLABUS

Sr. No.	Topics	Didactic Hrs	Visits/ Supervision Hours	Total Hrs
1.	Introduction to the history of Physiotherapy	02	05	
2.	Orientation to the curriculum, clinical areas and geographical location	03		
3.	Concept of morality and ethics	03		
4.	Concept of professionalism and Professional dress code	02		
TOTAL		10	05	15

HUMAN ANATOMY

(Didactic -150hrs + Practical / Laboratory -60hrs) **TOTAL -210 HRS**

COURSE DESCRIPTION:

The focus of this course is an in-depth study and analysis of the regional and systemic organization of the body. Emphasis is placed upon structure and function of human movement. A comprehensive study of human anatomy with emphasis on the nervous, musculoskeletal and circulatory systems is incorporated. Introduction to general anatomy lays the foundation of the course. Dissection and identification of structures in the cadaver supplemented with the study of charts, models, prosected material and radiographs are utilized to identify anatomical landmarks and configurations of the:

- Upper limb and thoracic region
- Lower limb, abdomen and pelvis
- Head and Neck
- Nervous system

Sr. No.	Regions	Didactic Hours	Practical Hours	Total Hours
1	GENERAL ANATOMY AND HISTOLOGY	17	03	20
2	MUSCULOSKELETAL SYSTEM	57	33	90
3	NEURO ANATOMY	32	12	44
4	SYSTEMIC ANATOMY	09	03	12
5	CARDIO VASCULAR & RESPIRATORY ANATOMY	13	05	18
6	ABDOMEN	04	02	06
7	SENSORY ORGANS	04	02	06
8	ENDOCRINE & EXOCRINE SYSTEM	04	-	04
9	RADIOLOGY	10	-	10
	TOTAL	150	60	210

OBJECTIVES:

1] MUSCULOSKELETAL ANATOMY

- i. The student should be able to identify & describe Anatomical aspects of muscles, bones, joints, their attachments & to understand and analyze movements.
- ii. Application of knowledge of anatomy on the living (living anatomy).
- iii. To understand the Anatomical basis of various clinical conditions.

2] NEURO ANATOMY

- i. To identify & describe various parts of nervous system.
- ii. To describe blood circulation of C.N.S. & spinal cord.
- iii. Be able to identify the Structures of various C.N.S Trans-sections.
- iv. To identify and describe the course of peripheral nerves.
- v. To understand anatomical basis of clinical conditions of nervous system.

3] CARDIOVASCULAR & RESPIRATORY ANATOMY

- i. To identify & describe various structures of the Cardio Vascular & Respiratory system and the course of blood vessels
- ii. Identify and describe various structures of Thoracic cage and mechanisms of Respiration
- iii. Be able to apply knowledge of Living anatomy with respect to Cardio Vascular & Respiratory system.
- iv. To understand anatomical basis of clinical conditions of cardiovascular & Respiratory system

4] To Obtain Knowledge of OTHER SYSTEMS & SENSORY ORGANS

SYLLABUS

Sr. No.	Regions	Didactic Hours	Practical Hours	Total Hours
1	GENERAL ANATOMY AND HISTOLOGY	17	03	20
	a. General Anatomy:	10		10
	i. Fascia	1		
	ii. Muscles	2		
	iii. Bones	2		
	iv. Joints	2		
	v. Nerve	2		
	vi. Vessels	1		

Sr. No.	Regions	Didactic Hours	Practical Hours	Total Hours
	a. General Histology:	7	3	10
	i. Epithelial	1		
	ii. Connective tissue	1		
	iii. Muscle	1		
	iv. Bone and cartilage	1		
	v. Nerve and vessels	1		
	vi. Embryology	2		
2	MUSCULOSKELETAL SYSTEM	57	33	90
	a. Superior extremity	15	10	25
	b. Inferior extremity	15	10	25
	c. Back & Thoracic Cage	10	05	15
	d. Head Neck & Face	13	06	19
	i. Skull and Mandible	2	1	
	ii. Facial Muscles, blood supply, nerve supply	3	1	
	iii. Triangles of neck, Glands, Tongue & Palate	3	1	
	iv. Larynx & Pharynx	1	1	
	v. Muscles of mastication & T.M. joint	2	1	
	vi. Extra ocular muscles with nerve supply	1	1	
	vii. Nose & Para nasal sinuses	1	-	
	e. Living Anatomy:	4	2	6
	i. Upper extremity	1	-	
	ii. Lower extremity	1	-	
	iii. Head Neck & Face	1	-	
	iv. Trunk	1	-	

3	NEURO ANATOMY	32	12	44
	a. General organization of Nervous System	5		5
	b. Central Nervous System	15	8	23
	c. Cranial nerves	10	4	14
	d. Peripheral Nerves (should be done with respective parts) i. Autonomic Nervous System: ii. Sympathetic iii. Parasympathetic	2		2

Sr. No.	Regions	Didactic Hours	Practical Hours	Total Hours
4	SYSTEMIC ANATOMY	09	03	12
	a. Alimentary system	2	-	2
	b. Urinary System	2	-	2
	c. Genital system: i. Male organs ii. Female organs (Pelvic cavity and Pelvic floor)	5	3	8
5	CARDIO VASCULAR & RESPIRATORY ANATOMY	13	05	18
	a. Thoracic wall	2	-	2
	b. Mediastinum	1	-	1
	c. Heart and major blood vessels	4	2	6
	d. Lungs	2	1	3
	e. Diaphragm & Intercostals	2	1	3
	f. Ribs and sternum	2	1	3
6	ABDOMEN	04	02	06
	Muscles of abdomen	2	1	3
	Muscles of pelvis	2	1	3
7	SENSORY ORGANS	04	02	06
	a. Ear	2	1	3
	b. Eye	1	1	2
	c. Skin	1	-	1
8	ENDOCRINE & EXOCRINE SYSTEM	04	-	04
9	RADIOLOGY	10	-	10

RECOMMENDED TEXT BOOKS

1. Human Anatomy – Snell
2. Anatomy- Chaurasia, Volume- I,II & III
3. Neuro anatomy -- Inderbir Singh
4. Human Anatomy – Kadasne, Volume- I,II & III
5. Neuroanatomy -- Vishram Singh
6. Human Anatomy – Datta

RECOMMENDED REFERENCE BOOKS

1. Gray's Anatomy
2. Extremities -- Quining Wasb
3. Atlas of Histology -- Mariano De Fiore
4. Anatomy & Physiology -- Smout and McDowell
5. Kinesiology -- Katherine Wells
6. Neuroanatomy -- Snell
7. Neuroanatomy -- Vishram Singh
8. Cunningham's- Practical Anatomy

SCHEME OF UNIVERSITY EXAMINATION

THEORY		Marks
80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		100
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15] This question should include: Digestive/ Uro-genital / Reproductive system / Special senses – Eye / Ear/ Skin / Circulatory system / General Anatomy/ General Histology	50
	Q-2- answer any FIVE out of SIX [5x 7 =35] Should be based on: Thorax / Soft parts Upper Limb / Soft part Lower Limb/ Soft parts Thorax / Spine / Neck.	
Section B -L.A.Q.	Q-3] L.A.Q (any ONE out of TWO) (should be based on Musculoskeletal anatomy) a) b) 15 marks	30
	Q-4] L.A.Q (any ONE out of TWO) (Should be based on Neuro-Anatomy -including cranial nerves with emphasis to III to XII nerves) a) b) 15 marks	
Total Marks		80

PRACTICAL		Marks
80 MARKS + I.A. – 20 MARKS		100
Spots	Based on: i. Musculoskeletal (7x3) = 21 marks ii. Systemic (5x3) = 15 marks iii. Neuroanatomy (3x3) = 09 marks	45
Radiology		05
Living anatomy		05
Viva	i. Hard parts ii. Soft parts	20
Journal	Year work on practicals performed	05
Total Marks		80

INTERNAL ASSESSMENT:

1. Two exams – Terminal and prelims of 80 marks each (Theory & Practical)
TOTAL - 160 marks
2. I.A. to be calculated out of 20 marks (Theory & Practical)
3. Internal assessment as per University pattern.

HUMAN PHYSIOLOGY

(Theory -150 hrs, Practical / Laboratory -50 hrs) **TOTAL 200 hrs**

COURSE DESCRIPTION:

The course is designed to study the function of the human body at the molecular, cellular, tissue and systems levels. The major underlying themes are; the mechanisms for promoting homeostasis, cellular processes of the metabolism, membrane function and cellular signaling; the mechanisms that match supply of nutrients to tissue demands at different activity levels; the mechanisms that match the rate of excretion of waste products to their rate of production; the mechanisms that defend the body against injury and promote healing.

These topics address the consideration of nervous and endocrine regulation of the cardiovascular, hematopoietic, pulmonary, renal, gastro-intestinal and musculoskeletal systems including the control of cellular metabolism. The course stresses on the integrative nature of physiological responses in normal function and disease.

Sr. No.	Topics	Didactic hrs	Practical hrs	Total hrs
1.	GENERAL PHYSIOLOGY	25	42	172
2.	NERVOUS SYSTEM	35		
3.	EXCRETORY SYSTEM	06		
4.	TEMPERATURE REGULATION	02		
5.	ENDOCRINE SYSTEM	06		
6.	REPRODUCTIVE SYSTEM	08		
7.	SPECIAL SENSES	05		
8.	RESPIRATORY SYSTEM	20		
9.	CARDIOVASCULAR SYSTEM	20		
10.	GASTRO INTESTINAL SYSTEM	03		
11.	EXERCISE PHYSIOLOGY	015	08	023
12.	PHYSIOLOGY OF AGEING	005	-	005
Total		150	50	200

OBJECTIVES:

At the end of the course, the candidate will:

1. Acquire the knowledge of the relative contribution of each organ system in maintenance of the Milieu Interior (Homeostasis)
2. Be able to describe physiological functions of various systems, with special reference to Musculo-skeletal, Neuro-motor, Cardio-respiratory, Endocrine, Uro-genital function, & alterations in function with aging
3. Analyze physiological response & adaptation to environmental stresses-with special emphasis on physical activity, altitude, temperature

4. Acquire the skill of basic clinical examination, with special emphasis to Peripheral & Central Nervous system, Cardiovascular & Respiratory system, & Exercise tolerance / Ergography

SYLLABUS

Sr. No.	Topics	Didactic Hrs
1	GENERAL PHYSIOLOGY	25
	a. Cell: i. Structure of cell membrane ii. Transport across cell membrane iii. Homeostasis	4
	b. Blood: i. Rh- ABO system & mismatch-transfusion ii. WBC iii. Plasma protein iv. Platelets v. Hemoglobin vi. Normal values of blood (composition & function) vii. Bleeding time & clotting time	7
	c. Nerve: i. Structure, classification & Properties ii. R.M.P & action potential iii. Propagation of nerve impulse iv. Nerve injuries –degeneration, regeneration and reaction of degeneration	6
	d. Muscle: i. Structure- properties- classification- smooth, skeletal, cardiac, excitation/ contraction coupling ii. Factors affecting development of muscle tension, fatigue, load. iii. Neuro-muscular transmission; applied physiology: Myasthenia gravis, Eaton Lambert Syndrome.	8

Sr. No.	Topics	Didactic Hours
2	<p>NERVOUS SYSTEM:</p> <ul style="list-style-type: none"> a. Introduction of nervous system, classification – C.N.S., P.N.S. & A.N.S. b. Synapse-structure, properties, & transmission; c. Reflexes-classification & properties; d. Receptor physiology: classification, properties. e. Physiology of Touch, Pain, Temperature & Proprioception; f. Sensory and motor tracts: effect of transaction (complete and incomplete) at various levels g. Physiology of Muscle Tone (muscle spindle); Stretch reflex h. Connection & function of Basal ganglia, Thalamus, Hypothalamus, Sensory and Motor cortex, Cerebellum, Limbic system, Vestibular Apparatus i. Autonomic nervous system: Structure and functions of the sympathetic and the parasympathetic nervous system. j. Learning, memory & conditioned reflex k. Physiology of Voluntary movement 	35
3	<p>EXCRETORY SYSTEM:</p> <ul style="list-style-type: none"> a. Kidneys-structure & function; b. Urine formation;(to exclude concentration and dilution) c. Juxtglomerular apparatus d. Fluid and electrolyte balance – Na, K, H₂O e. Neural control of Micturation f. Applied physiology: Types of bladder 	6
4	TEMPERATURE REGULATION	2
5	<p>ENDOCRINE SYSTEM:</p> <ul style="list-style-type: none"> a. Secretion- regulation & function of Pituitary-Thyroid-Adrenal-Parathyroid-Pancreas b. Applied physiology (abnormalities) of the above mentioned glands 	6
6	<p>REPRODUCTIVE SYSTEM:</p> <ul style="list-style-type: none"> a. Physiology of ovary and testis b. Physiology of menstrual cycle and spermatogenesis c. Functions of progesterone, estrogen and testosterone d. Puberty & menopause e. Physiological changes during pregnancy 	8

Sr. No.	Topics	Didactic Hours
7	SPECIAL SENSES: a. Structure and function of the eye b. Applied physiology: errors of refraction, accommodation, reflexes – dark and light adaptation, photosensitivity. c. Structure and function of the ear d. Applied physiology- types of deafness	5
8	RESPIRATORY SYSTEM: a. Introduction, structure and function of the RS b. Mechanics of respiration; c. Pulmonary Volumes & capacities; d. Anatomical & Physiological Dead space-ventilation/perfusion ratio, alveolar ventilation e. Transport of respiratory gases f. Nervous & Chemical control of respiration g. Pulmonary function tests-Direct & indirect method of measurement h. Physiological changes with altitude & acclimatization	20
9	CARDIOVASCULAR SYSTEM: a. Structure & properties of cardiac muscle b. Cardiac impulse- initiation and conduction c. Cardiac cycle d. Heart rate regulation e. Blood pressure- definition-regulation- Cardiac output-regulation & function affecting; Peripheral resistance, venous return f. Regional circulation-coronary-muscular, cerebral g. Normal ECG.	20
10	GASTRO INTESTINAL SYSTEM: a. Absorption and digestion in brief b. Liver function	3

Sr. No.	Topics	Didactic Hours
11	EXERCISE PHYSIOLOGY	15
	a. Basal Metabolic Rate and Respiratory Quotient b. Energy metabolism c. Fatigue d. Oxygen debt e. Acute cardio vascular changes during exercise, difference between mild, moderate and severe exercise, concept of endurance f. Acute respiratory changes during exercise g. Concept of training/conditioning, effects of chronic exercise/effect of training on the cardiovascular & respiratory system h. Body temperature regulation during exercise i. Hormonal and metabolic effects during exercise j. Effects of exercise on muscle strength, power, endurance k. Physical fitness and its components	
12	PHYSIOLOGY OF AGEING (With respect to all systems)	05

PRACTICALS

Sr. No.	Topics	Practical Hours
1.	Haematology – (demonstration only)	6hrs
2.	GRAPHS:	5hrs
	a. Skeletal muscle and its properties	
	b. Cardiac muscle-properties-effect of Ach & Adrenaline	
3.	Blood pressure- effects of change in posture & exercise	4hrs
4.	Examination of pulse	2hrs
5.	Spirometry	4hrs
	a. Lung volumes and capacities	
	b. Timed vital capacity	
6.	Perimetry	1hr
7.	Physical fitness:	8hrs
	a. Breath holding	
	b. Mercury column test;	
	c. Cardiac efficiency test- Harvard step test- Master step test	
8.	Clinical examination: History taking and general examination /Respiratory system / cardio vascular system / Higher functions /Cranial nerves /Reflexes / Motor & Sensory system	20hrs
TOTAL		50 hrs

RECOMMENDED TEXT BOOKS

1. Text book on Medical Physiology – Guyton
2. Textbook of Physiology – A K Jain (for MBBS students)

RECOMMENDED REFERENCE BOOKS

1. Review of Medical Physiology – Ganong
2. Samson & Wright's Applied Physiology
3. Textbook of Medical Physiology – Bern and Levy

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		Marks
		100
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15] Based on: Blood/G.I. tract / Electrolyte balance / Endocrine / Uro-genital System / General physiology /Special Senses (Eye/Ear/Skin)	50
	Q-2- Answer any THREE out of FOUR [5 x 7 =35] Based on: Cardio-vascular system / Respiratory system / Exercise Physiology/ Nerve	
Section B -L.A.Q.	Q-3] L.A.Q (any ONE out of TWO) Based on Musculoskeletal a) b) -15 marks	30
	Q-4] L.A.Q (any ONE out of TWO) Based on: C.N.S./ Spinal Cord/ Electro-Neuro-Physiology /C.V.S. /R.S. a) b) 15 marks LAQ should give break up of 15 marks – e.g. [3 +5+7]	
Total Marks		80

PRACTICAL 80 MARKS + I.A. – 20 MARKS		Marks
		100
Spots	Based on: Topic 1,2,3,6,7,8,9,11&12 (10 X 2 Marks)	20
Viva	Based on theory	20
Demonstration	On Clinical Physiology C.V.S. 10 Marks R.S. 10 Marks C.N.S. Cranial Nerves and Special Senses 15 Marks	35
Journal	Year work on practicals performed	05
Total Marks		80

INTERNAL ASSESSMENT:

1. Two exams – Terminal and prelims of 80 marks each (Theory & Practical) **TOTAL - 160 marks**
2. I.A. to be calculated out of 20 marks (Theory & Practical)
3. Internal assessment as per University pattern.

BIOCHEMISTRY

(Didactic 46hrs+Demonstrations 4hrs) **TOTAL 50 HRS**

COURSE DESCRIPTION:

This course provides the knowledge and skills in fundamental organic chemistry and introductory biochemistry that are essential for further studies. It covers basic biochemical, cellular, biological and microbiological processes, basic chemical reactions in the prokaryotic and eukaryotic cells, the structure of biological molecules, introduction to the nutrients i.e. carbohydrates, fats, enzymes, nucleic acids and amino acids.

Sr. No.	Topics	Didactic Hours	Demonstrations Hours	Total Hours
1	CARBOHYDRATES	9		9
2	PROTEINS	6		6
3	ENZYMES	4		4
4	VITAMINS	4		4
5	MINERALS	5		5
6	HORMONES	1		1
7	NUTRITION	3		3
8	CLINICAL BIOCHEMISTRY	6	4	10
9	LIPID	4		4
10	MUSCLE CONTRACTION	4		4
	TOTAL	46	4	50

OBJECTIVES:

The student would know:

1. Various biomolecules which are present in the body and functions
2. The formation and fate of these biomolecules.
3. Their normal levels in body fluids required for functioning and their abnormal levels to understand the disease process.

SYLLABUS

Sr. No.	Topics	Didactic Hours	Demonstrations Hours	Total Hours
1	<p>CARBOHYDRATES</p> <p>a. Chemistry, Definition, Classification with examples, Functions</p> <p>b. Digestion and Absorption, Glycogenesis, Gluconeogenesis, Glycogenolysis and HMP pathway, Glycolysis, Electron transport chain for ATP synthesis, TCA cycle. Hormonal regulation of blood</p> <p>c. Glucose, Glycogen storage disorders, Diabetes mellitus, Glycosuria, changes in Carbohydrate, Protein & Lipid metabolism.</p> <p>d. All the metabolisms should be taught based on the following points such as starting and ending products, tissues of occurrence and the conditions when the pathway is activated, deactivated and significance of the pathway.</p>	9		9
2	<p>PROTEINS</p> <p>a. Definition, Importance, Functional Classification, Digestion & Absorption, decarboxylation, deamination, transamination, transmethylation, Urea cycle, clinical significance of serum urea, function of glycine, Phenylalanine, tryptophan, methionine tyrosine.</p> <p>b. There should be an emphasis on understanding the structure of protein, the essential and non-essential amino acids.</p>	6		6
3	<p>ENZYMES</p> <p>Definition, Modern Classification, Factors affecting enzymes Action, diagnostic & therapeutics uses & enzymes, Isoenzymes, Competitive & Non competitive inhibition.</p>	4		4
4	<p>VITAMINS</p> <p>Definition, Classification, Fat & water soluble vitamins, functions, Deficiency manifestations sources & RDA</p>	4		4

Sr. No.	Topics	Didactic Hours	Demonstrations Hours	Total Hours
5	MINERALS Ca, P, Fe, I, Zinc, Selenium, Fluorine, Magnesium include Na and K. Function sources, Deficiency manifestations	5		5
6	HORMONES Definition with mechanism of action, classification.	1		1
7	NUTRITION Composition of food, balanced diet, Kwashiorkor, Marasmus, Nitrogen balance, major Dietary constituent & their importance. Include energy requirements, factors affecting B.M.R., S.D.A. (Specific Dynamic Action) and R.Q. (Respiratory Quotient)	3		3
8	CLINICAL BIOCHEMISTRY a. Liver Function Test, Renal Function Test, Lipid profile in serum b. Starvation metabolism, Hemoglobin chemistry and metabolism c. Demonstrations: Demonstration of estimation of various biomolecules and their interpretation Interpret reports of various conditions (including Diabetic profile, Cardiac profile, Uric acid and Gout)	6	4	10
9	LIPID Definition, classification with examples biomedical importance, Phospholipids & lipoproteins functions. Digestion & absorption of lipid, β oxidation of fatty acid with Energetics, Ketone bodies and their metabolism, Prostaglandins and essential fatty acids, Cholesterol, importance of cholesterol, obesity	4		4
10	MUSCLE CONTRACTION Mechanism & Biochemical events Connective Tissue- Biochemistry of connective tissue Collagen-Glyco-protein proteoglycans	4		4
	TOTAL	46	4	50

RECOMMENDED TEXT BOOKS

1. Biochemistry – Dr. Satyanarayan
2. Text book of Biochemistry for Medical students – Dr. Vasudevan / Shri Kumar
3. Biochemistry – Dr. Pankaja Naik

RECOMMENDED REFERENCE BOOK

1. Review of Biochemistry (24th edition) - Harpar

SCHEME OF UNIVERSITY EXAMINATION

THEORY ONLY		Marks
40 marks + I.A. – 10 Marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		50
Q-1 & Q-2	SAQ-to answer any FIVE out of SIX [5x3]	15
	SAQ – to answer any FIVE out of SIX [5x5]	25
Total Marks		40

INTERNAL ASSESEMENT

1. Two exams – Terminal and prelims of 40 marks each TOTAL - 80 marks
2. I.A. to be calculated out of 10 marks (Theory only)
3. Internal assessment as per University pattern.

FUNDAMENTALS OF KINESIOLOGY & KINESIOTHERAPY

(Didactic – 100 Hrs & Practical / Laboratory – 150 Hrs) **TOTAL 250 HRS**

COURSE DESCRIPTION:

This course covers the definition of various terms used in mechanics, biomechanics kinesiology as well as its importance in physical therapy. It applies the mechanical principles to simple equipments of therapeutic gymnasium and familiarizes the candidate to its use. It covers the types of human motions as well as planes and relative axes of motion. It also explains the inter-relationship among kinematic variables and utilizes this knowledge to describe and analyze motion. It covers the classification of the joints and muscles along their distinguishing characteristics and skill of measurement of its ranges in various planes and axes. This course additionally covers therapeutic principles and skills of application of massage, yoga, aerobic exercise and use of suspension therapy. It also enhances the skill of evaluation of vital parameters & sensory system.

Sr. No.	Topics	Didactic Hours	Practical/Laboratory Hours	Total Hours
1	MECHANICS & BASIC BIOMECHANICS	25	---	25
2	BIO-PHYSICS RELATED TO KINESIOTHERAPY	20	25	45
3	CLASSIFICATION OF MOVEMENTS	10	15	25
4	BASIC EVALUATION	15	35	50
5	MASSAGE	05	20	25
6	RELAXATION	05	10	15
7	AEROBIC EXERCISE	05	05	10
8	YOGA	15	40	55
TOTAL		100	150	250

OBJECTIVE:

Cognitive:

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

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

Psychomotor:

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

- a) Describe & also acquire the skills of use of various tools of the Therapeutic Gymnasium
- b) Demonstrate the movements in terms of various anatomical planes and axes.
- c) Demonstrate various starting & derived positions used in therapeutics.
- d) Describe physiological principles & acquire the skills of application of therapeutic massage
- e) Acquire the skills of assessment of basic evaluation like sensations, reflexes & vital parameters
- f) Acquire the skill of objective assessment of Range of Motion of the joints by Goniometry
- g) Describe physiological basis and principle of relaxation and acquire the skills of relaxation methods
- h) Describe physiological responses and principles of aerobic exercises for general fitness & demonstrate fitness skills on self & group.
- i) Describe physiological principles and acquire the skill of performing Pranayama & Yogasanas

SYLLABUS

Sr. No.	Topic	Didactic Hours	Practical/Laboratory Hours	Total Hours
	MECHANICS & BASIC BIOMECHANICS	25	--	25
1.	a. Mechanics & Application to human body <ol style="list-style-type: none"> i. Definition and terminologies: Mechanics (Statics & Dynamics), Biomechanics, Kinetics, Kinematics (Osteokinematics, Arthrokinematics, Open Chain & Closed Chain kinematics) ii. Axes / planes, iii. Laws of inertia & motion, iv. Gravity, C.O.G., L.O.G. and B.O.S. v. Equilibrium – Types and affecting factors vi. Mechanics of Forces Work, Energy, Power, Friction, Momentum, Parallelogram of Forces vii. Torque viii. Pendulum ix. Mechanical and Anatomical pulleys x. Levers xi. Fluid mechanics related to Hydrotherapy (physics, statics & dynamics) 	20		20

Sr. No.	Topic	Didactic Hours	Practical/Laboratory Hours	Total Hours
	b. Muscle Mechanics i. Types of Muscles- Anatomical & Physiological ii. Types of muscle work / Contraction iii. Muscle Action: Roles as Agonist, Antagonist, Fixators, Synergist iv. Active & Passive insufficiency v. Range of muscle work ,Angle of pull – with importance to efficiency of muscle work and stability of joint	5	--	5
2	BIO-PHYSICS RELATED TO KINESIOTHERAPY	20	25	45
	a. Starting Positions & Derived Positions i. Application of stability ii. BOS, Gravity and muscle work in relation to various positions	10	5	15
	b. Therapeutic Gymnasium i. Use of accessories such as Pulleys Springs, Shoulder wheel, Walking aids, ii. Finger ladder, Therapeutic balls, Weights, Resistance bands, tubes, & wands iii. Applied mechanics of all above accessories	5	5	10
	c. Suspension Therapy i. Principles ii. Suspension Apparatus iii. Types of Suspension iv. Effects and uses v. Techniques for individual joints	5	15	20
3	CLASSIFICATION OF MOVEMENTS	10	15	25
	a. Definition and classification b. Principles of movements c. Effects, uses and Techniques (active: assisted, free, assisted- resisted, resisted & passive)			

Sr. No.	Topic	Didactic Hours	Practical/Laboratory Hours	Total Hours
4	BASIC EVALUATION	15	35	50
	a. Assessment of Vital Parameters	5	5	10
	i. Temperature ii. Blood Pressure iii. Heart Rate/ Pulse rate iv. Respiratory Rate v. Chest expansion			
	b. Assessment of Sensations and Reflex testing	5	5	10
4	c. Goniometry	5	25	30
	i. Definition and Types of Goniometers ii. Principles iii. Techniques for individual joints with biomechanical principles iv. Uses			
5	MASSAGE	05	20	25
	a. Definition b. Classification c. Principles d. Effects & uses e. Indications and contra indications f. Techniques- Upper limb, Lower Limb, Neck, Back, Abdomen, Face & Scalp			
6	RELAXATION	05	10	15
	a. Principles, b. Techniques along with their effects & uses i. General - Jacobson's, Shavasana & Reciprocal (Laura Mitchell) ii. Local - Heat, Massage, Gentle/Rhythmic passive movements			
7	AEROBIC CONDITIONING AND BASIC PRINCIPLES OF GENERAL FITNESS (as applied to self and group)	5	5	10
	a. Physiology of aerobic and anaerobic exercise. b. Components of fitness (definition of terms only) c. Warm up d. Cool down exercises e. Group & Recreational activities			

Sr. No.	Topic	Didactic Hours	Practical/Laboratory Hours	Total Hours
8	YOGA	15	40	55
	<ul style="list-style-type: none"> a. Definition b. Principles of Yoga c. Yogasana- Technique, Benefits, Contraindications & cautions for each Asanas: <ul style="list-style-type: none"> i. Asanas in supine <ul style="list-style-type: none"> a) Pawanamuktasana b) Ardha Halasana c) Halasana d) Setubandhasana e) Naukasana f) Matsyasana g) Shavasana h) Sarvangasana ii. Asanas in prone <ul style="list-style-type: none"> a) Bhujangasana b) Ardha-Shalabhasana c) Dhanurasana d) Makarasana iii. Asanas in sitting <ul style="list-style-type: none"> a) Padmasana, Siddhasana, Sukhasana b) Yogamudrasana c) Virasana d) Vajrasana e) Gomukhasana f) Pashchimottanasana iv. Asanas in standing <ul style="list-style-type: none"> a) Padhastasana, Padangusthasana, Uttanasana b) Utkatasana c) Tadasana d) Trikonasana v. Pranayama <ul style="list-style-type: none"> a) Anulom-vilom b) Kapalbhati 			

PRACTICAL: Practical demonstrations of:

Sr. No.	Topics
1	Various starting and derived positions
2	The techniques of active, passive, assisted and resisted movements
3	The techniques of various accessories and equipments used in therapeutic gymnasium its biomechanical principles and uses.
4	The techniques of use of suspension method for assisted and resisted Movements
5	Relaxation procedures
6	Massage techniques
7	Yogasanas and Pranayama
8	Aerobic exercise for self and others
9	Assessment of vital parameters in different body position (supine, sitting and standing) and of sensory system and reflexes.
10	Measurement of joint R.O.M. through goniometry, method of fixation and measurement.

RECOMMENDED TEXT BOOKS

1. Principles of Exercise Therapy – Dena Gardiner
2. Massage, Manipulation & Traction – Sydney Litch
3. Therapeutic Exercise – Sydney Litch
4. Massage – M. Hollis
5. Practical Exercisetherapy– Margaret Hollis
6. Hydrotherapy – Kisner, Hollis
7. Measurement of Joint Motion – Cynthia Norkins.
8. Biomechanics – Cynthia Norkins
9. Clinical Kinesiology-Brunnstrom
10. Yogic Exercises-Physiologic and Psychic processes-- S. Datta Ray

RECOMMENDED REFERENCE BOOKS

1. Therapeutic Exercise – Carolyn Kisner
2. Asanas-Why & How – Omprakash Tiwari

SCHEME OF UNIVERSITY EXAMINATION

THEORY		Marks
80 MARKS + I.A. – 20 MARK		100
* The question paper will give appropriate weightage to all the topics in the syllabus.		
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15]	50
	Q-2- answer any FIVE out of SIX [5x 7 =35]	
Section B -L.A.Q.	Q-3] L.A.Q (any ONE out of TWO) a) b) 15 marks	30
	Q-4] L.A.Q (any ONE out of TWO) a) b) 15 marks LAQ's to be based on Mechanics & application/ Starting positions & Derived positions/ Classification of Movements/ Goniometry/ Massage LAQ should give break up of 15 marks – e.g. [3 +5+7]	
Total Marks		80

PRACTICAL		Marks
80 MARKS + I.A. – 20 MARKS		100
LONG CASE	Based on Massage / Goniometry / Movements (passive) <ul style="list-style-type: none"> Cognitive – Bio-physics, Biomechanical principles, indications, contraindication <i>Documentation of findings etc - 20 Marks</i> <i>Psychomotor + Affective skills - 10 Marks</i> 	30
SHORT CASE	Two Short case based on <ul style="list-style-type: none"> Basic evaluation (any one): Sensation / Reflex testing / B.P./ & Pulse Rate/ Chest Expansion / Respiratory Rate /Aerobic fitness for self Skill performance (any one): Relaxation / Yoga posture / Starting / Derived position & Suspension Therapy (2 x 20 = 40 marks) <i>Cognitive – 05 Marks</i> <i>Psychomotor -15 Marks</i> 	40
COMMUNICATION SKILL		5
JOURNAL	Year work on practical's performed.	5
Total Marks		80

INTERNAL ASSESSMENT:

- Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each TOTAL - 160 marks
- Internal Assessment to be calculated out of 20 marks.
- Internal assessment as per University pattern.

FUNDAMENTALS OF ELECTROTHERAPY

Didactic 95 hrs+ Practical 105hrs [TOTAL-200HRS]

COURSE DESCRIPTION:

This course will cover the basic principles of Physics that are applicable in medical equipments used in Physiotherapy. It will also help to understand the fundamentals of currents, sound waves, Heat & its effects, electromedical radiations and their effects as well as their application in physical therapy. It covers the skill of application of superficial thermal agents and Cryotherapy.

Sr. No.	Topic	Didactic Hours	Practical/ Lab Hours	Total hours
1	MEDICAL ELECTRONICS AND ELECTRICITY :	55	15	70
	a) Fundamentals of Low frequency currents	32	09	41
	b) Fundamentals of High frequency currents	13	06	19
	c) Electro Magnetic Spectrum	5	-	5
	d) Cellular Bio-physics	3	-	3
	e) Environmental currents	2	-	2
2	ELECTRICAL MODALITIES	25	40	065
3	SUPERFICIAL THERMAL AGENTS	15	50	065
TOTAL		95	105	200

OBJECTIVES:

Cognitive:

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

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

Psychomotor:

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

- a) Test the working of the various electrotherapeutic-equipments
- b) Describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc & the simple instruments used to test / calibrate these components [such as potentiometer, oscilloscope , multimeter] of the circuit ; & will be able to identify such components.
- c) Describe & identify various types of electrodes used in therapeutics, describe electrical skin resistance & significance of various media used to reduce skin resistance.

- d) Acquire knowledge of various superficial thermal agents such as Paraffin wax bath, Cryotherapy, Hydrocollator packs, Home remedies, their physiological & therapeutic effects, Merits / demerits & acquire the skill of application.

SYLLABUS

Sr. No.	Topic	Didactic Hours	Practical /Lab Hrs	Total Hours
	MEDICAL ELECTRONICS AND ELECTRICITY	55	15	70
	a. Fundamentals of Low frequency currents	32	09	41
1.	i. Basic Physics: Structure of atom, Isotopes, States of matter; Compound formation-(covalent formation), Properties of Electric lines of forces, Conductors, Non-conductors, Latent heat, Transmission of heat	3	-	3
	ii. Condenser a) Principles b) Capacity c) Types & construction d) Electric field e) Charging and discharging of the condenser f) Duration of Discharge g) Discharge through inductance h) Capacitive reactance & uses of condenser	3	-	3
	iii. Main supply: a) Production of Electricity b) Types: A.C./ D.C. c) Distribution/ Grid system wiring of the house, colour coding of electrical supply to the apparatus d) Earthing and its importance e) Types of Plugs & Switches	3	3	6
	iv. Shock a) Definition b) Types (Electric Shock & Earth shock) c) Severity Causes, Effects & Precaution	2	-	2

Sr. No.	Topic	Didactic Hours	Practical/ Lab Hrs	Total Hours
	v. Static Electricity: a) Theory of Electricity b) Production of Electric Charge c) Characteristics of charged electrical body and capacitor and inductance: types & uses d) Potential difference	3	-	3
	vi. Current electricity a) EMF b) Resistance: Combination of resistance in series and parallel c) Ohms Law d) D.C., A.C. e) Devices for regulating current: Identification, functioning & Uses- Rheostat, Potentiometer, Ammeters, Oscilloscopes, Voltmeter f) Voltage and Power g) Thermal effects of electric current- Joule's Law.	6	6	12
	vii. Electrical Skin Resistance: a) Skin Resistance b) Factors affecting Skin resistance: types of electrodes used, electrode gels, skin threshold, skin type, skin temperature, exercises c) Methods to reduce skin resistance	2	-	2
	viii. Faradic currents: Duration, frequency, wave forms & graphical representation, surging, faradic type current, pulse width modulation,	5	-	5
	ix. Galvanic currents/ Direct current: and interrupted galvanic current, duration, frequency, waveforms & graphical representation	5	-	5
	b. Fundamentals of High frequency currents	13	06	19
	i. Electro Magnetic Induction: a) Production b) Direction of induced EMF c) Strength of induced EMF d) Type – Self & Mutual induction e) Inductive Reactance f) Eddy currents	3	-	3

Topic	Didactic Hours	Practical/ Lab Hours	Total Hours
g. Principles and Laws – Faraday's , Lenz's h. Dynamo			
ii. Apparatus for Modification of Currents: a) Interruption of current – Switch & Valve b) C- R timing circuit c) Multivibrator Circuit, Pulse Generator d) Current supplied to patient – Impulse type	2	-	2
iii. Magnetism: a) Nature and Types b) Molecular theory of Magnetism c) Property of Magnet d) Magnetic effect of electric current – Electro Magnets e) Meters for measuring A.C.	2	-	2
iv. Sound: a) Wave motion in sound b) Infrasonics c) Normal hearing band d) Characteristics of sound waves and their velocities e) Ultrasonics f) Reflection, Refraction and Attenuation of Sound waves g) Interference of sound waves	2	-	2
v. D.C. and A.C.: a) Source – Cell and rectified AC b) Rectification of AC c) Thermionic valves – Diode and Triode d) Metal Rectifier e) Types of Rectification f) Transformers-Types & Functions g) Smoothing circuit h) Semiconductor and its types i) Diodes & Transistors j) Choke coil	4	6	10
c. Electro Magnetic Spectrum	5	-	5
i. Laws of transmission Reflection – Refraction – Absorption – Attenuation ii. Electro Magnetic Radiation iii. Laws Governing E.M.R. iv. Laws of Reflection, Refraction, Absorption, Attenuation, Cosine Law, Inverse Square Law, Grothus Law			

	Topic	Didactic Hours	Practical/ Lab Hours	Total Hours
	d. Cellular Bio-physics	3	-	3
	i. Action potential, ii. Resting membrane potential iii. Transmission of impulses: Saltatory conduction iv. Reception & emission of E.M.F. signals			
	e. Environmental currents	2	-	2
	Environmental currents & fields risk factors on prolonged exposure to E.M. field.			
2	ELECTRICAL MODALITIES Production, Physical principles, Panel diagrams, Testing of apparatus of the following:	25	40	065
	a. S.W.D. b. Ultrasound c. U.V.R. d. I.F.T. e. I.R. f. LASER (no panel diagram) g. Diagnostic Electrical Muscle Stimulator, h. T.E.N.S.			
3	SUPERFICIAL THERMAL AGENTS	15	50	65
	Construction/Design of the Modalities, Scales of temperature, Specific heat & modes of energy transfer, Physiological effects, Therapeutic effects/ Uses, Merits/demerits, Indications/contra-indications, Skills of application: a. Home remedies b. Paraffin wax bath c. whirl pool d. contrast bath e. Hydro-collator hot packs f. Cryotherapy			

PRACTICAL

Practical demonstrations of:

Sr. No.	Topic
1.	Various ELECTRICAL COMPONENTS like Diodes & Triodes, Rheostat, Capacitor, Potentiometer, Switches, Plugs and Pulse generator
2	The technique of testing of mains supply
3	The techniques of testing the following ALONG WITH PANEL DIAGRAM:
	i. Low Frequency currents- Diagnostic Muscle stimulator, Transcutaneous Nerve Stimulation
	ii. Medium Frequency currents-I.F.T.
	iii. High Frequency currents- Short Wave Diathermy, Ultrasound
	iv. I.R. (no panel diagram)
	v. U.V.R. (no panel diagram)
	vi. LASER (no panel diagram)
4	The skill of application of THERMAL AGENTS (on models) :
	i. Hot packs
	ii. P.W.B.
	iii. Whirlpool
	iv. Contrast bath
	v. Cryotherapy

RECOMMENDED TEXT BOOKS

1. Clayton 1s Electro therapy – 3rd & 10th edition
2. Electro therapy explained – Low & Reed
3. Electro Therapy – Kahn
4. Electrotherapy Evidence Based Practice-Sheila Kitchen 11th edition

RECOMMENDED REFERENCE BOOK

1. Clinical Electrotherapy -- Nelson & Currier

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS		Marks
* The question paper will give appropriate weightage to all the topics in the syllabus.		100
Section A -S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15]	50
	Q-2- answer any FIVE out of SIX [5x 7 =35]	
Section B -L.A.Q.	Q-3] L.A.Q (any ONE out of TWO) * Based on superficial Thermal agents a) b) 15 marks	30
	Q-4] L.A.Q (any ONE out of TWO) a) Based on Production /Panel Diagram of high frequency current b) Based on Production / Panel Diagram of low/ Medium frequency current 15 marks	
Total Marks		80

PRACTICAL 80 MARKS + I.A. – 20 MARKS		Marks
		100
LONG CASE	Based on Superficial thermal agent: <ul style="list-style-type: none"> • <i>Cognitive – Medical Electronic, Physiological, Biophysical principles, Therapeutic effects, indications-contraindications</i> - 20 Marks • <i>Psychomotor + Affective skills</i> - 10 Marks 	30
SHORT CASE	Two Short case on Testing of equipments: <ol style="list-style-type: none"> 1. Low & Medium frequency 2. High frequency/Actinotherapy (2 x 20=40 marks) <i>Cognitive – 05 Marks</i> <i>Psychomotor -15 Marks</i> 	40
COMMUNICATION SKILL		5
JOURNAL	Year work on practical's performed.	5
Total Marks		80

INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each TOTAL - 160 marks
2. Internal Assessment to be calculated out of 20 marks.
3. Internal assessment as per University pattern.

SCHEME OF UNIVERSITY EXAMINATIONS AT A GLANCE**LBPT**

Subjects	Theory			Practical		
	University	I.A.	Total	University	I.A.	Total
Anatomy	80	20	100	80	20	100
Physiology	80	20	100	80	20	100
Biochemistry	40	10	50	-	-	-
Fundamentals of Exercise Therapy	80	20	100	80	20	100
Fundamentals of Electro Therapy	80	20	100	80	20	100
Total	360	90	450	320	80	400

II BPT

SYLLABUS

Transcript Hours- 1400

Sr. No.	Subject	Theory Hours	Practical / Clinical Hours	Total Hours
	PROFESSIONAL PRACTICE			
1	Professional practice & Ethics <i>(College Examination in final year)</i>	005	010	015
	MEDICAL SCIENCES			
1	Pathology	050	-	050
2	Microbiology	031	004	035
3	Pharmacology	050	-	050
4	Psychiatry (Including Psychology)	030	020	050
	PHYSIOTHERAPY			
1	Kinesiology	080	-	080
2	Kinesiotherapy	080	160	240
3	Electrotherapy	100	200	300
4	Seminar (including introduction to terms of I.C.F. definition of terms Activity Limitation and Participation Restriction) <i>(not for examination)</i>		090	090
5	Supervised clinical practice (To practice clinical skills under the supervision, at the O.P.D./ I.P.D. set up) <ul style="list-style-type: none"> ➤ Clinical assignments should include Observation, Clinical History taking & technical assistance to the clinicians <ul style="list-style-type: none"> • Therapeutic Gymnasium • Fundamentals of Exercise therapy & • Electro Therapy To maintain a Register / Log book-in which the prescribed Case Histories & written assignments are documented & to obtain the signature from the respective section In-charge at the end of the assignment.		490	490

PROFESSIONAL PRACTICE AND ETHICS

(COLLEGE EXAMINATION IN FINAL YEAR)

Total -15 HRS

COURSE DESCRIPTION:

This subject would be taught in continuum from first year to final year. An exam in theory would be conducted only in final year. Professional and ethical practice curriculum content addresses the Knowledge, Skills and Behaviors required of the physiotherapist in a range of practice relationships and roles. The course will discuss the role, responsibility, ethics administration issues and accountability of the physical therapists. The course will also cover the history and change in the profession, responsibilities of the professional to the profession, the public and to the health care team. This includes the application of professional and ethical reasoning and decision-making strategies, professional communication.

OBJECTIVES:

At the end of the course the candidate will be compliant in following domains:

Cognitive:

- a) Be able to understand the moral values and meaning of ethics
- b) Will acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.

Psychomotor:

- a) Be able to develop psychomotor skills for physiotherapist-patient relationship.
- b) Skill to evaluate and make decision for plan of management based on sociocultural values and referral practice.

Affective:

- a) Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals.
- b) Be able to develop bed side behavior, respect & maintain patients' confidentiality.

SYLLABUS

Sr. No.	Topics	Didactic Hours	Supervision Hours	Total Hours
1.	Ethical code of conduct	03	10	15
2.	Communication skills			
	a. Physiotherapist -Patient Relationship b. Interviewing -Types of interview, Skills of interviewing	01 01		
	TOTAL	05	10	15

PATHOLOGY

[DIDACTIC -50 HRS]

COURSE DESCRIPTION:

Students will develop an understanding of pathology underlying clinical disease states involving the major organ systems and epidemiological issues. Students will learn to recognize pathology signs and symptoms considered red flags for serious disease. Students will use problem-solving skills and information about pathology to decide when referrals to another health care provider or alternative interventions are indicated. Students will develop the ability to disseminate pertinent information and findings, and ascertain the appropriate steps to follow.

The course more deals with structural impairments as an important part in ICF Classification.

Sr. No.	Topics	Didactic Hours
1	GENERAL PATHOLOGY	04
2	INFLAMMATION & REPAIR	06
3	IMMUNO -PATHOLOGY	04
4	CIRCULATORY DISTURBANCES	04
5	PATHOLOGIC CHANGES IN VITAMIN DEFICIENCIES	01
6	GROWTH DISTURBANCES	04
7	MEDICAL GENETICS	01
8	SPECIFIC PATHOLOGY	10
9	MUSCULAR DISORDERS	03
10	NEURO-MUSCULAR JUNCTION	01
11	BONE & JOINTS	05
12	GI. SYSTEM	01
13	ENDOCRINE	02
14	HEPATIC DISEASES	01
15	CLINICAL PATHOLOGY	03
TOTAL		50

OBJECTIVES:

At the end of the course, the candidate:

Cognitive:

- a) Will have sound knowledge of concepts of cell injury & changes produced by different tissues, organs and capacity of the body in healing process.
- b) Acquire the knowledge of general concepts of neoplasia with reference to the Etiology, gross & microscopic features, & diagnosis, in different tissues, & organs of the body.
- c) Acquire knowledge of common immunological disorders & their resultant effects on the human body.

Psychomotor:

- a) Recall the Etiology-pathogenesis, the pathological effects & the clinico-pathological correlation of common infections & non-infectious diseases.
- b) Understand in brief, about the common Haematological disorders & investigations necessary to diagnose them.
- c) Correlate normal & altered morphology of different organ systems in different diseases needed for understanding disease process & their clinical significance

SYLLABUS

Sr. No.	Topics	Didactic Hours
1	GENERAL PATHOLOGY <ol style="list-style-type: none"> a. Cell injury-Causes, Mechanism & Toxic injuries with special reference to Physical including ionizing radiation, Chemical & Biological b. Reversible injury (degeneration)- types-morphology-cloudy swelling, hyaline, fatty changes c. Intra-cellular Accumulation- Mucin, Protein d. Irreversible cell injury-types of necrosis- Apoptosis -Calcification- Dystrophic & Metastasis e. Extra-cellular accumulation-Amyloidosis 	4

Sr. No.	Topics	Didactic Hours
2	INFLAMMATION & REPAIR	6
	<ul style="list-style-type: none"> a. Acute inflammation – features, causes, vascular & cellular events b. Morphologic variations-Ulcers c. Inflammatory cells & Mediators d. Chronic inflammation: Causes, Types, Non-specific & Granulomatous – with examples e. Wound healing by primary & secondary union, factors promoting & delaying healing process f. Healing at various sites- bone, nerve & muscle g. Regeneration & Repair 	
3	IMMUNO –PATHOLOGY	4
	<ul style="list-style-type: none"> a. Immune system: organization-cells- antibodies-regulation of immune responses b. Hyper-sensitivity (types and examples including graft rejection) c. Secondary Immuno-deficiency including H.I.V. d. Basic concepts of autoimmune disease (emphasis on S.L.E. & R.A.) 	
4	CIRCULATORY DISTURBANCES	4
	<ul style="list-style-type: none"> a. Oedema - pathogenesis - types - transudates / exudates b. Chronic venous congestion- lung, liver c. Thrombosis – formation – fate – effects d. Embolism – types- clinical effects e. Infarction – types – common sites f. Gangrene – types – etiopathogenesis g. Shock – Pathogenesis, types 	
5	PATHOLOGIC CHANGES IN VITAMIN DEFICIENCIES	1

Sr. No.	Topics	Didactic Hours
6	GROWTH DISTURBANCES a. Atrophy, Hypertrophy, Hypoplasia, Metaplasia,	4
	Agenesis, Dysplasia b. Neoplasia classification, Histogenesis, Biologic behaviors, difference between Benign & Malignant tumour c. Malignant neoplasms- grades-stages-local & distal spread d. Carcinogenesis: Physical, Chemical, Occupational, Heredity, Viral, Nutritional e. Precancerous lesions & Carcinoma in situ f. Tumour & host interactions-local and systemic effects-metastatic (special reference to bones and C.N.S.)	
7	MEDICAL GENETICS (in brief): a. Classifications with examples of Genetic disorders	1
8	SPECIFIC PATHOLOGY a. C.V.S. i. Atherosclerosis - Ischemic Heart Diseases – Myocardial Infarction– Pathogenesis /Pathology ii. Hypertension iii. C.C.F. iv. Rheumatic Heart Diseases v. Peripheral Vascular Diseases b. Respiratory i. C.O.P.D. ii. Pneumonia (lobar, bronchial, viral), Lung Abscess iii. T. B.: Primary, Secondary – morphologic types iv. Pleuritis & its complications v. Lung collapse – Atelectasis vi. Occupational Lung diseases (with special emphasis on Silicosis, Asbestosis, Anthracosis) vii. A.R.D.S.	10

	<p>c. Neuropathology:</p> <p>i. Reaction of nervous tissue to injury, infection & ischemia</p> <p>ii. Meningitis: Pyogenic, T.B.M., Viral</p> <p>iii. Cerebro-Vascular Diseases – Atherosclerosis – Thrombosis, Embolism, Aneurysm, Hypoxia, Infarction & Hemorrhage, Hydrocephalous, Increased Intracranial Pressure</p> <p>iv. Leprosy</p> <p>v. Parkinsonism</p>	
9	<p>MUSCULAR DISORDERS</p> <p>a. Classification of Muscular disorders with emphasis on Muscular Dystrophies</p>	3
10	<p>NEURO-MUSCULAR JUNCTION</p> <p>a. Myasthenia gravis</p> <p>b. Myasthenic syndrome</p>	1
11	<p>BONE & JOINTS</p> <p>a. Osteomyelitis – Rickets – Osteomalacia – Osteoporosis</p> <p>b. Arthritis- degenerative (Osteoarthritis, Calcaneal spur, Peri arthritis, Spondylosis) - inflammatory (R.A., Ankylosing Spondylitis, Gout)</p> <p>c. Miscellaneous-P.I.D., Haemarthosis</p> <p>d. Infective-T.B.</p>	5
12	<p>GI. SYSTEM</p> <p>a. Gastric / Duodenal ulcer, Enteric fever, T.B., Enteritis, Gastritis (related to consumption of NSAID)</p>	1
13	<p>ENDOCRINE</p> <p>a. Hypo and Hyperthyroidism</p> <p>b. Diabetes</p>	2
14	<p>HEPATIC DISEASES</p> <p>a. Cirrhosis – emphasis to systemic effects of portal hypertension</p>	1

15	CLINICAL PATHOLOGY	3
	<ul style="list-style-type: none"> a. Anemia – (deficiency) – T.C./D.C./ Eosinophilia Anaemia b. Muscle / Skin / Nerve biopsy c. Microscopic appearance of muscle necrosis – fatty infiltration 	

RECOMMENDED TEXT BOOKS

1. Text book of Pathology -Harsh Mohan
2. Basic Pathology-Robbins

RECOMMENDED REFERENCE BOOKS

1. Pathologic basis of disease - Cotran, Kumar, Robbins
2. General Pathology – Bhende

SCHEME OF UNIVERSITY EXAMINATION

- ALONG WITH MICROBIOLOGY SUBJECT

MICROBIOLOGY

(Didactic-31hrs + Demonstration -4hrs) TOTAL 35 HRS

COURSE DESCRIPTION:

Students will develop an understanding of pathology underlying clinical disease states and involving the major organ systems and epidemiological issues. Epidemiological issues will be presented and discussed. Students will learn to recognize pathology signs and symptoms considered red flags for serious disease. Students will use problem-solving skills and information about pathology to decide when referral to another health care provider or alternative intervention is indicated. Students will develop the ability to disseminate pertinent information and findings, and ascertain the appropriate steps to follow.

Sr. No.	Topics	Didactic Hours	Demonstration Hours	Total Hours
1	GENERAL MICROBIOLOGY	4	1	5
2	LABORATORY DIAGNOSIS OF INFECTION	2	1	3
3	IMMUNOLOGY	5		5
4	SYSTEMIC BACTERIOLOGY	7		7
5	MYCOLOGY	2	1	3
6	VIROLOGY	5		5
7	PARASITOLOGY	3	1	4
8	APPLIED MICROBIOLOGY	3		3
	TOTAL	31	4	35

OBJECTIVES:

At the end of the course, the candidate will

1. Have sound knowledge of prevalent communicable diseases and the agents responsible for causing clinical infections, pertaining to C.N.S, C.V.S, Musculoskeletal system, Respiratory system, Genitourinary system, wound infections and of newer emerging pathogens
2. Know the importance and practices of best methods to prevent the development of infections in self and patients (universal safety precautions)

SYLLABUS

Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours
1	General Microbiology a. Introduction & scope b. Classification of Micro-organisms and Bacterial Anatomy (cell wall, capsule, spore, flagella and types as per their shape and arrangement) c. Sterilization d. Disinfection e. Demonstration for General Microbiology	4	1	5
2	LABORATORY DIAGNOSIS OF INFECTION a. Culture media and identification of bacteria b. Sample collection for smear examination and cultures c. Demonstration of Gram staining, ZN staining and culture media	2	1	3
3	IMMUNOLOGY a. Innate immunity & acquired immunity b. Structure and function of immune system and Immune response – normal / abnormal c. Define Antigen, Antibody and Antigen - antibody reaction & application for diagnosis d. Hyper – sensitivity e. Auto-immunity	5		5
4	SYSTEMIC BACTERIOLOGY a. Infection caused by gram +ve cocci Staphylococcus, Streptococcus and Pneumococcus b. Infection caused by gram –ve cocci Gonococci and Meningococci	7		7

Sr. No.	Topics	Didactic Hours	Practical/ Lab Hours	Total Hours
	<ul style="list-style-type: none"> c. Clostridium d. Enterobacteriaceae (E.Coli, Klebsiella) and Pseudomonas e. Salmonella and Vibrio f. Mycobacterial infection: <ul style="list-style-type: none"> i. Tuberculosis-Leprosy ii. Atypical Mycobacterium g. Syphilis and Leptospirosis- Morphology & pathogenesis 			
5	MYCOLOGY	2	1	3
	<ul style="list-style-type: none"> a. Introduction and Superficial mycosis b. Mycetoma and opportunistic fungal infection c. Mycology and Virology demonstration 			
6	VIROLOGY	5		5
	<ul style="list-style-type: none"> a. Introduction & general properties, b. DNA virus c. Measles, Mumps, Rubella, polio and congenital viral infections d. Hepatitis and Rabies e. H.I.V. 			
7	PARASITOLOGY	3	1	4
	<ul style="list-style-type: none"> a. Introduction- Entamoeba histolytica b. Malaria, Filaria c. Toxoplasma – Cystisarcosis & Echinococcus 			
8	APPLIED MICROBIOLOGY	3		3
	<ul style="list-style-type: none"> a. Hospital acquired infections, Universal safety precautions and Waste disposal b. Diseases involving Bones, Joints- Nerves-Muscles-Skin-Brain- Cardiopulmonary system, Burn and wound infections 			

RECOMMENDED TEXT BOOKS

1. Concise Textbook of Microbiology - Ananthnarayan
2. Concise Textbook of Microbiology - C.P.Baweja
3. Textbook of Microbiology - Nagoba

RECOMMENDED REFERENCE BOOK

1. Text books of Microbiology – R. Ananthnarayan & C.K. Jayram Panikar

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY		Marks
Pathology-50 marks + Microbiology-30 marks 80 marks + I.A.:20 marks *Emphasis to be given to topics related to Musculo Skeletal / Neurological / Cardiovascular / Respiratory conditions & Wound / Ulcers.		100
Section A-Q-1 & Q- 2	Questions based on PATHOLOGY	
	SAQ Q-1 -to answer any FIVE out of SIX [5x7] LAQ Q-2-to answer any ONE out of TWO [15]	35 15
Section B- Q-3 & Q4	Questions based on MICROBIOLOGY	
	SAQ Q3 – to answer any THREE out of FOUR (3X5) LAQ Q-4 -to answer any ONE out of TWO [15]	15 15
Total Marks		80

INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination of 80 marks each
TOTAL - 160 marks
2. Internal Assessment to be calculated out of 20 marks
3. Internal assessment as per University pattern

PHARMACOLOGY

[DIDACTIC – 50 hrs]

COURSE DESCRIPTION:

This course covers the basic knowledge of Pharmacology including administration, physiologic response and adverse effects of drugs under normal and pathologic conditions. Topics focus on the influence of drugs in rehabilitation patient/client management. Drugs used in iontophoresis and phonophoresis will be discussed in detail.

Sr. No.	Topics	Didactic Hours
1	GENERAL PHARMACOLOGY	04
2	DRUGS ACTING ON C.N.S	11
3	DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM	07
4	DRUGS ACTING ON C.V.S.	07
5	DRUGS ACTING ON RESPIRATORY SYSTEM	03
6	CHEMOTHERAPY	03
7	OTHER CHEMO THERAPEUTIC DRUGS	03
8	ENDOCRINE	08
9	DRUGS IN GI. TRACT	02
10	HEAMATINICS	01
11	DERMATOLOGICAL DRUGS	01
TOTAL		50

OBJECTIVES:

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

Cognitive:

- Describe Pharmacological effects of commonly used drugs by patients referred for Physiotherapy; list their adverse reactions, precautions, contraindications, formulation & route of administration.
- Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice versa
- Indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency, & safety for individual needs.

Psychomotor:

Get the awareness of other essential & commonly used drugs by patients- The bases for their use & common as well as serious adverse reactions.

SYLLABUS

Sr. No.	Topics	Didactic Hrs
1	GENERAL PHARMACOLOGY	4
	<ul style="list-style-type: none"> i. Pharmacokinetics ii. Routes of administration iii. Adverse drug reaction and reporting iv. Factors modifying drug effect 	
2	DRUGS ACTING ON C.N.S.	11
	<ul style="list-style-type: none"> i. Introduction ii. Alcohols + Sedatives & Hypnotics iii. Anti-convulsants iv. Drug therapy in Parkinsonism v. Analgesics & antipyretics –especially Gout & R.A. vi. Psycho Therapeutics vii. Local anaesthetics, counter irritants 	<ul style="list-style-type: none"> 1 2 1 2 3 1 1
3	DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM	7
	<ul style="list-style-type: none"> i. Adrenergic ii. Cholinergic iii. Skeletal muscle relaxants 	
4	DRUGS ACTING ON C.V.S.	7
	<ul style="list-style-type: none"> i. Antihypertensives ii. Antianginal- Antiplatelets, Myocardial Infarction iii. C.C.F. iv. Shock v. Coagulants and Anticoagulants 	<ul style="list-style-type: none"> 2 2 1 1 1
5	DRUGS ACTING ON RESPIRATORY SYSTEM	3
	<ul style="list-style-type: none"> i. Cough ii. Bronchial asthma iii. C.O.P.D. 	
6	CHEMOTHERAPY	3
	<ul style="list-style-type: none"> i. General principles ii. Anti Tuberculosis iii. Anti –Leprosy 	
7	OTHER CHEMO THERAPEUTIC DRUGS	3
	<ul style="list-style-type: none"> i. Drugs used in Urinary Tract Infection ii. Tetra / chlora iii. Penicillin iv. Cephalosporin v. Aminoglycocides vi. Macrolides 	

Sr. No.	Topics	Didactic Hrs
8	ENDOCRINE	8
	i. Insulin and oral Anti diabetic drugs	2
	ii. Steroids-Anabolic steroids	2
	iii. Drugs for osteoporosis, Vitamin D, Calcium, Phosphorus	2
	iv. Thyroid & Antithyroid	1
	v. Estrogen + Progesterone	1
9	DRUGS IN GI TRACT	2
	i. Peptic ulcer	
	ii. Diarrhoea, Constipation & Antiemetics	
10	HEAMATINICS	1
	i. Vitamin B, Iron	
11	DERMATOLOGICAL DRUGS	1
	i. Scabies, Psoriasis, Local antifungal	

RECOMMENDED TEXT BOOKS

1. Pharmacology for Physiotherapy –Padmaja Udaykumar
2. Pharmacology for Physiotherapist –H. L. Sharma, K. K. Sharma
3. Essentials of Medical Pharmacology – K. D. Tripathi
4. Pharmacology and Pharmacotherapeutics – Dr. R S Satoskar, Dr. Nirmala N. Rege,
Dr. S. D. Bhandarkar

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY		Marks
40 marks + I.A. 10 Marks [There shall be no LAQ in this paper]		
* Emphasis should be given to the drugs related to Musculo-skeletal / Neurological, Cardio-Vascular (excluding anti arrhythmic and shock) / Respiratory conditions, analgesics & anti-inflammatory conditions		50
Q-1 & Q-2	SAQ Q-1 to answer any FIVE out of SIX [5x3]	15
	SAQ Q- 2 to answer any FIVE out of SIX [5x5]	25
Total Marks		40

INTERNAL ASSESSMENT

1. Two exams – Terminal and preliminary examination of 40 marks each
TOTAL - 80 marks
2. Internal Assessment to be calculated out of 10 marks.
3. Internal assessment as per University pattern.

PSYCHIATRY (INCLUDING PSYCHOLOGY)

[Didactic 30hrs + Clinical 20hrs]- TOTAL 50HRS

COURSE DESCRIPTION:

The course design increases awareness of psychosocial issues faced by individuals. Their significance at various points on the continuum of health and disability should be emphasised. The course discusses personal and professional attitudes and values as they relate to developing therapeutic relationships. It emphasizes on communication skills for effective interaction with patients, health-care professionals and others. It expects students to identify common psychiatric conditions.

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1	PSYCHOLOGY	10	--	10
2	PSYCHIATRY	20	20	40
	TOTAL	30	20	50

OBJECTIVES:

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

Cognitive:

- 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.
- Understand the importance of psychological status of the person in health & disease; environmental & emotional influence on the mind & personality.
- Have the knowledge and skills required for good interpersonal communication.

Psychomotor:

- Enumerate various Psychiatric disorders with special emphasis to movement / Pain & ADLs
- Acquire the knowledge in brief, about the pathological & etiological factors, signs / symptoms & management of various Psychiatric conditions.
- Understand the patient more empathetically.

SYLLABUS

Sr. No.	Topics	Didactic Hours
1.	PSYCHOLOGY	10
	a. Psychology: Definition, understanding, Nature & its fields and subfields	1
	b. Developmental psychology (childhood, adolescence, adulthood and old age) and its theories in brief	2
	c. Learning: Theories of learning, Role of learning in human life	2
	d. Memory – types – Forgetting causes	2
	e. Attention & perception Nature of attention [in brief] Nature of perception, Principles of grouping]	1
	f. Motivation and theories: conflict and frustration – Types of Common Defence mechanisms, Stress - common reactions to frustrations	2
2.	PSYCHIATRY	20
	a. Psychiatric History & Mental Status Examination	1
	b. Classification of Mental disorders	1
	c. Schizophrenia & its types	1
	d. Other psychotic disorders (Psychotic disorder, Delusional disorder, Schizo-affective disorders, Post partum psychosis)	1
	e. Mood disorder	2
	f. Organic brain disorders (delirium, dementia, Amnestic syndromes, Organic personality disorder,)	2
	g. Anxiety disorders: Phobia, Obsessive Compulsive Disorder, Post Traumatic Disorders and Conversion disorder	2
	h. Somatoform disorder, (Hypochondriasis, Dissociative disorder, Conversion disorder, & Pain disorder)	1

Sr. No	Topics	Didactic Hours
	i. Somatization disorder	1
	j. Personality disorder	1
	k. Substance related disorder (alcohol)	1
	l. Disorders of infancy – childhood & adolescence i. Attention Deficit Hyperactivity Disorder, ii. Mental Retardation iii. Conduct disorder, iv. Pervasive developmental disorder v. Enuresis vi. Speech disorder	2
	m. Geriatric Psychiatry	1
	n. Eating disorder	1
	o. Management: ECT, Pharmacotherapy, Group therapy, Psycho therapy, Cognitive Behavioral Therapy and Rational Emotive Therapy.	2

CLINICAL

HOURS: 20hrs

A. History, Mental Status Examination & evaluation of:

1. Schizophrenia
2. Anxiety Disorder
3. Personality Disorder
4. Somatoform Disorder
5. Childhood Disorder (ADHD, MR)
6. Organic Brain Disorder (dementia)

B. Seminar/ Workshop on Communication skills

RECOMMENDED TEXT BOOKS:

1. Morgan C.T. & King R.A. Introduction to Psychology – recent edition [Tata McGraw-Hill publication]
2. Munn N.L. Introduction to Psychology [Premium Oxford, I.B.P. publishing Co.]
3. Clinical Psychology – Akolkar
4. Developmental Psychology-Elizabeth B. Hurlock(5th edition, Tata Mc-Graw Hill)
5. A short book of Psychiatry – 3rd edn- Ahuja – Jaypee bros – medical publishers
6. Short Textbook of Psychiatry- 7th edition -M.S. Bhatia

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY		Marks
40 marks + I.A. – 10 Marks [There shall be no LAQ in this paper]		50
* The question paper will give appropriate weightage to all the topics in the syllabus.		
Q-1	SAQ- Questions based on PSYCHOLOGY to answer any FIVE out of SIX (5x 3)	15
Q-2	SAQ – Questions based on PSYCHIATRY to answer any FIVE out of SIX (5x 5)	25
Total Marks		40

CLINICAL EXAMINATION: (College Examination only)

1. Case presentation will be taken at the end of preliminary examination
2. Case presentation :History taking : 20 marks + Communication skills : 20 marks

Total: 40 marks

INTERNAL ASSESMENT:

1. Two exams – Terminal and preliminary examination (Theory only)
of 40 marks each **TOTAL - 80 marks**
2. Internal Assessment to be calculated out of 10 marks (Theory only)
3. Internal assessment as per University pattern.

KINESIOLOGY

DIDACTIC- 80 HRS

COURSE DESCRIPTION:

This course is based on anatomical, physiological & related kinesiological principles for normal human movement. Students have the opportunity to develop and acquire understanding of kinesiological responses for the efficacy in various kinesiotherapeutic applications.

Sr. No	Topics	Didactic Hours
1.	INTRODUCTION TO BIOMECHANICS	20
2.	REGIONAL KINESIOLOGY	40
3.	KINETICS AND KINEMATICS OF GAIT & ADLs	20

Objective – At the end of the course, the candidate will be able to –

1. Understand the principles of Biomechanics.
2. Acquire the knowledge of kinetics and kinematics of Spine, Extremities, Temporomandibular joint, Thoracic cage
3. Acquire the knowledge of Musculo skeletal movements during normal Gait and Activities of Daily Living

SYLLABUS

Sr. No.	TOPICS	DIDACTIC HOURS
1	INTRODUCTION TO BIOMECHANICS	20
	a. Muscle Biomechanics <ol style="list-style-type: none"> i. Elements of muscle structure – fiber, size, motor unit, length tension, arrangement & number relationship ii. Classification of muscles iii. Mobility and Stability of muscles iv. Types of muscle contraction and factors affecting muscle function. 	10
	b. Joint Biomechanics <ol style="list-style-type: none"> i. Basic principles of joint design ii. Classification of joints iii. Osteokinematics & Arthrokinematics iv. Concave Convex Rule v. Joint function, kinetics & kinematics 	10

Sr. No.	TOPICS	DIDACTIC HOURS
2	REGIONAL KINESIOLOGY	40
	a. Vertebral Column	9
	b. Thorax	2
	c. Shoulder Complex	5
	d. Elbow joint	2
	e. Wrist And Hand Complex	5
	f. Hip Joint	5
	g. Knee Complex	5
	h. Ankle – Foot complex	5
	i. Temporo-Mandibular Joint	2
3	KINETICS AND KINEMATICS OF GAIT & ADLs	20
	<p>a. GAIT</p> <p>i. Human locomotion</p> <p>ii. Subjective & Objective evaluation</p> <p>iii. Gait cycle & Measurable parameters (Step Length, Step Width, Stride Length, Foot Angle, Cadence)</p> <p>iv. Kinetics and kinematics of gait</p> <p>v. Determinants of gait</p> <p>b. KINETICS AND KINEMATICS OF VARIOUS ACTIVITIES OF DAILY LIVING</p> <p>i. Supine to Sitting, Sitting to Standing, Squatting, Climbing up & down</p> <p>ii. Lifting, Pulling, Pushing, Overhead activities,</p> <p>iii. Running, Jogging.</p>	<p>10</p> <p>10</p>

RECOMMENDED TEXT BOOKS

1. Joint Structure and Function – Cynthia .C. Norkins
2. Clinical Kinesiology – Brunnstrom

RECOMMENDED REFERENCE BOOKS

1. Kinesiology of the Human Body – Steindler
2. Kinesiology of the Musculoskeletal system – Neumann & Donald
3. Kinesiology – The mechanics and Pathomechanics of Human motion – Oatis & Carol
4. Biomechanical Basis of Human Motion – Joseph and Hamill
5. Physiology of the Joints – Kapandji Vol.- I,II,&III

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY 80 MARKS + I.A. – 20 MARKS		Marks
* The question paper will give appropriate weightage to all the topics in the syllabus.		100
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15] Based on the topics 1(a & b)	50
	Q-2- answer any FIVE out of SIX [5x 7 =35] Based on the topics 1(a & b)	
Section B -L.A.Q.	Q-3] L.A.Q (any ONE out of TWO) * Based on topics 2 & 3 a) b) 15 marks	30
	Q-4] L.A.Q (any ONE out of TWO) * Based on topics 2 & 3 a) b) 15 marks	
Total Marks		80

INTERNAL ASSESSMENT – (THEORY)

1. Two exams – Terminal and preliminary examination of 80 marks each
TOTAL - 160 marks
2. Internal Assessment to be calculated out of 20 marks.
3. Internal assessment as per University pattern.

KINESIOTHERAPY

Didactic-80 Hrs + Practical/ Laboratory-160 HRS [TOTAL - 240 HRS]

COURSE DESCRIPTION:

This course is based on anatomical and physiological & related kinesiological principles for normal human movement and for the efficacy in the assessment methods for mobility, muscle strength. Students have the opportunity to develop and acquire understanding of physiological responses to various types of training and develop skills of exercise programs (on models). Exercise components of muscle strength, flexibility, balance, breathing and gait are examined. Evidence of appropriate, safe and effective exercise design and proper exercise biomechanics and prescription parameters are addressed with all interventions.

Sr. No.	TOPICS	Didactic Hours	Practical/ Lab Hours	Total Hours
1.	BIOPHYSICS	40	115	155
2.	POSTURE	05	05	10
3.	MOTOR & POSTURAL CONTROL AND BALANCE	03	00	03
4.	FUNCTIONAL REEDUCATION	05	05	10
5.	NEUROMUSCULAR CO-ORDINATION	05	05	10
6.	GAIT & WALKING AIDS	10	15	25
7.	BRONCHIAL HYGIENE	12	15	27
TOTAL		80	160	240

OBJECTIVES:

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

Cognitive:

Describe the Biophysical properties of connective tissue, & effect of mechanical loading, & factors which influence the muscle strength, & mobility of articular & periarticular soft tissues.

Psychomotor:

1. Apply the biomechanical principles for the efficacy in the assessment methods for mobility, muscle strength
2. Acquire the skill of subjective and objective assessment of individual & group muscle strength
3. Acquire the skills of subjective and objective methods of muscle strengthening
4. Describe the physiological effects, therapeutic uses, merits / demerits of various exercise modes including Hydrotherapy
5. Demonstrate various therapeutic exercises on self; & acquire the skill of application on models with Home Programs
6. Analyze normal Human Posture [static & dynamic].
7. Acquire the skill of functional re-education techniques on models
8. Acquire the skill of Balance and Coordination Exercises
9. Acquire the skill of using various walking aids for Gait Training
10. Acquire the skill of demonstrating breathing exercises and retraining on self and others
11. Acquire the skill of demonstrating Postural Drainage on models

SYLLABUS

Sr. No.	TOPICS	Didactic Hours	Practical/ Laboratory Hours	Total Hours
1.	BIOPHYSICS	40	115	155
	<ul style="list-style-type: none"> a. Biophysical Principles: <ul style="list-style-type: none"> i. Structures & Properties of connective and non connective tissues b. Stretching : <ul style="list-style-type: none"> i. Definition ii. Types iii. Assessment of muscle length and fascia around the joint iv. Principles of stretching v. Techniques for all joints vi. Individual muscle stretching c. Joint Mobility : <ul style="list-style-type: none"> i. Definition ii. Causes of limitation iii. Indication and contra indications iv. Principles v. Techniques vi. Assessment methods vii. Individual joints mobility Exercises– Upper Limb, Lower Limb viii. & Spine (Using active, assisted, passive movements) d. Manual Muscle Testing and assessment (subjective & objective) : <ul style="list-style-type: none"> i.Principle ii.Trick movements iii.Group Muscle Testing iv.Individual Muscle testing – Upper & Lower Limbs, Trunk & Face 	2	-	02
		3	12	15
		10	17	27
		6	35	41

Sr. No.	TOPICS	Didactic Hours	Practical/ Lab Hours	Total Hours
2.	POSTURE	5	5	10
	a. Definition b. Human posture –Changes from quadruped to biped c. Correct and faulty posture d. Postural patterns and Postural Mechanism e. Factors affecting posture f. Physiological deviations g. Analysis of all views			
3.	MOTOR CONTROL, POSTURAL CONTROL AND BALANCE	03	-	03
	a. Motor Control b. Postural Alignment & Weight Distribution c. Sensory Organisation d. C.N.S. Integration e. Motor Strategies			
4.	FUNCTIONAL REEDUCATION	5	5	10
	a. Principles & Indications b. Mat exercises- mobility, strength and balance training c. Progression to sitting, standing and walking d. Transfers			
5.	NEUROMUSCULAR CO-ORDINATION AND BALANCE	5	5	10
	a. Definition b. Physiology related to coordination & Balance c. Frenkels exercise (Principles & Techniques) d. Balancing Exercise			
6.	GAIT & WALKING AIDS	10	15	25
	a. Gait i. Definition, ii. Gait cycle and measurable Parameters (Step Length, Step Width, Stride Length, Foot Angle, Cadence b. Walking Aids i. Types ii. Indications iii. Selection / Prescription iv. Pre „Walking Aids“ training v. Measurements vi. Gait with walking aids	3	7	10
		7	8	15

Sr. No.	TOPICS	Didactic Hours	Practical/Laboratory Hours	Total Hours
7.	BRONCHIAL HYGIENE	12	15	27
	a. Humidification & Nebulisation	3	1	4
	i. Definition			
	ii. Types			
	iii. Method of delivery			
	iv. Indications and contraindications			
	b. Breathing Exercise –			
	i. Types – Inspiratory , Expiratory (including forced expiratory technique)	5	6	11
	ii. Goals & Uses			
	iii. Techniques			
	iv. ACBT			
	v. Autogenic drainage			
	c. Postural Drainage:			
	i. Definition	4	8	12
	ii. Indications & Contraindications			
	iii. Assessment & Principles			
	iv. Techniques			

PRACTICAL: Chapter No: 1(b, c, d & e) 2, 4, 5, 6 & 7

RECOMMENDED TEXT BOOKS

1. Progressive Resisted Exercises – Margaret Hollis,
2. Therapeutic Exercise foundation and techniques - Carolyn Kisner
3. Muscle Testing -Daniel Kendall
4. Principles of Exercise Therapy – Dena Gardiner

RECOMMENDED REFERENCE BOOKS

1. Therapeutic Exercise - Basmajian & Wolf.
2. Orthopedic Evaluation – Magee
3. Cash's Textbook for Physiotherapists in Chest, Heart & Vascular diseases
4. Physical Rehabilitation- O'Sullivan

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS		Marks
* The question paper will give appropriate weightage to all the topics in the syllabus.		100
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15]	50
	Q-2- answer any FIVE out of SIX [5x 7 =35]	
Section B -L.A.Q.	Q-3] L.A.Q (any ONE out of TWO) * Based on topics 1(c, d & e), 2, & 7 a) b) 15 marks	30
	Q-4] L.A.Q (any ONE out of TWO) * Based on topics 1(c, d & e), 2, & 7 a) b) 15 marks	
Total Marks		80

PRACTICAL 80 MARKS + I.A. – 20 MARKS		Marks
		100
LONG CASE	Muscle Strengthening / Mobility /Bronchial hygiene (On models)	30
SHORT CASE	Two Short cases on M.M.T. /Coordination/Posture/Gait (Measurable parameters only as mentioned in chapter 6-a) / Walking aids/ Functional Reeducation / Breathing Exercises 2 x 20 = 40 marks	40
Communication skills		5
JOURNAL	Documentation- Principles & applications for various Kinesiotherapeutics.	5
Total Marks		80

INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each TOTAL - 160 marks.
2. Internal Assessment to be calculated out of 20 marks.
3. Internal assessment as per University pattern.

ELECTROTHERAPY

Didactic –100 hrs+ Practical / Laboratory –200 hrs [TOTAL - 300 HRS]

COURSE DESCRIPTION:

This course tends to explore fundamental skills in application of electrotherapeutic modalities and knowledge of indications, contraindications and physiological principles needed for appropriate patient care. It includes topics such as Electrical stimulation, T.E.N.S., Iontophoresis, Ultrasound / Phonophoresis, Diathermy and Electro diagnostic testing etc.

Sr. No.	Topic	Didactic	Practical	Total
1	PAIN	003	-	003
2	LOW FREQUENCY CURRENTS	037	085	122
3	MEDIUM FREQUENCY CURRENTS	008	022	030
4	BIOFEEDBACK	005	-	005
5	HIGH FREQUENCY CURRENTS	012	028	040
6	SOUND	010	025	035
7	ACTINOTHERAPY	015	025	040
8	ELECTROTHERAPY: WOUNDCARE	010	015	025
	TOTAL	100	200	300

OBJECTIVES:

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

Cognitive:

1. Acquire the knowledge about the physiology of pain, Pain pathways & Methods of pain modulation, selection of appropriate modality for Pain modulations.
2. Describe the Physiological effects, Therapeutic uses, indication & contraindications of various Low/ Medium & High Frequency modes / Actinotherapy
3. Describe the Physiological Effects & therapeutic uses of various therapeutic ions & topical pharmaco -therapeutic agents to be used for the application of iontophoresis & sono/ phonophoresis

Psychomotor:

1. Acquire the skills of application of the Electro therapy modes on models, for the purpose of Assessment & Treatment.
2. Acquire an ability to select the appropriate mode as per the tissue specific & area specific application.

SYLLABUS

Sr. No.	Topic	Didactic Hours	Practical Hours	Total Hours
1	PAIN	3	-	3
	<ul style="list-style-type: none"> a. Pain pathway b. Pain gate theory c. Descending pain suppressing system d. Physiological block 			
2	LOW FREQUENCY CURRENTS	37	85	122
	<ul style="list-style-type: none"> a. Faradic currents : Physiological & Therapeutic effects, indications, contraindications: <ul style="list-style-type: none"> i. Faradic type ii. Strong Surged Faradic iii. Sinusoidal currents iv. Application of Faradic current <ul style="list-style-type: none"> a) Faradism Under pressure – Indications, Principle of application, Technique of application b) Faradic re-education: Indications, Principle of application, Technique of application v. Short/Long pulse currents Motor Points: Definition., Identification b. Galvanic / Direct currents (Continuous DC & Interrupted DC) : Physiological & Therapeutic effects, Indications, Contraindications <ul style="list-style-type: none"> i. Definition: Galvanic & Interrupted Galvanic Currents ii. Property of Accommodation iii. Technique & Methods of Application of Galvanic currents iv. Types – Anodal & Cathodal, Therapeutic effects & uses, Technique & Methods of application, Dangers & precautions v. Ionization /Iontophoresis: Theory of Medical Ionisation, Effects & Uses of various Ions, Indications and contraindications, Dangers and precaution c. High Voltage Currents d. Micro Currents e. Didynamic Currents 	12	20	32
		12	20	32
		1	-	1
		1	-	1
		1	-	1

	f. Transcutaneous Electrical Nerve Stimulation (T.E.N.S.) i. Definition ,Types ii. Physiological & Therapeutic effects iii. Technique & Methods of Application iv. Indications & contraindications	5	20	25
	g. Strength Duration Curves on model i. Principle of S-D curves ii. Technique of plotting iii. Interpretation of normal curves iv. Chronaxie and Rheobase	5	25	30

3	MEDIUM FREQUENCY CURRENTS	8	22	30
	a. Interferential Therapy i. Definition , Types, ii. Physiological & Therapeutic effects iii. Technique & Methods of Application iv. Electrodes types (including vacuum), Effects & Uses v. Advantages of I.F.T. over Low frequency currents vi. Indications & contraindications b. Russian Currents			
4	BIOFEEDBACK	5	-	5
	i. Principle ii. Methods: Electro biofeedback. iii. Uses of Biofeedback			
5	HIGH FREQUENCY CURRENTS	12	28	40
	S.W.D i. Types: continuous / Pulsed ii. Definition and types iii. Physiological & Therapeutic effects iv. Technique & Methods of Application v. Electrodes types, Effects & Uses vi. Indications & contraindications vii. Dangers & Precautions			

Sr. No.	Topic	Didactic Hours	Practical Hours	Total Hours
6	SOUND	10	25	35
	Therapeutic Ultra Sound: Pulsed / Continuous i. Physiological & Therapeutic effects ii. Technique & Methods of Application iii. Phonophoresis iv. Indications & Contraindications v. Dangers & Precautions			
7	ACTINOTHERAPY	15	25	40
	a. Radiant heat [I.R.] i. Physiological & Therapeutic effects ii. Technique & Methods of Application iii. Effects & Uses iv. Indications & contraindications v. Dangers & Precautions	5	5	10
	b. U.V.R. i. Types : a, b, c ii. Physiological & Therapeutic effects iii. Technique & Methods of Application iv. Effects & Uses v. Indications & contraindications vi. Dangers & Precautions vii. Test Dose	6	20	26
	c. Laser – He/ Ne, & I.R. combination i. Physiological & Therapeutic effects ii. Technique & Methods of Application iii. Effects & Uses iv. Indications & Contraindications v. Dangers & Precautions vi. Dosage	4	-	4
8	ELECTROTHERAPY: WOUNDCARE	10	15	25
	i. Types of wound ii. Application of Therapeutic currents, Ultrasound, U.V.R. & LASER			

PRACTICAL:

Skills of application to be practiced on models in No-1 to 8 above

RECOMMENDED TEXT BOOKS

1. Clayton's Electro Therapy
2. Electro therapy Explained – Low & Reed
3. Electro Therapy – Kahn
4. Therapeutic Electricity – Sydney Litch
5. Electrotherapy Evidence Based Practice – Sheila Kitchen

RECOMMENDED REFERENCE BOOK

1. Clinical Electro Therapy – Nelson & Currier

SCHEME OF UNIVERSITY EXAMINATION

THEORY		Marks
80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		100
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15] [MUST KNOW area]	50
	Q-2- answer any FIVE out of SIX [5x 7 =35] based on Actinotherapy (I.R./U.V.R./LASER)	
Section B -L.A.Q.	Q-3] L.A.Q (any ONE out of TWO) Based on High frequency modalities a) b) 15 marks	30
	Q-4] L.A.Q (any ONE out of TWO) Based on Low/Medium freq. modalities a) b) 15 marks LAQ should give break up of 15 marks – e.g. [3 +5+7]	
Total Marks		80

PRACTICAL 80 MARKS + I.A. – 20 MARKS		Marks
		100
LONG CASE	Motor points /Strength Duration Curve / Faradism under pressure (On models)	30
SHORT CASES	1. Based on Low or Medium Frequency modalities / High Frequency modalities 2. Actinotherapy (I.R./U.V.R./LASER) 2 x 20 = 40 marks (Skill of application on models & rationale for selection of modality)	40
Communication skills		5
JOURNAL	Documentation- Principles & applications for various Electrotherapy Modalities.	5
Total Marks		80

INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each TOTAL - 160 marks.
2. Internal Assessment to be calculated out of 20 marks
3. Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATIONS AT A GLANCE

- II BPT

Subjects	Theory			Practical		
	University	I.A.	Total	University	I.A.	Total
Pathology & Microbiology	50 + 30	20	100	---	---	---
Pharmacology	40	10	50	---	---	---
Psychiatry (including Psychology)	40	10	50	---	---	---
Kinesiology	80	20	100	---	---	---
Kinesiotherapy	80	20	100	80	20	100
Electrotherapy	80	20	100	80	20	100
Total	400	100	500	160	40	200

III BPT

SYLLABUS

Transcript Hours- 1400

Sr. No.	SUBJECTS	Theory Hours	Laboratory / Clinical Hours	Total Hours
	PROFESSIONAL PRACTICE			
1	Professional Practice & Ethics (College Examination in final year)	10	005	015
	MEDICAL SCIENCES			
2	Surgery-I (Cardiovascular & Thoracic Surgery, General Surgery & Plastic/Reconstructive Surgery)	030	025	055
3	Surgery-II (Orthopaedics)	040	020	060
4	Medicine-I (Cardiovascular Respiratory Medicine, General Medicine, Rheumatology & Gerontology)	045	010	055
5	Medicine-II (Neurology & Paediatrics)	045	020	065
6	Community Medicine & Sociology	050	010	060
7	Obstetrics & Gynaecology (College Examination)	020	010	030
8	Dermatology (College Examination)	010	-	010
	PHYSIOTHERAPY			
9	Functional Diagnosis & Physiotherapeutic Skills	135	325	460
10	Seminar (including ICF)	-	090	090
11	Supervised clinical practice	-	500	500
	TOTAL	385	1015	1400

PROFESSIONAL PRACTICE AND ETHICS

(COLLEGE EXAMINATION IN FINAL YEAR)

TOTAL -15 HRS

COURSE DESCRIPTION:

This subject would be taught in continuum from first year to final year. An exam in theory would be conducted only in final year. Professional and ethical practice curriculum content addresses the Knowledge, Skills and Behaviors required of the physiotherapist in a range of practice relationships and roles. The course will discuss the role, responsibility, ethics administration issues and accountability of the physical therapists. The course will also cover the history and change in the profession, responsibilities of the professional to the profession, the public and to the health care team. This includes the application of professional and ethical reasoning and decision-making strategies, professional communication.

OBJECTIVES:

At the end of the course the student will be compliant in following domains:

Cognitive:

- a) Be able to understand the moral values and meaning of ethics.
- b) Will acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.

Psychomotor:

- a) Be able to develop psychomotor skills for physiotherapist-patient relationship.
- b) Skill to evaluate and make decision for plan of management based on sociocultural values and referral practice.

Affective:

- a) Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
- b) Be able to develop bed side behavior, respect & maintain patients' confidentiality

SYLLABUS

Sr. No.	Topics	Didactic Hours	Visits/ Supervision Hours	Total Hours
1.	Collecting data on psychosocial factors in Medicine / Surgery / Reproductive Health / Paediatrics	04	05	15
2.	Inter professional communication.	03		
3.	Ethics in clinical practice	03		
TOTAL		10	05	15

SURGERY-I

(General Surgery, Cardiovascular & Thoracic Surgery & Plastic/ Reconstructive Surgery)

(Didactic-35hrs + Clinical -20 hrs) **TOTAL =55HRS**

COURSE DESCRIPTION:

This course intends to familiarize students with principles of General surgery including various specialties like cardiovascular, thoracic, neurology and plastic surgery. It also familiarizes the students with terminology and abbreviations for efficient and effective chart reviewing and documentation. It explores various conditions needing attention, focusing on epidemiology, pathology, as well as primary and secondary clinical characteristics and their surgical and medical management. The purpose of this course is to make physiotherapy students aware of various surgical conditions general surgery and specialty surgeries so these can be physically managed effectively both pre as well as postoperatively.

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1.	GENERAL SURGERY	20	10	30
2.	CARDIO VASCULAR AND THORACIC SURGERY	10	5	15
3.	PLASTIC SURGERY / RECONSTRUCTIVE SURGERY	5	5	10
	TOTAL	35	20	55

OBJECTIVES:

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

1. Describe the effects of surgical trauma & Anaesthesia in general
2. Clinically evaluate & describe the surgical management in brief of
 - a) General Surgery
 - b) Neuro Surgery
 - c) Cardiovascular and Thoracic Surgery
 - d) ENT & Ophthalmic Surgery
 - e) Plastic & Reconstructive Surgery
3. Describe pre-operative evaluation, surgical indications in various surgical approaches, management and post operative care in above mentioned areas with possible complications.
4. Be able to read & interpret findings of the relevant investigations

SYLLABUS

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1	GENERAL SURGERY	20	10	30
	a. GENERAL : <ol style="list-style-type: none"> i. Anaesthesia types, Effect, indications and contraindications and common postoperative complications ii. Haemorrhage and Shock, classification, description and treatment iii. Water & Electrolyte imbalance iv. Inflammation – acute & chronic-signs, symptoms, complications & management v. Wounds & Ulcers, Cellulitis – classification, healing process, management, bandaging, Dressing solutions and its uses and debridement Procedure, hand washing and universal precautions. vi. Enumerate Common abdominal surgical incisions – classification, indications, opening – closure, advantages and disadvantages, complications (including burst abdomen and fecal fistula), minimally invasive surgery. vii. Mastectomy and oncosurgery– approach, complications & management viii. Amputation – types, sites, complications & management ix. Burns – causes, complications, classification & management x. Varicose veins and PVD xi. Hernias-surgery, precautions and complications xii. Transplantation approach, risk problems related to donor and recipient, precautions. 	12	10	
	b. NEUROSURGERY <ol style="list-style-type: none"> i. Head Injury – management ii. Intra cranial & Spinal tumors iii. Intracranial Aneurysm and AV malformation iv. Post operative Neurosurgical care 	4		

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
	c. E.N.T. Surgery i. Tracheostomy – indications, surgical approach & management ii. Surgical procedures in VII th cranial nerve palsy iii. Vertigo	3		
	d. Ophthalmic Surgery Surgeries for III rd , IV th , VI th Cranial Nerve palsy	1		
2	CARDIO VASCULAR AND THORACIC SURGERY a. Introduction, Cardiorespiratory resuscitation, cardiopulmonary bypass, Special investigation procedures in cardiac surgery, Basic techniques in cardiac surgery approach, incisions, Types of operation, Complications of cardiac surgery, Lines, drains and tubes. b. Brief description of indications, surgery, complications for following surgery : i. Surgeries of thorax i. Surgeries of the lung ii. Surgeries of pleura and pericardium iii. Surgery for coronary artery disease iv. Valvular surgeries v. Surgery for Congenital Heart Disease vi. Peripheral arterial disorder, Burger's disease, Raeynaud's disease and Aneurysm vii. Gangrene, Amputation, DVT	10	5	15
3	PLASTIC SURGERY / RECONSTRUCTIVE SURGERY a. Skin grafts & flaps – Types, indications with special emphasis to burns, wounds b. Ulcers, complications and postoperative care c. Tendon transfers, with special emphasis to hand, foot & facial paralysis, & repair of Flexor & Extensor Tendon Injuries d. Keloid & Hypertrophied scar management e. Reconstructive surgery of peripheral nerves f. Micro vascular surgery- reimplantation and revascularization	5	5	10

CLINICAL (10 hrs)

1. Evaluation / presentation and recording of one case each in:
 - a) Burns
 - b) Wound & ulcer
 - c) Head injury
 - d) Peripheral vascular condition
 - e) Post radical mastectomy
 - f) Post thoracic surgery
 - g) Post abdominal surgery
 - h) Plastic surgery

2. Auscultation & its interpretation with special emphasis to Reading & interpretation of the X-ray chest.

RECOMMENDED TEXT BOOKS

1. Short practice of surgery-- Bailey and Love
2. Textbook of Surgery – Das

SCHEME OF UNIVERSITY EXAMINATION

THEORY		Marks
Surgery I-40 marks + I.A :10 marks		50
Q-1 & Q- 2	SAQ Q-1 -to answer any FIVE out of SIX [5x3] Based on topics GENERAL SURGERY & PLASTIC SURGERY	15
	SAQ Q-2-to answer any FIVE out of SIX [5X5] Based on topics CARDIOVASCULAR & THORACIC SURGERY	25
Total Marks		40

Clinical Case Presentation (COLLEGE EXAMINATION)	Marks
Conducted at the end of Preliminary examination - Based on Case presentation, Examination and Viva	20

INTERNAL ASSESSMENT:

1. One examination of Total 40 marks (Theory only)
2. Internal Assessment to be calculated out of 10 marks
3. Internal assessment as per University pattern.

SURGERY-II (ORTHOPAEDICS)

(Didactic-40hrs + Clinical -20hrs) **TOTAL =60 HRS**

COURSE DESCRIPTION:

This course intends to familiarize students with principles of orthopaedic surgery along with familiarization with terminology and abbreviations for efficient and effective chart reviewing and documentation. It also explores various orthopaedic conditions needing attention, focusing on epidemiology, pathology, as well as primary and secondary clinical characteristics and their surgical and medical management. The purpose of this course is to make physiotherapy students aware of various orthopaedic surgical conditions so these can be physically managed effectively both pre as well as postoperatively.

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1	FRACTURES	6	3	9
2	DISLOCATIONS & SUBLUXATIONS	4	2	6
3	SOFT TISSUE AND TRAUMATIC INJURIES	4	2	6
4	DEFORMITIES AND ANOMALIES	11	3	14
5	DEGENERATIVE AND INFLAMMATORY CONDITIONS	6	3	9
6	MANAGEMENT OF METABOLIC DISORDERS	2	2	4
7	GENERAL ORTHOPAEDIC DISORDERS	5	3	8
8	TUMORS	2	2	4
	TOTAL	40	20	60

OBJECTIVES:

At the end of the course, the candidate will --

- a) Be able to discuss the, aetiology, Pathophysiology, clinical manifestations & conservative / surgical management of various traumatic & cold cases of the Musculoskeletal Conditions.
- b) Gain the skill of clinical examination; apply special tests & interpretation of the preoperative old cases & all the post-operative cases.
- c) Be able to read & interpret salient features of the X-ray of the Spine & Extremities and correlate the radiological findings with the clinical findings.
- d) Be able to interpret Pathological / Biochemical studies pertaining to Orthopaedic conditions.

SYLLABUS

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1	FRACTURES a. Definition, Classification, Causes, Clinical features, healing of fractures & Complications. b. Principles of general management of i. Fracture of the Upper Extremity ii. Fracture of the Lower Extremity iii. Fracture of the vertebral column, thorax and pelvis iv. Emergency care and first aid.	6	3	9
2	DISLOCATIONS & SUBLUXATIONS a. Definition, General description, Principles of general description and management of traumatic dislocation and subluxation of common joints. i. Shoulder joint ii. Acromioclavicular joint iii. Elbow joint iv. Hip joint v. Knee joint	4	2	6
3	SOFT TISSUE AND TRAUMATIC INJURIES a. Introduction ,Anatomy & physiology general description, grade of injury and management of injuries of i. Ligaments, Bursae, Fascia ii. Muscles & Tendons iii. Muscles and tendons injuries of upper and lower limb b. Cervicolumbar injuries ,Whiplash of the cervical spine c. Crush injuries of hand & foot	4	2	6
4	DEFORMITIES AND ANOMALIES a. Definition ,Causes , Classification , Congenital and acquired deformities Physical and clinical and radiological features, Complications b. Principles of medical and surgical management of the deformities	11	3	14
Sr.	Topics	Didactic Hours	Clinical Hours	Total Hours

No.				
	<p>c. General description of following deformities :</p> <p>i. Deformities of the spine:</p> <p>a) Scoliosis b) Kyphosis c) Lordosis d) Flat back e) Torticollis</p> <p>ii. Deformities of the lower limb:</p> <p>a) C.D.H., coxa vara , coxa valga , anteversion, Retroversion b) Genu valgum, Genu varum, Genu recurvatum, C.D.K. c) Talipes calcaneus equinus, varus & valgus d) Pes cavus, Pes planus e) Hallux valgus & varus, Hallux rigidus and hammer toe</p> <p>iii. Deformities of Shoulder & Upper limb</p> <p>a) Sprengel's shoulder, Cubitus varus, Cubitus valgus b) Dupuytren's contracture</p>			
5	<p>DEGENERATIVE AND INFLAMMATORY CONDITIONS</p>	6	3	9
	<p>a. Osteo-arthrosis/Arthritis b. Spondylosis c. Spondylolysis and listhesis d. Pyogenic arthritis e. Rheumatoid arthritis f. Juvenile arthritis g. Tuberculous arthritis h. Gouty arthritis i. Haemophilic arthritis j. Neuropathic arthritis k. Ankylosing spondylitis l. Psoriatic arthritis</p>			

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
6	MANAGEMENT OF METABOLIC DISORDERS	2	2	4
	a. Osteoporosis b. Osteomalacia & Rickets			
7	GENERAL ORTHOPAEDIC DISORDERS	5	3	8
	a. Carpel tunnel syndrome /Entrapment nerve injuries b. Compartment syndrome, Ischemic contracture c. Avascular necrosis of bone in adult and children i. Gangrene ii. Backache /P.I.D.			
8	TUMORS	2	2	4
	i. Classification, Principles of general management ii. General description of benign and malignant tumours of musculoskeletal system			

CLINICAL (20 HRS)

3. Independent clinical orthopaedic evaluation presentation & recording of:
 - a) One acute soft tissue lesion (including nerve injury)
 - b) Two cases of degenerative arthritis of extremity joint (One each in Upper Extremity and One Lower Extremity)
 - c) Two cases of spine (one P.I.D., one traumatic)
 - d) One post operative case of fractures of extremities with fixation/ replacement knee / hip
 - e) One paraplegia / quadriplegia

RECOMMENDED TEXT BOOKS

1. Outline of Fractures --Adams
2. Outline of Orthopedics.--Adams
3. Apley's systems of orthopedics and fractures by Louis Solomon, 9th edition

SCHEME OF UNIVERSITY EXAMINATION

THEORY Surgery II-40 marks + I.A.:10 marks		Marks
		50
Q-1 & Q-2	SAQ Q-1 -to answer any FIVE out of SIX [5x3]	15
	SAQ Q-2-to answer any FIVE out of SIX [5X5]	25
Total Marks		40

Clinical Case Presentation (COLLEGE EXAMINATION)	Marks
Conducted at the end of Preliminary examination - Based on Case presentation, Examination and Viva	20

INTERNAL ASSESSMENT:

1. One examination of Total 40 marks (Theory only)
2. Internal Assessment to be calculated out of 10 marks
3. Internal assessment as per University pattern.

MEDICINE-I

(Cardiovascular Respiratory Medicine, General Medicine & Gerontology)

(Didactic-45 hrs + Clinical-10 hrs) **TOTAL-55 HRS**

COURSE DESCRIPTION:

This course intends to familiarize students with medical terminology & abbreviations for efficient & effective chart reviewing & documentation. It also explores selected systemic diseases, focusing on epidemiology, pathology, histology, etiology as well as primary & secondary clinical characteristics & their management. Discusses & integrates subsequent medical management of General, Rheumatology, Gerontology, Cardio-vascular & Respiratory systems, to formulate appropriate intervention, indications, precautions & contraindications.

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1	CARDIO-VASCULAR & RESPIRATORY MEDICINE	30	05	35
2	GENERAL MEDICINE, RHEUMATOLOGY & GERONTOLOGY	15	05	20
	TOTAL	45	10	55

OBJECTIVES:

At the end of the course, the candidate will:

1. Be able to describe Etiology, Pathophysiology, Signs & Symptoms & Management of the various Endocrinal, Metabolic, Geriatric & Nutrition Deficiency conditions.
2. Be able to describe Etiology, Pathophysiology, Signs & Symptoms, Clinical Evaluation & Management of the various Rheumatologic Cardiovascular & Respiratory Conditions.
3. Acquire skill of history taking and clinical examination of Musculoskeletal, Respiratory, Cardio-vascular & Neurological System as a part of clinical teaching.
4. Be able to interpret auscultation findings with special emphasis to pulmonary system.
5. Study Chest X-ray, Blood gas analysis, P.F.T. findings & Haematological studies, for Cardiovascular, Respiratory, Neurological & Rheumatological conditions.
6. Be able to describe the principles of Management at the Intensive Care Unit.
7. Be able to acquire the skills of Basic Life Support.
8. Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.

SYLLABUS

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1	CARDIO-VASCULAR & RESPIRATORY MEDICINE :	30	5	35
	a. Cardio-Vascular Diseases	11	2	
	i. Hypertension -- systemic	1		
	ii. Cardiac Conditions- a) I.H.D. (Angina, Myocardial infarction) b) R.H.D. c) Infective Endocarditis d) Cardio myopathy e) Heart Failure	4		
	iii. Valvular Heart Disease a) Congenital b) Acquired	2		
	iv. Congenital Heart Disease	1		
	v. Investigations a) Basics of E.C.G. [Normal & Abnormal (Ischaemia, Infarction & Arrhythmias)] b) Observation of conduction of stress test on patient c) 2D Echo (Ejection Fraction & Wall motion Abnormality)	3		
	b. Diseases of the Respiratory System :	17	3	
	i. Common Infectious diseases like Tuberculosis, Pneumonia, Lung Abscess, and Bronchiectasis.	3		
	ii. Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydropneumothorax, and Empyema.	2		
	iii. ILD & Occupational lung diseases like Silicosis, Asbestosis, Pneumoconiosis, Brucellosis, Farmer's Lung.	2		
	iv. Obstructive Airway Diseases (C.O.P.D. with Cor Pulmonale, Pulmonary Hypertension, Bronchial Asthma & Cystic Fibrosis)	3		
	v. Intensive Care Unit a) Infrastructure b) Instrumentation. c) Mechanical Ventilation (settings & monitoring) d) Assessment, monitoring & management of patient in I.C.U.	3		

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
	vi. Basic Life Support :Introduction & Demonstration	2		
	vii. Investigation: Normal & Abnormal 1. Chest X-ray 2. Blood Gas Analysis 3. PFT(Observation of conduction on patient)	2		
2	GENERAL MEDICINE, RHEUMATOLOGY & GERONTOLOGY:	15	05	20
	a. General Medicine i. Disorders of Endocrine system (Diabetes) Introduction, pathophysiology, types, role of physical activity, complications of diabetes (autonomic neuropathy, myopathy, weakness) & medications. ii. Thyroid, Pituitary & Adrenal conditions Cushing's syndrome iii. Obesity iv. Nutrition Deficiency Disease (Rickets, Vit. E, Vit. D, Vit. B , micro nutrients,(Zn, Se) v. Intoxication (Drug abuse; Alcohol, smoking, cocaine dependence)	7	2	
	b. Rheumatological Conditions i. Rheumatoid Arthritis ii. S L E iii. S S A iv. Gout v. Polymyositis vi. Fibro myalgia vii. Ankylosing spondylitis	5	2	
	c. Geriatric Conditions i. Aging Process (physiological changes due to aging) ii. CVS & RS complications iii. Osteoporosis	3	1	

RECOMMENDED TEXT BOOKS

1. API- Text book of Medicine, 5th edition
2. Medicine-- P.J. Mehta

RECOMMENDED REFERENCE BOOK

1. Principles & Practice of Medicine -- Davidson

CLINICAL - 10 HRS

1. History taking, Evaluation –General Examination & Systemic examination (Inspection, Palpation, Percussion & Auscultation)
2. Presentation and recording of Two cases Each in:
 - a. Muscular disorders
 - b. Respiratory Conditions
 - c. Cardio Vascular Conditions
 - d. Degenerative / Rheumatological Condition
 - e. Obesity
 - f. Nutritional disorders
 - g. Diabetes Mellitus & Metabolic bone disorders.

SCHEME OF UNIVERSITY EXAMINATION

THEORY		Marks
Medicine I-40 marks + I.A.:10 marks		50
Q-1 & Q- 2	SAQ Q-1 -to answer any FIVE out of SIX [5x3] * Based on topics – GENERAL MEDICINE, RHEUMATOLOGY & GERONTOLOGY	15 25
	SAQ Q-2-to answer any FIVE out of SIX [5X5] * Based on topics – CARDIOVASCULAR & RESPIRATORY MEDICINE	
Total Marks		40

Clinical Examination (COLLEGE EXAMINATION)	Marks
Conducted at the end of Preliminary examination	
1. General Medicine, Rheumatology & Gerontology -10 Marks	20
2. Cardio-Vascular & Respiratory Medicine -10 Marks	

INTERNAL ASSESSMENT:

1. One examination of Total 40 marks (Theory only)
2. Internal Assessment to be calculated out of 10 marks
3. Internal assessment as per University pattern.

MEDICINE-II **(Neurology & Paediatrics)**

(Didactic – 45 hrs + Clinical – 20 hrs) **TOTAL – 65 HRS**

COURSE DESCRIPTION:

This course intends to familiarize students with medical terminology & abbreviations for efficient & effective chart reviewing & documentation, It also explores select systemic diseases, focusing on epidemiology, etiology, pathology, histology as well as primary & secondary clinical characteristics & their management. It discusses & integrates subsequent medical management of Neurological & Paediatric conditions to formulate appropriate intervention, indications, precautions & contraindications.

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1	NEUROLOGY	25	10	35
2	PAEDIATRICS	20	10	30
	TOTAL	45	20	65

OBJECTIVES:

At the end of the course, the candidate will:

1. Be able to describe Aetiology, Pathophysiology, signs & Symptoms & Management of the various Neurological & Paediatric conditions.
2. Acquire skill of history taking and clinical examination of Neurological & Paediatric conditions as a part of clinical teaching.
3. Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.
4. Acquire knowledge in brief about intra-uterine development of the foetus.
5. Be able to describe normal development & growth of a child, importance of Immunization, breast-feeding & psychological aspect of development.
6. Be able to describe neuromuscular, musculoskeletal, cardio-vascular & respiratory conditions related to immunological conditions, nutritional deficiencies, infectious diseases, & genetically transmitted conditions.
7. Acquire skill of clinical examination of a neonate / child with respect to neurological, musculoskeletal & respiratory function.

SYLLABUS

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1	NEUROLOGY	25	10	35
	a. Introduction to Nervous System i. Applied anatomy ii. Applied physiology	1		
	b. Cerebro Vascular Accidents i. Thrombosis, Embolism, Haemorrhage ii. Level of Lesion & symptoms iii. Management	3	1	
	c. Extra Pyramidal lesions – Basal Ganglia i. Parkinsonism ii. Athetosis, Chorea, Dystonia	2	1	
	d. Differential diagnosis of muscle wasting i. Approach to neuropathies ii. Myopathies and neuromuscular junction disorders.	5	2	
	e. Disorders of Anterior Horn cell with differential diagnosis of Motor Neuron Disease, S.M.A., Syringomyelia, Peroneal Muscular Atrophy, and Poliomyelitis.	2	2	
	f. Multiple Sclerosis	1		
	g. Infections of the nervous system: Encephalitis, Neurosyphilis, H.I.V. infection, Herpes, Meningitis, Tabes Dorsalis	2		
	h. Tetanus	1		
	i. Epilepsy	1		
	j. Alzheimer's Disease, Dementia	1		
	k. Disorders of cerebellar function	1	2	
	l. Disorders of cranial nerves & Special Senses	2		
	m. Disorders of Spinal cord i. Syndromes ii. Bladder dysfunction iii. Autonomic dysfunction	3	2	

~~103~~

102

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
2	PAEDIATRICS	20	10	30
	a. Normal intra-uterine development of foetus with special reference to Central Nervous System, Neuromuscular System, Cardiovascular Respiratory System	1		
	b. Normal development & growth	2		
	c. Immunization and breast-feeding	1	1	
	d. Sepsis, Prematurity, Asphyxia Hyperbilirubinemia and birth injuries	1		
	e. Cerebral Palsy- Medical Management including early intervention	2	2	
	f. Developmental disorders associated with spinal cord: Spinal Dysraphism, Spina Bifida, Meningocele, Myelomeningocele, hydrocephalus	1	2	
	g. Common infections			
	a) C.N.S.& Peripheral Nervous System	2	1	
	b) Typhoid, Rubella, Mumps, Measles, Diphtheria, Chicken gunia, Malaria			
	h. Epilepsy	1		
	i. Mental Retardation and Down's Syndrome	1	1	
	j. Genetically transmitted neuro-muscular conditions	2		
	k. Malnutrition and Vitamin deficiency conditions	1		
	l. Juvenile R. A. & other Rheumatologic conditions of Musculoskeletal system	1	1	
	m. Common diseases of the Respiratory system: Asthma, Bronchitis, Bronchiectasis, T.B., Pneumonia, Lung collapse, Pleural effusion.	2	2	
	n. Respiratory distress in neonate	1		
	o. Rheumatic & Congenital Heart disease	1		

104

103

CLINICAL (10 HRS)

1. History taking and general examination in neonate and child
2. Examination of neonate and neonatal reflexes.
3. Examination of the nervous system
4. Examination of respiratory system
5. Examination of cardiovascular system
6. Examination of musculoskeletal system
7. Ventilatory care in neonate and child.

RECOMMENDED TEXT BOOKS:

1. Essentials of Paediatrics – O.P. Ghai-Inter Print publications
2. Clinical Paediatrics - Meherban Singh

SCHEME OF UNIVERSITY EXAMINATION

THEORY		Marks
Medicine II-40 marks + I.A.:10 marks		50
Q-1 & Q- 2	SAQ Q-1 -to answer any FOUR out of FIVE [4x5] * Based on topics – NEUROLOGY	20
	SAQ Q-2- to answer any FOUR out of FIVE [4x5] * Based on topics – PAEDIATRICS	20
Total Marks		40

Clinical Examination (COLLEGE EXAMINATION)	Marks
Conducted at the end of Preliminary examination	20
1. Neurology -10 Marks	
2. Paediatrics -10 Marks	

INTERNAL ASSESSMENT:

1. One examination of Total 40 marks (Theory only)
2. Internal Assessment to be calculated out of 10 marks
3. Internal assessment as per University pattern.

105

104

COMMUNITY HEALTH & SOCIOLOGY

TOTAL 60 HRS

A-COMMUNITY HEALTH

(Didactic- 30 Hours + Visits -10 Hours) Total 40hrs

COURSE DESCRIPTION:

The course is organized to introduce the concept of health care and management issues in Health Services. It will help them in assuming a leadership role in their profession and assume the responsibility of guidance. It will help them assume wider responsibilities at all levels of health services. It will help them in improving their performance through better understanding of the health services at all the levels of community.

OBJECTIVES:

At the end of the course, the candidate shall be able to understand the contents given in the syllabus.

SYLLABUS

Sr. No.	Topics	Didactic Hours
1	GENERAL CONCEPTS & DETERMINANTS OF HEALTH & DISEASES:	04
	a. National & International Definition of Health, Role of Socio-Economic & Cultural Environment in Health & Disease.	1
	b. Epidemiology – Definition & scope, uses with relevance to physiotherapy	1
	c. Environmental Hygiene including man & his surrounding, Occupational & Industrial hygiene, Village & Town Sanitation, Bacteriology of Water, Milk, & Food Hygiene.	2
2	NATIONAL PUBLIC HEALTH ADMINISTRATION	1
3	HEALTHCARE DELIVERY SYSTEM:	2
	a. Healthcare Delivery System of India	
	b. National Health Programmes	
	c. Role of W.H.O.	
	d. Millennium Development Goals for All	
4	PRIMARY HEALTHCARE:	1
	a. Definition	
	b. Principles,	
	c. Elements & its application	
5	EPIDEMIOLOGY OF SOCIO-ECONOMICAL & CULTURAL ISSUES - related to morbidity in relation to the following vulnerable groups.	6
Sr. No.	Topics	Didactic Hours
	a. Women:	1
	i. Pregnant and lactating women, maternal health (ANC,PNC,INC)	
	ii. Perimenopausal women"s" health: physical & psychological	

	b. Infants: (Low Birth Weight, Breast feeding, Complimentary feeding, IYCN, IMNCI Vaccine preventable diseases, Immunization programmes, Infant and childhood mortality)	2
	c. Children: Child health, Growth monitoring under five clinic, ICDS, PEM	2
	d. School aged population health: Early detection and prevention of disabilities, behavioral problems	1
6	DEMOGRAPHY AND OBJECTIVES OF NATIONAL FAMILY WELFARE PROGRAMMES AND NATIONAL POPULATION POLICY	2
7	COMMUNICABLE DISEASES An over-view [including prevention & control] T.B., H.I.V., Leprosy, Vector borne diseases- Malaria / Filariasis / Dengue/ Chikungunya/ Japanese encephalitis.	3
8	NON COMMUNICABLE DISEASES: Diabetes Mellitus, Hypertension, Coronary Heart Disease / Obesity / Blindness/ Accidents /Stroke/ Cancer.	2
9	NUTRITIONAL DISEASES: Malnutrition, Nutritional disorders and National nutrition programmes, Osteomalacia, Rickets, Neuropathies due to Vitamin - deficiency, Skeletal Deformities.	4
10	MENTAL HEALTH: a. Socio-economical & cultural aspects b. Substance abuse and addiction –tobacco, alcohol and others	2
11	OCCUPATIONAL HEALTH: Occupational diseases & hazards - definition, scope, prevention & legislations, Occupational lung diseases & Physical injuries/pains.	1
12	GERIATRIC HEALTH: a. Physical, social, economical aspects b. Osteoporosis, Malnutrition, Alzheimer's disease, Parkinson's disease	1
13	HOSPITAL WASTE MANAGEMENT: Universal Safety Precautions, Immunization of health care providers including their vaccination.	1
COMMUNITY VISITS: Community health centers: Urban & Rural – 10 Hours		

RECOMMENDED TEXT BOOKS

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

107

106

B- SOCIOLOGY

Total 20 hrs

COURSE DESCRIPTION:

This course covers the basic knowledge and concepts of sociology to with the aim to help them understand the impact of group, culture and environment on the behavior and health of the patients. Make them realize the importance of the relationship of the physical therapist and the patient and the environment around them.

OBJECTIVES:

At the end of the course, the candidate shall be able to understand the contents given in the syllabus.

SYLLABUS

Sr. No.	Topics	Didactic Hours
1	INTRODUCTION: Definition & Relevance with Physiotherapy and social factors affecting Health status, Decision Making in taking treatment.	1
2	SOCIALIZATION: Definition, Influence, of Social Factors, on Personality, Socialization in the Hospital & Rehabilitation of the patients.	1
3	SOCIAL GROUPS: Concepts, Influence of formal & informal groups of Health & Diseases, Role of Primary & Secondary Groups in the Hospital & Rehabilitation Setting.	1
4	FAMILY: Influence on human personality, Role of family in health and disease	1
5	COMMUNITY ROLE: Rural & Urban communities in Public Health, Role of community in determining Beliefs, Practices & Home Remedies in Treatment.	1
6	CULTURE: Component's impact on human behavior, Role of community in determining beliefs, practices and health seeking behavior and home remedies	1
7	SOCIAL CHANGE FACTORS: Human Adaptation, Stress, Deviance, Health Programme Role of Social Planning in the improvement of Health & in Rehabilitation.	1

108

107

70

8	SOCIAL CONTROL: Definition, Role of norms, Folkways, Customs, Morals, Religion, Law & other means of social controls in the regulation of Human Behavior, Social Deviance & Disease	1
9	POPULATION GROUPS : a. Children: Street children, Child labour, Juvenile delinquency b. Women's: Victims of domestic violence and addiction, C.S.W., physically and /or mentally challenged c. Role of NGOs, Social support systems	5
10	Social Security & Social Legislation in relation to the Disabled	1
11	Role of a Medical Social Worker	1
12	Sociology of Brain Death and/ or Organ donation:	1
13	SOCIAL PROBLEMS: Population explosion, Poverty, Dowry, Illiteracy- Causes, prevention & Control measures.	4

RECOMMENDED TEXT BOOKS

1. An Introduction to Sociology – Sachdeva & Bhushan
2. Indian Social Problems - Madan, Vol-I-Madras

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY		Marks
80 MARKS + I.A. – 20 MARKS		
* The question paper will give appropriate weightage to all the topics in the syllabus.		100
Section A- Q-1 &Q-2	Based on COMMUNITY MEDICINE SAQ Q-1 –to answer any FIVE out of SIX [5x7] LAQ Q2-to answer any ONE out of TWO [1 x15]	35 15
Section B-Q-3	Questions based On SOCIOLOGY SAQ Q-3-to answer any SIX out of SEVEN [6x5]	30
Total Marks		80

INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination of 80 marks each
TOTAL - 160 marks
2. Internal Assessment to be calculated out of 20 marks.
3. Internal assessment as per University pattern.

408
108

GYNAECOLOGY & OBSTETRICS (COLLEGE EXAMINATION)

(Didactic - 20 hrs + Clinical – 10 hrs) **TOTAL 30 HRS**

COURSE DESCRIPTION:

This course intends to provide introduction to women's health which includes problems related to pregnancy, osteoporosis, and other disorders specific to women. Topics will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area. It also emphasises on evaluation & medical treatment of pelvic floor dysfunctions.

Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours
1	PHYSIOLOGY OF PUBERTY & MENSTRUATION	2		2
2	PHYSIOLOGY OF PREGNANCY	3		3
3	PHYSIOLOGY OF LABOUR	4		4
4	POST NATAL PERIOD	2	5	7
5	INFERTILITY	1		1
6	URO-GENITAL DYSFUNCTION	3	1	4
7	GYNAECOLOGICAL SURGERIES	2	1	3
8	PRE, PERI & POST MENOPAUSE	2	1	3
9	PELVIC INFLAMMATORY DISEASES	1	2	3
	TOTAL	20	10	30

OBJECTIVES:

At the end of the course, student will be able to describe:

- a) Normal & abnormal physiological events, complications and management during Puberty.
- b) Normal and abnormal physiological events, complications and management of pregnancy (Pregnancy, Labour, Puerperium)
- c) Normal and abnormal physiological events, complications and management of menopause.
- d) Normal and abnormal physiological events, complications and management of urogenital dysfunction.(Antenatal, Postnatal, during menopause)
- e) The student will be able to acquire the cognitive skill of clinical examination of the pelvic floor.

H10
109

SYLLABUS

Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours
1	PHYSIOLOGY OF PUBERTY & MENSTRUATION: Abnormalities & common problems of Menstruation	2		2
2	PHYSIOLOGY OF PREGNANCY : a. Development of the foetus, Normal/ Abnormal / multiple gestations, b. Common Complications during pregnancy: i. Anaemia, ii. PIH iii. Eclampsia iv. Diabetes, v. Hepatitis, vi. TORCH infection or HIV	3		3
3	PHYSIOLOGY OF LABOUR a. Normal – Events of Ist, IInd & IIIrd Stages of labour b. Complications during labour & management c. Caesarean section- elective/ emergency & post operative care	4		4
4	POST NATAL PERIOD a. Puerperium & Lactation b. Complications of repeated child bearing with small gaps c. Methods of contraception	2	5	7
5	INFERTILITY a. Management with emphasis on PCOS/PCOD	1		1
6	URO-GENITAL DYSFUNCTION a. Uterine prolapse – Classification & Management (Conservative / Surgical) b. ii) Cystocoele, Rectocoele, Enterocoele, Urethrocoele	3	1	4
7	GYNAECOLOGICAL SURGERIES (Pre and post surgical management)	2	2	4
8	PRE, PERI & POST MENOPAUSE a. Physiology b. Complications & c. Management	2	1	3
9	PELVIC INFLAMMATORY DISEASES with special emphasis to backache due to Gynaecological / Obstetrical conditions	1	1	2

CLINICAL (10 hrs)

1. **Evaluation & presentation** of One case Each in:

- a) Uro-genital dysfunction
- b) Antenatal care
- c) Postnatal care
- d) Following normal labour
- e) Following Caesarean section
- f) Pelvic Inflammatory Diseases

2. **Observation** – One Normal & One Caesarean delivery & One Hysterectomy / Repair of the Uro-genital Prolapse

RECOMMENDED TEXT BOOKS

1. Text book of Gynaecology – Datta – New Central Book Agency
2. Text book of Obstetrics --Datta – New Central Book Agency

SCHEME OF COLLEGE EXAMINATION (THEORY ONLY)

THEORY ONLY		Marks
50 marks [There shall be no LAQ in this paper]		
*Emphasis to be given to the Urogenital dysfunction / Obstetrical conditions / age related Gynaecological problems		50
Section-A-Q-1	SAQ-to answer any FIVE out of SIX [5x3]	15
Section-B-Q-2	SAQ-to answer any FIVE out of SIX [5x7]	35
Total Marks		50
Passing in the exam is Mandatory		
Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than 50%.		

DERMATOLOGY

(COLLEGE EXAMINATION)

TOTAL - 10 HRS

OBJECTIVES:

At the end of the course, the student will be able to describe the Pathophysiology, Signs & Symptoms, Clinical Features, Examination & Management of Common Skin Conditions like Leprosy, Psoriasis, Bacterial & Fungal Infections of the skin, connective tissue disorder, hand eczema, drug reaction, cutaneous manifestation of HIV, & Sexually Transmitted Diseases

SYLLABUS

Sr. No.	Topics	Didactic Hours
1	Introduction to Dermatology, basic skin lesions & History taking	1
2	a. Skin infections (Part I) – Scabies / Pediculosis / Bacterial infections b. Skin infection (Part II) Viral / Fungal / Cutaneous T.B.	2
3	Connective tissue disorder-Scleroderma, S.L.E., Dermatomyositis, Morphia	1
4	a. Hand eczema, Psoriasis, Psoriatic arthritis, Reiter's Syndrome b. Cutaneous hyperplasia-Keloid, Hypertrophic scar, Corn, Callosity	1
5	Leprosy & Deformity	2
6	a. Cutaneous Manifestation of HIV b. Hyperhidrosis	1
7	a. Drug reaction b. Urticaria Genodermatosis -Epidermolysis bullosa c. Sexually Transmitted skin lesions PUVA Treatment	2
TOTAL		10

RECOMMENDED TEXT BOOK

1. Textbook of dermatology – Dr. Khopkar

SCHEME OF COLLEGE EXAMINATION (THEORY ONLY)

THEORY		Marks
25 marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		25
Section-A- Q-1	SAQ - Answer any FIVE out of SIX [5x5]	25
Total Marks		25
Passing in the exam is Mandatory		
Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than 50%.		

FUNCTIONAL DIAGNOSIS & PHYSIOTHERAPEUTIC SKILLS

(Didactic - 135 hrs + Clinical – 325 hrs) TOTAL 460 HRS

COURSE DESCRIPTION:

1. Functional Diagnosis & Physiotherapeutic Skills is a stepping stone to introduce students to actual concepts of PT assessment and later to the treatment concepts
2. Functional Diagnosis focuses on the assessment of all the body systems i.e. Musculoskeletal, Neurological and Cardiovascular-Respiratory in order to study the various impairments and their impact on activity and participation of the individual taking into consideration the contextual factors as well. It also emphasizes on the clinical reasoning of the underlying components of a universal evaluation tool (ICF) for a better understanding of the patient in a holistic manner. The student is also subjected to learn basics of manipulative, cardiovascular-respiratory and neuro-therapeutic skills on models so that he/she will be able to apply these principles eventually on patients.
3. The student will also gain a sound knowledge of electro-diagnosis, which is an integral part of Functional Diagnosis.

Sr. No.	Topic	Didactic Hours	Practical / Laboratory Skills Hours	Total Hours
1.	<u>SECTION-I</u> INTERNATIONAL CLASSIFICATION OF FUNCTION, DISABILITY & HEALTH (ICF)	05	-	005
2.	<u>SECTION-II</u> MUSCULOSKELETAL EVALUATION & MANIPULATIVE SKILLS	40	140	180
3.	<u>SECTION-III</u> CARDIO VASCULAR RESPIRATORY EVALUATION & RELATED SKILLS	40	055	095
4.	<u>SECTION – IV</u>NEUROTHERAPEUTIC EVALUATION & ELECTRO DIAGNOSIS	50	130	180
TOTAL		135	325	460

OBJECTIVES:**Cognitive:**

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

1. Understand the use of ICF.
2. Acquire the knowledge of human growth and development from new life to birth and adulthood
3. Understand structure and function of nerve and muscle as a base for understanding the electro-diagnostic assessment.
4. Understand the use of appropriate tools or instruments of assessment in Musculoskeletal, Neurological and Cardio-vascular conditions.
5. Understand the theoretical basis and principles of manipulative skills, neurotherapeutic skills and skills of cardiopulmonary care and resuscitation
6. Document results of assessment to evaluate the patient from time to time.

Psychomotor:

Student will be able to:

1. Perform assessment of measures of body structures and functions related to tissue mechanics.
2. Perform assessment of measures of body structures and functions related to motor control affecting activity and participation, quality of life and independence.
3. Perform the skill of electro-diagnosis (SD Curve) and observe skills of EMG and NCV studies, to understand the documentation of finding of these studies.
4. Interpretation and analysis of assessment and findings.
5. Demonstrate skills of manual therapy musculoskeletal, neurotherapeutics and cardiovascular and respiratory skills on models (Laboratory work).

Affective:

Student will be able to:

1. Select appropriate assessment techniques to facilitate safety, sensitive practices in patient comfort and effectiveness.
2. Demonstrate safe, respectful and effective performance of physical therapy handling techniques taking into account patient's clinical condition, need for privacy, resources available and the environment.
3. Follow the principles of appropriate handling technique that is draping, hand placement, body part positioning, manual techniques, lifting and transfer techniques.
4. Communicate with patients and their families/caregivers regarding the need and uses of various assessment techniques.

SYLLABUS

Sr. No.	Topic	Didactic Hours	Practical/ Clinical Hours	Total Hours
1	SECTION I: Functional Diagnosis using International Classification of Function, Disability & Health (I.C.F.) (Applicable for all the Sections mentioned below)	5	-	5
2	SECTION II:			
	MUSCULOSKELETAL EVALUATION AND MANIPULATIVE SKILLS (Didactic-40 + Practical 140= 180 Hours)			
	a. Assessment of Musculoskeletal System:	03	02	05
	<ul style="list-style-type: none"> i. Soft tissue flexibility ii. Joint mobility iii. Muscle strength & Endurance iv. Trick movements v. Sensations vi. Limb length vii. Abnormal posture viii. Gait deviations due to musculoskeletal dysfunction 			
	b. Assessment of Joints with special tests:	10	08	18
	i. Cervical Spine: Foraminal compression, Distraction, Shoulder depression, vertebral artery, Dizziness tests.			
	ii. Shoulder: Yergason's, Speed's, Drop-Arm, Supraspinatus, Impingement, Anterior & Posterior Apprehension, Allen, Adson.			
	iii. Elbow: Cozen's, Miller's, Tinel's sign			
	iv. Forearm, Wrist & Hand: Phalen's, Bunnel-Littler, Froment's sign			
	v. Lumbar Spine: Schober's, SLR, Prone Knee Bending, Slump.			
	vi. Sacro Iliac joint: Faber- Patrick's, Gaenslen, Gillet, March			

Sr. No	Topic	Didactic Hours	Practical / Clinical Hours	Total Hours
	vii. Hip: Nelaton's line, Bryant's triangle, Thomas, Ober's, Tripod sign, Trendlenburg sign,			
	viii. Knee: Tests for collateral & cruciate ligaments (valgus, varus, Lachman, Sag, Drawer's, McMurray's, Fluctuation, Patellar tap, Q- angle, Clarke)			
	ix. Ankle & Foot: Anterior Drawer, Talar Tilt, Homan's & Moses (for D.V.T.)			
	c. Response of soft tissues to trauma :	02		02
	i. Trigger points ii. Spasm iii. Ligament Sprains iv. Muscle Strains			
	d. Basics in Manual Therapy and Applications with Clinical Reasoning:	05	05	10
	i. Assessment of Articular and extra-articular soft tissue status a) Contractile tissues b) Non contractile tissues ii. Examination of joint integrity a) Accessory movement b) End feel			
	e. Examination of musculoskeletal Dysfunction :	06	10	16
	i. Subjective examination ii. Objective examination iii. Special tests iv. Functional Diagnosis using ICF			

Sr. No.	Topic	Didactic Hours	Practical/ Clinical Hours	Total Hours
	f. Assessment of Pain:	04	05	09
	i. Types of pain: Somatic, Somatic referred, Neurogenic, Visceral ii. Subjective Assessment: a) Location, duration, progression, distribution, quality, diurnal variations, modifying factors. b) Severity, nature of pain, tissue irritability iii. Objective Measurement & Documentation- a) Visual Analogue Scale (V.A.S). b) Numerical Rating Scale(N.R.S.) c) McGill's modified questionnaire(including Body charts)	Assessment By V.A.S. & N.R.S.		
	g. Basic principles, indications, contra indications of mobilization skills for joints and Soft tissues:	10	110	120
	i. Maitland ii. Mulligan iii. Kaltenborn iv. Mckenzie v. Cyriax vi. Myofascial Release Technique vii. Muscle Energy Technique viii. Neural Tissue Mobilization (Neuro Dynamic Testing)	Practice of Manual Therapy in Kaltenborn, Maitland's, M.E.T. & Neural Mobilisation on extremities on Models only		
3	SECTION III: CARDIO VASCULAR RESPIRATORY EVALUATION & RELATED SKILLS (Didactic-40 + Practical 55= 95 Hours)			
	a. Assessment of Cardio Vascular & Pulmonary System:	25	25	50
	i. Vital parameters ii. Chest expansion iii. Symmetry of chest movement iv. Breath Holding Test v. Breath Sounds vi. Rate of Perceived Exertion (R.P.E.) vii. Energy Systems & Exercise Physiology –	Identification of abnormal breath sounds, measurement of chest expansion, pattern of breathing, Vital parameters, Grades of Dyspnoea, Rate of Perceived Exertion,		

Sr. No.	Topic	Didactic Hours	Practical /Clinical Hours	Total Hours
	a) Physiological response to immobility and activity. b) Aerobic & Anaerobic metabolisms c) Evaluation of Functional Capacity using sub maximal tests (Exercise Tolerance – Six Minutes Walk test) d) Theoretical bases of different protocols for maximal exercise testing (e.g.: Bruce Protocol, Modified Bruce Protocol, Balke) viii. Interpretation of reports – A.B.G, P.F.T., P.E.F.R., E.C.G- (Normal & Variations due to Ischemia & Infarction), X-ray Chest, Biochemical Reports ix. Ankle Brachial Index x. Tests for Peripheral Arterial & Venous circulation.	Ankle Brachial Index, Exercise Tolerance Testing – 6 Minutes Walk Test		
	b. Examination of Cardiovascular Respiratory Dysfunction	05	05	10
	i. Subjective examination ii. Objective examination iii. Special tests: Exercise Tolerance Testing – 6 Minutes Walk Test, Breath Holding Test, P.E.F.R. iv. Functional Diagnosis using I.C.F.			
	c. Assessment of Fitness & Health	10	25	35
	i. Screening for risk factors ii. Body composition-B.M.I., use of skin fold calipers, Girth measurement iii. Physical fitness: Flexibility, Strength, Endurance, Agility iv. Physical Activity Readiness Questionnaire v. Screening for health and fitness in childhood, adulthood and geriatric group vi. Quality of life vii. Principles & components of exercise prescription for healthy			

Sr. No.	Topic	Didactic Hours	Practical/ Clinical Hours	Total Hours
4	SECTION IV: NEUROTHERAPEUTIC EVALUATION & ELECTRO DIAGNOSIS (Didactic-50 + Practical 130= 180 Hours)			
	a. General principles of Human development & maturation	07	05	12
	i. Aspects a) Physical b) motor c) Sensory d) Cognitive & Perceptive e) Emotional f) Social ii. Factors influencing human development & growth: a) Biological b) Environmental inherited iii. Principles of maturation in general & anatomical directional pattern – a) Cephalo – caudal b) Proximo – distal c) Centro – lateral d) Mass to specific pattern e) Gross to fine motor development f) Reflex maturation tests iv. Development in specific fields - Oromotor development, sensory development, neurodevelopment of hand function.			
	b. Basics in Neuro Therapeutics Skills & Applications with Clinical reasoning.	20	55	75
	i. Principles, Technique & Indications for Application of a) Bobath b) Neuro Developmental Technique c) Rood's Technique d) P.N.F. e) Brunnstrom, f) Techniques of Motor Relearning Program (M.R.P.)	Therapeutic Skills of N.D.T., P.N.F., Bobath, Rood's Technique & Brunnstrom, M.R.P. on models only		

Sr. No.	Topic	Didactic Hours	Pract/Clinic Hours	Total Hours
	c. Assessment of Movement Dysfunction	10	25	35
	<ul style="list-style-type: none"> i. Higher functions ii. Cranial nerves iii. Sensations , sensory organization & body image iv. Joint mobility v. Tone vi. Reflexes-Superficial & Deep vii. Voluntary control viii. Muscle Strength ix. Co-ordination x. Balance xi. Endurance xii. Trick movements xiii. Limb Length xiv. Posture deviations xv. Gait deviations due to neurological dysfunction xvi. Functional Diagnosis using I.C.F. xvii. Interpretation of Electro diagnostic findings, routine Biochemical investigations 			
	d. Electro diagnosis	10	30	40
	<ul style="list-style-type: none"> i. Physiology of resting membrane potential, action potential, Propagation of Action Potential ii. Physiology of muscle contraction iii. Motor unit & Recruitment pattern of motor unit – Size principle iv. Therapeutic current –as a tool for electro diagnosis. <ul style="list-style-type: none"> a). Electrophysiology of muscle & nerve b) Faradic Galvanic Test, Strength Duration Curve-tests should be carried out on relevant patients, c) Test for Sensory & Pain Threshold/ Pain Tolerance – technique only v. Electro-Myography <ul style="list-style-type: none"> a) Definition Instrumentation – Basic components like C.R.O., Filter, Amplifier & Preamplifier, and Types of Electrodes 		Test for S.D.C. & Faradic/ Galvanic Test	

Sr. No.	Topic	Didactic Hours	Practical/ Clinical Hours	Total Hours
	b) Normal & Abnormal E.M.G pattern i. at rest ii. on minimal contraction iii. on maximal contraction c) Nerve Conduction Studies i. Principles & Technique ii. F wave iii. H reflex			
	e. SCALES: Berg Balance, Modified Ashworth, F.I.M., Barthel Index, G.C.S., D.G.I., M.M.S., S.T.R.E.A.M. & A.S.I.A.	3	15	18

DOCUMENTATION:	
A	Documentation & Interpretation of following investigations: i. Electro diagnosis : <u>2 each</u> a) S.D.C. b) Faradic Galvanic Test c) E.M.G. & N.C. Studies ii. Cardio Vascular & Pulmonary: (1 each) – A.B.G, P.F.T., E.C.G, X-ray Chest, Exercise Tolerance Test. iii. Neurological Scales (1 each) – Modified Ashworth, Berg's Balance, D.G.I., Glasgow iv. Coma, Barthel Index, F.I.M.
B	Case presentation with Functional diagnosis : i. Total 12 cases ii. Three cases each in – a) Musculoskeletal b) Neurological c) Cardiovascular & Respiratory (<u>Including General Medical & Surgical Cases</u>) d) General & Community Health (<u>Including Fitness & Health, Women & Child Health, Occupation Health</u>)
To maintain the Record/ Journal of the term work & to get each assignment duly signed by respective Head of the Dept.	

RECOMMENDED TEXT BOOKS

1. Orthopaedic Physical Examination –Magee
2. Clinical Electro Therapy – Nelson – Currier --- Appleton & Lange publication
3. Clinical Electromyography – Mishra
4. Therapeutic Exercises - Colby & Kisner
5. Physical Rehabilitation, Assessment and treatment - Susan B O's Sullivan
6. Neurological Examination - John Patten

RECOMMENDED REFERENCE BOOKS

1. Maitland's book on Manual therapy,
2. Mobilisation of Extremities – Kaltborn
3. Clinical Electromyography – Kimura
4. Orthopaedic Physical therapy – Donnatelli
5. NAGS, SNAGS and MWMS - Brian Mulligan
6. Exercise & Heart – Wenger
7. Exercise Physiology – William D Mc'Ardle
8. Facilitation techniques based on NDT principles - Lois Bly Allison Whiteside
9. Movement therapy in Hemiplegia - Brunnstrom
10. Cash textbook of Physiotherapy in neurological conditions - Patricia Downie
11. Physical Dysfunction - Trombly Scoot
12. Infant Motor Development- Jan Piek
13. Neurology & Neurosurgery Illustrated (3rd edition)-Bone & Callander
14. Neuro-developmental Therapy –Janett Howle

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS		Marks
* The question paper will give appropriate weightage to all the topics in the syllabus.		100
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15]	50
	Q-2- answer any FIVE out of SIX [5x 7 =35]	
Section B -L.A.Q.	* LAQ's Based on topics- Simulated case on all of the sections on ICF pattern (Section II,III & IV) Q-3] L.A.Q (any ONE out of TWO)	30
	a) b) 15 marks	
	Q-4] L.A.Q (any ONE out of TWO)	
	a) b) 15 marks LAQ should give break up of 15 marks – e.g. [3 +5+7]	
Total Marks		80

PRACTICAL 80 MARKS + I.A. – 20 MARKS		Marks
		100
LONG CASE	<p>[Time maximum 30 minutes for students for evaluation]</p> <p>1. Psychomotor & affective: Skill of History taking [05 marks] Skill of clinical examination [15 marks] Skill of objective diagnostic procedure [10 marks]</p> <p>2. Cognitive : • Ability to justify bases for functional diagnosis by I.C.F. [10 marks]</p> <p>[To be evaluated in cognitive, psychomotor and affective domains.]</p>	40
SHORT CASE	<p>Two Short cases on</p> <p>1. Mobilization Technique: Kaltenborn, Maitland, M.E.T. or Neural Mobilisation (On Models)</p> <p>2. Neuro Therapeutic Skills: N.D.T. / P.N.F. / Rood's / Brunnstrom</p> <p>3. Electro Diagnosis: S.D. Curve / Faradic Galvanic Test (On Patient)</p> <p>4. Exercise Tolerance Test: Six Minutes Walk Test (On Model)</p>	20
SPOTS	<p>5 spots - (5 x2 Marks= 10 Marks) 3minutes for each spot</p> <p>a) X ray (on section 2/3/4) b) Pulmonary Function Test c) Blood gas analysis d) E.C.G. e) E.M.G. / N.C. studies</p>	10
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis with I.C.F.	5
COMMUNICATION SKILLS		5
Total Marks		80

INTERNAL ASSESSMENT:

- 1. Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each TOTAL - 160 marks**
- 2. Internal Assessment to be calculated out of 20 marks**
- 3. In Practicals of Terminal & Preliminary examinations Spots will be of 15 marks instead of 10 marks (3 marks X 5), No marks will be allotted for the journal in Terminal & Preliminary examinations**
- 4. Internal assessment as per University pattern**

SCHEME OF EXAMINATIONS AT A GLANCE – III BPT

SUBJECTS	UNIVERSITY EXAMINATIONS						COLLEGE LEVEL EXAMS (Theory only)
	Theory			Clinical / Practical			
	University	I.A.	Total	University	I.A.	Total	
Surgery-I (General Surgery + Cardio vascular & Thoracic Surgery + Plastic / Reconstructive Surgery)	40	10	50	---	---	---	---
Surgery-II (Orthopaedics)	40	10	50	---	---	---	---
Medicine-I (Cardiovascular Respiratory Medicine + General Medicine + Gerontology)	40	10	50	---	---	---	---
Medicine-II (Neurology & Paediatrics)	40	10	50	---	---	---	---
Community Health & Sociology	80	20	100	---	---	---	---
Functional Diagnosis and Physiotherapeutic Skills	80	20	100	80	20	100	---
Gynaecology & Obstetrics	---	---	---	---	---	---	50
Dermatology	---	---	---	---	---	---	25
Total	320	80	400	80	20	100	75

IV BPT SYLLABUS

Transcript Hrs-1465

Sr. No.	Subjects	Theory Hours	Practical / Clinical Hours	Total Hours
PROFESSIONAL PRACTICE				
1	Professional Practice & Ethics <i>(College Examination)</i>	015	--	015
2	Administration, Management & Marketing <i>(College Examination)</i>	020	--	020
PHYSIOTHERAPY				
3	Musculoskeletal Physiotherapy	060	140	200
4	Neuro Physiotherapy	065	135	200
5	Cardiovascular-Respiratory Physiotherapy (Including Critical Care)	060	140	200
6	Community Physiotherapy	085	115	200
7	Principles of Bio-engineering <i>(College Examination)</i>	030	-	030
8	Research Methodology & Biostatistics <i>(College Examination)</i>	040	-	040
9	Seminar (including I.C.F.)	-	060	060
10	Supervised clinical practice -During each clinical assignment, the student shall evaluate, functionally diagnose, plan & practice clinical skills on patients in consultation with the qualified physiotherapist staff	-	500	500
TOTAL		375	1090	1465

PROFESSIONAL PRACTICE AND ETHICS

(COLLEGE EXAMINATION)

Total -60Hrs (I to IV year)

COURSE DESCRIPTION:

This subject will be taught in continuum from first year to final year. An examination will be conducted only in final year. Professional and ethical practice curriculum content addresses the Knowledge, Skills and Behaviors required by the physiotherapist in a range of practice relationships and roles. The course will discuss the role, responsibility, ethics administration issues and accountability of the physical therapists. The course will also cover the history and change in the profession, responsibilities of the professional to the profession, the public and to the health care team. This includes the application of professional and ethical reasoning and decision-making strategies and professional communication.

Sr. No.	Topics	I BPT	II BPT	III BPT	IV BPT	Total Hours
1	PROFESSIONAL ISSUES & ETHICS	15 hrs	15 hrs	15 hrs	15 hrs	60

OBJECTIVES:

At the end of the course, the student will be compliant in following domains:

Cognitive: The student will

1. Be able to understand the moral values and meaning of ethics
2. Be able to learn and apply ethical code of conduct in fields of clinical practice, learning, teaching, research and physiotherapist-patient relationship
3. Acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals
4. Will acquire the knowledge of the basics in Managerial & Management skills, & use of information technology in professional Practice

Psychomotor: The student will be able to:

1. Develop psychomotor skills for physiotherapist-patient relationship
2. Develop the skill to evaluate and make decisions for plan of management based on sociocultural values and referral practice

Affective: The student will be able to:

1. Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society and co-professionals
2. Develop bedside behavior, respect & maintain patients' confidentiality

SYLLABUS

Sr. No.	Topics	Didactic Hours	Visits/ Supervision Hours	Total Hours
I BPT	1. Introduction to the history of Physiotherapy.	02	05	15
	2. Orientation to the curriculum, clinical areas and geographical location.	03		
	3. Concept of morality and ethics	03		
	4. Concept of professionalism and Professional dress code	02		
II BPT	1. Ethical code of conduct	03	10	15
	2. Communication skills			
	a. Physiotherapist –Patient Relationship b. INTERVIEWING -Types of interview, Skills of interviewing	01 01		
III BPT	1. Collecting data on psychosocial factors in Medicine, Surgery, Reproductive Health, Paediatrics	04	05	15
	2. Inter professional communication.	03		
	3. Ethics in clinical practice	03		
IV BPT	1. Roles of Physiotherapist as patient manager, Consultant, Critical inquirer, Educator, Administrator	05	---	15
	2. Laws and regulations	02		
	3. Professional development, competence and expertise	02		
	4. Professional bodies	02		
	5. Ethics in Research	01		
	6. Ethics in Teaching	02		
	7. Role of W.C.P.T. & Council	01		
TOTAL		40	20	60

RECOMMENDED REFERENCE LITERATURE

1. Rules & Regulation of Indian Association of Physiotherapists
2. W.C.P.T. ethics (from their website)
3. Gazette of Maharashtra Council for Occupational therapists & Physiotherapists

SCHEME OF COLLEGE EXAMINATION

THEORY ONLY [There shall be no LAQ in this paper]		Marks
* The question paper will give appropriate weightage to all the topics in the syllabus.		50
Q-1 & Q2	SAQ-to answer any FIVE out of SIX [5 x 3]	15
	SAQ – to answer any FIVE out of SIX [5 x 7]	35
Total Marks		50
Passing in the examination is Mandatory Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than 50%.		

**ADMINISTRATION, MANAGEMENT
& MARKETING
(COLLEGE EXAMINATION)**

Total – 20 HRS

COURSE DESCRIPTION:

This curriculum content addresses the Knowledge, Skills and Behaviors required of the physiotherapist in a range of practice relationships and roles. The course will discuss the role, responsibility, administration issues of the physiotherapists. The course will also cover responsibilities of the professional to the profession, the public and to the health care team. This includes the application of professional and ethical reasoning and decision-making strategies, professional communication, reflective practice strategies and personal management issues (stress, work-life balance). Factors that influence individual practice are addressed, including the availability and accessibility of local health care resources as well as the ethical, legal and regulatory requirements of practicing the physiotherapy profession in a given jurisdiction.

OBJECTIVES:

At the end of the course the student will be compliant in following domains:

Cognitive:

The student will:

- a. Learn the management basics in fields of clinical practice, teaching, research and physiotherapy practice in the community.
- b. Acquire communication skills in relation with patients, peers, seniors and other professionals & the community.
- c. Acquire the knowledge of the basics in Managerial & Management skills, & use of Information technology in professional Practice

Psychomotor:

The student will be able to:

- a. Develop psychomotor skills for physiotherapy practice.
- b. Develop skill to evaluate and make decision for plan of management based on sociocultural values and referral practice.

Affective:

The student will be able to:

Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals.

SYLLABUS

Sr. No.	Topics	Didactic Hours
1.	Management studies related to –local health care organization Management & structure, planning delivery with quality assurance & funding of service delivery information technology career development in Physiotherapy.	05
2.	Administration-principles-based on the Goal & functions -at large hospital set up / domiciliary services/ private clinic /academics	03
3.	Methods of maintaining records	02
4.	Budget-planning	03
5.	Performance analysis--physical structure / reporting system [man power / status /functions / quantity & quality of services/turn over-cost benefit revenue contribution	03
6.	Setting up Therapeutic gymnasium, Fitness clinics, Cardiac and Pulmonary Rehab centers etc.	02
7.	Time management	02
TOTAL		20

RECOMMENDED REFERENCE BOOK

1. Administration for Physiotherapists-Pai
2. Principles of Hospital Administration-Sakharkar

SCHEME OF COLLEGE EXAMINATION

THEORY 50 MARKS		Marks
[There shall be no LAQ in this paper]		
* The question paper will give appropriate weightage to all the topics in the syllabus.		50
Q-1 & Q2	SAQ-to answer any FIVE out of SIX [5 x 3]	15
	SAQ – to answer any FIVE out of SIX [5 x 7]	35
Total Marks		50
Passing in the exam is Mandatory		
Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than 50%.		

MUSCULOSKELETAL PHYSIOTHERAPY

(Didactic - 60 hours + Practical-140 hours)**TOTAL: 200 HOURS**

COURSE DESCRIPTION:

This course includes a study of applied anatomy and physiology of the musculo-skeletal system along with pathological changes and patho-mechanics of the system. It discusses relevant tests and measures for determining impairment and differentiating the diagnosis based on the specificity and sensitivity of the assessment instruments as related to patients with disorders of the musculo-skeletal system.

Musculo-skeletal Physiotherapy focuses on maximizing functional independence and well-being. The course uses a patient-centered model of care with multi-system assessment, evidence based interventions and a significant patient education component to promote a healthy, active lifestyle and community-based living.

The candidate will have a sound understanding of theory, scientific evidence and best practices in the areas of the Musculo-skeletal System including Movement Sciences, Psychosocial Sciences and Physiotherapy.

Sr. No.	Topics	Didactic Hours	Clinical Hours
1.	Use of ICF model in physiotherapy management of health condition of musculoskeletal system	02	00
2.	Outcome measures – and Evidence Based Practice	02	00
3.	Biomechanical / Physiological basis of physiotherapy intervention skills	04	05
4.	Physiotherapy interventions with goal setting for dysfunctions due to musculoskeletal health conditions secondary to conservative or surgical management of:		
	Manifestations of trauma and their complications	22	50
	Degenerative Arthritis	07	45
	Inflammatory conditions	04	05
	Infectious Diseases of bones & joints	02	05
	Metabolic & Hormonal Disorders	02	05
	Congenital & Acquired Deformities	06	10
	Peripheral Nerve Injuries & Plexus Injuries	03	05
	Tumours of bone, Vascular disorders and Traumatic Amputations	06	10
TOTAL		60	140

OBJECTIVES:

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

Cognitive:

- a) Identify, evaluate, analyze & discuss primary and secondary musculo-skeletal dysfunction, based on biomechanical, kinesiological & patho-physiological principles.
- b) Correlate the same with radiological, electrophysiological, biochemical/ haematological investigations as applicable & arrive at the appropriate Physiotherapy diagnosis with skillful evaluation of structure and function with clinical reasoning.
- c) Understand the pharmaco-therapeutics, its interaction with physiotherapeutic measures and modify physiotherapeutic intervention appropriately.
- d) Apply knowledge of psychosocial factors (personal and environmental factors in the context of disability associated with the musculo-skeletal system or multiple body systems) for behavioral and lifestyle modification and use appropriate training and coping strategies.

Psychomotor:

- a) Apply theoretical basis of physiological effects, indications, contraindications; and best available evidence on the effectiveness, efficacy and safe application guidelines for a full range of physiotherapeutic strategies and interventions, including appropriate modes of soft tissue & joint mobilization, electrotherapy, therapeutic exercise, and appropriate ergonomic advise that can be employed to manage problems of the individual's structures, functions, activities and participation, capacity and performance levels associated with the musculo-skeletal system, for relief of pain & prevention, restoration and rehabilitation measures for maximum possible functional independence at home, workplace and in community.
- b) Prescribe and train for appropriate orthoses, prostheses and walking aids based on musculoskeletal dysfunction.

Affective:

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

SYLLABUS

Sr. No.	TOPICS	Didactic Hours	Practical Hours	Total Hours
1	<p>Use of ICF model (Bio, Psycho and Social) to plan Short term and Long term goals in physiotherapy management of health condition of musculoskeletal system</p> <p>a. Identification of short term and long term goals based on</p> <p style="padding-left: 20px;">i) Capacity and Performance related to activities and participation to enhance functioning</p> <p style="padding-left: 20px;">ii) Personal and Environment factors -facilitators and barriers that affect disablement and functioning</p> <p>b. Documentation of disability and functioning</p> <p>c. Red flags- Recognizing signs and symptom</p>	02	-	02
2	<p>a. Introduction to functional scales as outcome measures – Generic and Disease specific.</p> <p>b. Evidence base practice in musculoskeletal health conditions- levels of evidence, clinical application</p>	01	-	01
3	<p>Biomechanical / Physiological basis of following modes physiotherapy interventions implemented during all three stages of tissue healing -</p> <p>a. Electrotherapeutic modes for pain- acute and chronic pain syndromes, swelling, wound healing, re-education</p> <p>b. Therapeutic exercise to alleviate pain, increase mobility, muscle performance (strength) endurance, motor control, muscle length, posture and gait training</p> <p>c. Taping techniques for pain relief , support and posture correction</p> <p style="padding-left: 20px;">i. Principles</p> <p style="padding-left: 20px;">ii. Indications / Contraindications</p> <p style="padding-left: 20px;">iii. Types of tapes and terminologies used</p> <p style="padding-left: 20px;">iv. Techniques</p>	01	00	01
		02	00	02
		01	05	06
4	<p>The following topics are applicable to all conditions related to musculo-skeletal dysfunction throughout lifespan in acute care setting , hospital, chronic conditions at home and in community on the basis of:</p>			
Sr. No.				

Sr. No.	TOPICS	Total Hours
	<p>1. Evaluation, interpretation of investigations and appropriate clinical reasoning for Functional diagnosis (ICF).</p> <p>2. Evidence-based analysis of tools and techniques, (including Quality of Life questionnaires), and planning, prescription & implementation of short term & long term goals of Physiotherapy with appropriate documentation of the same.</p> <p>3. Application of appropriate electro therapeutic modes for relief of acute & chronic pain, swelling and for wound healing, muscle / movement re-education etc with clinical reasoning.</p> <p>4. Application of appropriate exercise therapeutic modes for improving joint mobility, muscle strength & endurance and motor control.</p> <p>5. Application of advanced therapeutic modes of manual mobilization techniques (non-thrust techniques to be applied on extremities only), Friction Massage, Myofascial Release, Muscle Energy Techniques and Neuro Dynamic Techniques on patients.</p> <p>6. Application of appropriate therapeutic exercise using therapeutic gymnasium tools as and when indicated, for relief of pain, enhancing structural stability, strength & endurance, and functional maintenance &/ or restoration including posture correction and gait training including preventive measures.</p> <p>7. Prescription of appropriate orthotic & prosthetic devices.</p> <p>8. Various taping techniques for support & pain relief; principles, indications, contra-indications, types of tapes used & relevant terminology.</p> <p>9. Appropriate Home Program & Ergonomic advise for preventive measures & functional efficiency at home, work place and during recreation. Advice to Parents & Care Givers.</p>	
	<p>Physiotherapy interventions with goal setting for dysfunctions due to impairments of Pain, Mobility, Muscle performance(Strength), Endurance, Motor Control, Muscle length, Posture and Movement Balance and Gait for common health conditions secondary to conservative or surgical management of the following regions, with appropriate consideration of red flags:</p>	

Topics	Didactic Hours	Clinical/Pract Hrs	Total hours
10. Tumours of bone tissue.	01		01
11. Vascular disorders affecting musculoskeletal system- V.I.C., C.R.P.S., Compartment syndrome	01	02	03
12. Traumatic Amputation a. Types b. Complications and management inclusive of prosthetic prescription & training	04	08	12

CLINICAL:

SUPERVISED CLINICAL PRACTICE:

During this supervised clinical practice, student should be able to successfully execute the competencies in assessment, Functional diagnosis on ICF basis, plan of care and therapeutic interventions relating to musculo-skeletal dysfunctions. Student should become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, paediatric and geriatric). Student should learn to perform these skills objectively under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies during the clinical practice and successfully perform on real patients during the final evaluation of the course.

CLINICAL COMPETENCIES:

A. COMPETENCY IN ASSESMENT AND CLINICAL REASONING:

Student should be able to apply the ICF framework in selecting measurement tools to ensure a holistic approach to evaluation of body structure and function, activities, participation; and select and administer assessment/evaluation tools and techniques suitable for the patient's problems and condition(s) based on the best available evidence and interpret the information obtained demonstrating evidence-based decision-making and safe handling technique such as:

1. Risk factor screening (Red flags & Yellow flags).
2. Assessment of Musculo-skeletal dysfunction.
3. Interpretation of Radiological, Electrophysiological, Haematological and Biochemical investigations.
4. Aerobic fitness and Functional performance testing as appropriate
5. Identification and quantification of environmental and home barriers and facilitators
6. Identification and analysis of body mechanics during self-care, home management, work, community, tasks, or leisure activities.
7. Identification and analysis of ergonomic performance during work

(job/school/play):

8. Assessment of Quality of Life through use of appropriate questionnaire and generic or disease-specific scales (nice to know)
9. Identification and prioritization of impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed
10. State the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.
11. Determine the predicted level of optimal functioning and the time required to achieve that level.
12. Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame and ways to overcome them when possible

B. COMPETENCY IN DEVELOPING PLAN OF CARE:

Student should be able to:

1. Identify patient goals and expectations.
2. Design a Plan of Care with measurable functional goals (short-term and long-term) that are prioritized and time bound.
3. Consult patient and/or caregivers to develop a mutual agreement regarding the plan of care.
4. Identify indications/ additional needs for consultation with other professionals & appropriate referrals.
5. Select the interventions that are safe, realistic and meet the specified functional goals and outcomes in the plan of care: (a) identify precautions and contraindications, (b) provide evidence for patient-centered interventions that are identified and selected, (c) define the specificity of the intervention (time, intensity, duration, and frequency).
6. Measure and monitor patient response to intervention and modify elements of the plan of care and goals in response to changing patient/client status, as needed.
7. Establish criteria for discharge based on patient goals and current functioning and disability.

C. COMPETENCY IN PHYSIOTHERAPEUTIC INTERVENTION: Important influences on Musculo-skeletal physiotherapy management choices may include but not limited to:

1. Diverse settings of care including critical, acute, long term, rehabilitation, and community care;
2. Lifespan issues ranging from the neonatal stage to those associated with aging;

3. Life style modification for diseases and for prevention
4. Skill of application of physical and electrical agents for relief of acute & chronic pain and swelling.
5. Facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skillful use of various therapeutic exercise techniques with appropriate therapeutic gymnasium equipment.
6. Skill of application of therapeutic modes of improving joint mobility and soft tissue flexibility like joint mobilization techniques and soft tissue techniques like Muscle Energy Techniques, Myofascial Release, Friction Massage, Neuro Dynamic Techniques etc.
7. Functional training in self care, home, work (job, school and play), community and leisure activities

DOCUMENTATION

Presentation & Documentation of 8 Cases (4 traumas, 4 cold) for patient management using ICF model as following:

(Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome)

1. Soft tissue lesion
2. Fractures of upper Limb (Including Hand Injury),
3. Fractures of lower limb,
4. Fractures of spine with/without Neurological condition
5. Degenerative/ Inflammatory arthritis of peripheral skeletal joint
6. Degenerative /inflammatory arthritis of Spine
7. Musculoskeletal condition of Hand & Foot
8. Amputation

RECOMMENDED TEXT BOOKS

1. Therapeutic Exercise - O'Sullivan
2. Orthopaedic Physical Therapy - Donatelli
3. Cash's Textbook of Orthopedics & Rheumatology for Physiotherapists
4. Tidy's Physical Therapy
5. Manual Mobilization of Extremity Joints - Kaltenborn
6. Therapeutic Exercise: Foundations and Techniques - Kolby & Carolyn Kisner
7. Physical Rehabilitation - Susan O'sullivan

**RECOMMENDED REFERENCE
BOOKS**

1. Manual Therapy: Nags, Snags, MWMs, etc - 6th Edition Brian R Mulligan
2. Maitland's Peripheral Manipulation Elly Hengeveld
3. Neural tissue mobilization – Butler
4. Brukner & Khan's Clinical Sports Medicine - Peter Brukner, Karim Khan
(Mcgraw Medical)
5. Therapeutic Exercise: Moving Toward Function - Carrie M. Hall, Lori Thein Brody
6. Manual Mobilization of Extremity Joints -Kaltenborn
7. Neural Tissue Mobilization - Butler
8. Taping Techniques –Rose Mac Donald
9. Clinical Orthopaedic rehabilitation-Broadsman

SCHEME OF UNIVERSITY EXAMINATION

THEORY		Marks
80 MARKS + I.A. – 20 MARKS		
* The question paper will give appropriate weightage to all the topics in the syllabus.		100
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15]	50
	Q-2- answer any FIVE out of SIX [5x 7 =35]	
Section B -L.A.Q.	* LAQ's Based on topics- structured question based on ICF model with emphasis to goal setting and treatment intervention Q-3] L.A.Q (any ONE out of TWO)	30
	Q-4] L.A.Q (any ONE out of TWO) a) b) 15 marks LAQ should give break up of 15 marks – e.g. [3 +5+7]	
Total Marks		80

140

142

PRACTICAL 80 MARKS + I.A. – 20 MARKS		Marks
		100
LONG CASE	a. Subjective and Physical Examination -10 marks b. Evaluation and Physical therapy diagnosis (ICF) – 10 marks c. Plan of care - Goal setting – 10 marks d. Demonstration of any one important test and treatment intervention on patient –10 marks [Student will be evaluated in cognitive, psychomotor and affective domains.]	40
SHORT CASE	Two Short cases on Demonstrations of physiotherapy intervention skills for effective patient management (one traumatic & one cold case) 2 x 10 marks	20
SPOTS	5 spots - (5 x2 Marks= 10 Marks) 3 minutes for each spot X– ray of extremities and spine, Orthoses, Prostheses, Metal Implant	10
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	5
COMMUNICATION SKILLS		5
Total Marks		80

INTERNAL ASSESSMENT:

1. Two examinations – Terminal and preliminary examination (Theory & Practical) of 80 marks each TOTAL - 160 marks
2. Internal Assessment to be calculated out of 20 marks.
3. In Practicals of Terminal & Preliminary examinations, Spots will be of 15 marks instead of 10 marks (3 marks X 5), No marks will be allotted for the journal in Terminal & Preliminary examinations
4. Internal assessment (Theory) as per University pattern.

NEUROPHYSIOTHERAPY

(Didactic 60 hrs + Clinical 140 hrs) **TOTAL 200 HRS**

COURSE DESCRIPTION:

This course includes a study of applied anatomy and physiology of the neuromuscular system along with the pathological changes and patho-mechanics of the system. It discusses relevant tests and measures for determining impairment and differentiating the diagnosis based on the specificity and sensitivity of the assessment instruments as related to patients with disorders of the neuromuscular system.

Neurophysiotherapy curriculum emphasizes the selection and use of measurement tools and management techniques based on the best available evidence. Physiotherapy strategies for assessment and treatment address structural & functional impairments and activity limitations of individuals and population (both adults & paediatric) in the context of their personal needs/goals including participation restrictions and the environment they live in. The permanence of many neurological impairments mandates that, where possible, emphasis is placed on prognosis and criterion – referenced outcomes to establish realistic goals.

The therapeutic approach is patient and family focused with a biopsychosocial emphasis that embraces inter professional collaboration and requires ongoing communication, education and negotiation with the client, family, care giver and healthcare team.

Sr. No.	Topics	Didactic Hours	Practical Hours	Total Hours
1.	APPLICATION OF ICF MODEL	02		002
2.	THEORETICAL BASIS OF MOTOR CONTROL AND LEARNING	02		002
3.	ADAPTIVE SYSTEM : PLASTICITY AND RECOVERY	01		001
	GENERAL METHODS OF STRENGTH TRAINING, FITNESS AND PROMOTION OF SKILL ACQUISITION	04		004
4.	QUALITY OF LIFE SCALES AND INDEPENDENCE MEASURE	02		002
5.	PHYSIOTHERAPY MANAGEMENT			
	A. ADULT	37	095	132
	B. PAEDIATRIC	17	040	057
TOTAL		65	135	200

OBJECTIVES:

At the end of the course, student will

Cognitive:

- a) Be able to identify and analyze movement dysfunction due to neuromuscular skeletal disorders in terms of biomechanical and biophysical basis, correlate the same with the health condition, routine electrophysiological, radiological and biochemical investigations, and arrive at appropriate physical therapy diagnosis using WHO-ICF with clinical reasoning.
- b) Be able to plan realistic goals based on the knowledge of prognosis of the disease of the nervous system and prescribe appropriate, safe evidence based physiotherapy interventions with clinical reasoning.
- c) Understand infection control principles, best practices and techniques applicable to a range of setting where clients with neurological conditions would receive physiotherapy services.
- d) Know determinacy of health (environmental, nutritional, self-management/ behavioral factors) and chronic disease management principles related to neurological health.

Psychomotor:

- a) Be able to develop psychomotor skills to implement timely and appropriate physiotherapy assessment tools/techniques to ensure a holistic approach to patient evaluation in order to prioritize patient's problems.
- b) Be able to select timely physiotherapeutic interventions to reduce morbidity and physiotherapy management strategies, suitable for the patients' problems and indicator conditions based on the best available evidence.
- c) Implement appropriate neuro-physiotherapeutic approaches, electrotherapeutic modalities, joint and soft tissue mobilizations and ergonomic advice for neuromuscular skeletal systems, contextual factors to enhance performance of activities and participation in society.

Affective:

- a) Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society and co-professionals, to promote individual and community health.

SYLLABUS

Sr. No.	Topics	Didactic Hours	Practical Hours	Total Hours
1.	<p>Features of ICF model (bio, psycho and social) to plan efficient, effective and cost-contained short term and long term goals to enhance functioning in a patient with health condition of nervous system.</p> <p>a. Clinical utility of bi-directional relationships among the ICF model's domain</p> <p>b. Environment and Personal factors- Facilitators and Barriers that affect disablement and functioning</p> <p>c. Capacity and Performance related Activities and Participation to enhance Functioning</p> <p>d. Set patient specific goals and expected outcome with clinical reasoning</p> <p>e. Documentation of disability and functioning Red flags-recognizing signs and symptoms</p>	02	--	02
2.	Theoretical basis of motor control and learning to understand various neurophysiotherapeutic approaches.	02	--	02
3.	<p>a. Plasticity of the intact brain</p> <p>i. motor learning</p> <p>ii. training</p> <p>iii. plasticity</p> <p>Plasticity following brain lesion</p> <ul style="list-style-type: none"> • nature of spontaneous recovery • effect of environment behavior and recovery • adaptation of motor performance • muscle adaptation <p>b. Strength training and physical conditioning in neuro rehabilitation to optimize functional performance</p> <p>c. Skill acquisition in restoration of functional performance</p> <ul style="list-style-type: none"> • information, instruction, demonstration • feedback • practice 	01	--	01
		02	--	02
4.	Quality of Life scales & Independence Measures	02	--	02
	The following topics are applicable to all conditions related to Neuromuscular dysfunction throughout lifespan in acute care setting, hospital, chronic conditions at			

	<p>home and in community on the basis of:</p> <ol style="list-style-type: none"> 1. Evaluation, interpretation of investigations and appropriate clinical reasoning for Functional diagnosis (I.C.F.). 2. Evidence-based analysis of tools and techniques, (including Quality of Life questionnaires), and planning, prescription & implementation of short term & long term goals of Physiotherapy with appropriate documentation of the same. 3. Manifestation of movement dysfunction following disease or trauma of the central or peripheral nervous system. <ol style="list-style-type: none"> a. Bed mobility b. lying to sitting c. standing up and sitting down d. walking e. balance f. reaching g. manipulation 4. Selecting appropriate assessment/evaluation tools and techniques suitable for the patients health condition and key indicators and interpret information obtained demonstrating evidence based decision making-use of biomechanical measures, generic scales/instruments to measure arousal, cognition, sensation, tone, strength, locomotion and balance, upper extremity function, anxiety and depression, quality of life and independence, Self assessment and self efficacy scales and common disease specific scales. <ul style="list-style-type: none"> • GCS • Mini Mental State Examination • Ashworth scale • Gait-D.G.I. • Balance- BBS, Functional Arm Reach Test. • T.U.G. • Barthel A.D.L. index • SF – 36 • Disease specific measures – S.T.R.E.A.M., Brunnstrom, Fugl–Meyer assessment. A.S.I.A. Scale, U.P.D.R.S., E.D.S.S. 								
5	<p>PHYSIOTHERAPY MANAGEMENT – ADULT</p> <p>Planning of short term and long term goals in accordance with ICF for all the conditions in neurosciences by doing detail assessment and appropriate outcome measures and planning evidence based treatment program-for key indicator conditions</p>								
	<table border="1"> <thead> <tr> <th data-bbox="288 1720 959 1794">Topic</th> <th data-bbox="959 1720 1102 1794">Didactic Hours</th> <th data-bbox="1102 1720 1278 1794">Practical/ Lab Hours</th> <th data-bbox="1278 1720 1386 1794">Total Hours</th> </tr> </thead> <tbody> <tr> <td data-bbox="288 1794 959 1899">a. Stroke – cerebral circulation, types of stroke and manifestations, assessment and management</td> <td data-bbox="959 1794 1102 1899">08</td> <td data-bbox="1102 1794 1278 1899">10</td> <td data-bbox="1278 1794 1386 1899">18</td> </tr> </tbody> </table>	Topic	Didactic Hours	Practical/ Lab Hours	Total Hours	a. Stroke – cerebral circulation, types of stroke and manifestations, assessment and management	08	10	18
Topic	Didactic Hours	Practical/ Lab Hours	Total Hours						
a. Stroke – cerebral circulation, types of stroke and manifestations, assessment and management	08	10	18						

b. Acquired brain injury; trauma and pathology (S.O.L.)	03	05	08
c. Spinal cord disorders – traumatic and non – traumatic, management including bladder training	04	08	12
d. Peripheral neuropathies – traumatic & non traumatic - upper limb & lower limb - brachial plexus - nerve root lesions - metabolic & endocrine	06	08	14
e. Vestibular disorders – central and peripheral	02	05	07
f. VII th cranial nerve	01	04	05
g. Demyelinating diseases - Multiple Sclerosis & G.B. syndrome	02	05	07
h. Cerebellar diseases and Ataxia	02	10	12
i. Extrapyrarnidal diseases, with emphasis on Parkinson's disease	03	15	18
j. Anterior Horn Cell diseases – heredity and acquired e.g. M.N.D., P.M.A., S.M.A., Poliomyelitis	02	05	07
k. Myopathies	02	10	12
l. Disorders of A.N.S. – Horner's syndrome, Hypo/Hypertension, Autonomic Dysreflexia	01	05	06
m. Psychosomatic pain & paralysis	01	05	06
<p>Treatment programme includes:</p> <ol style="list-style-type: none"> 1. Application of appropriate electro-therapeutic modes for relief of pain and functional re-education with clinical reasoning. 2. Application of skills as Neurotherapeutic approaches (Brunnstrom, Roods, Bobath, N.D.T., M.R.P., mental imagery, Constraint induced movement therapy, learning transfers), co-ordination and balancing exercise by using techniques based on neurophysiological principles. 3. Tools and adaptive equipments used for neuro-rehabilitation like Vestibular balls Tilt boards, Bolsters, Wedges, Graded Benches, Therapeutic mats etc. 4. Application of transfer and functional re-education exercise, postural exercise and gait training. 5. Bladder and bowel training 6. Developing a philosophy for caring 7. Prescription for appropriate orthotic devices and fabrication of temporary splints 8. Lifting techniques, wheel chair modifications, adaptive devices 9. Ergonomic advice for prevention/rehabilitation for the patients as well as for parents/care givers education about handling of patients. 			

PHYSIOTHERAPY MANAGEMENT – PAEDIATRIC

Knowledge of developmental neurology, plasticity in development, Etiology, Pathophysiology of common neuropaediatric conditions, impairment, clinical reasoning, goal setting & P.T. management. More emphasis should be given on physiotherapy management skills.

Topic	Didactic Hours	Practical/ Lab Hours	Total Hours
1. Cerebral palsy -etiology and type -assessment -differential diagnosis -management	08	10	18
2. Down's syndrome	01	05	06
3. Neural tube defects : Spina Bifida and Hydrocephalus	02	10	12
4. Brachial plexus injuries	01	02	03
5. Infectious disorders	01	01	02
6. Post Poliomyelitis Residual Paralysis	01	01	02
7. D.M.D. & other Myopathies	01	05	06
8. S.M.A. / H.S.M.N.	01	01	02
9. Pediatric extra pyramidal disorders	01	05	06

CLINICAL

SUPERVISED CLINICAL PRACTICE:

During the supervised clinical practice, student should be able to successfully execute the competencies in assessment, physical diagnosis on ICF basis, plan of care and therapeutic interventions relating to neuromuscular dysfunctions. Student should become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric and geriatric). Student should learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies during the clinical practice and successfully perform on real patients during the final evaluation of the course.

CLINICAL COMPETENCIES:

A] COMPETENCY IN ASSESMENT AND CLINICAL REASONING :

Student should be able to apply the ICF framework in selecting measurement tools to ensure a holistic approach to evaluation of body structure and function, activities, participation; and select and administer assessment/evaluation tools and techniques suitable for the patient's problems and condition(s) based on the best available evidence and interpret the information obtained demonstrating evidence-based decision-making and safe handling technique such as:

1. Risk factor screening (Red flags & Yellow flags).
2. Assessment of Neuromuscular dysfunction.
3. Interpretation of Radiological, Electrophysiological, Hematological and Biochemical investigations.
4. Identification and quantification of environmental and home barriers and facilitators
5. Identification and analysis of body mechanics during self-care, home management, work, community, tasks, or leisure activities.
6. Identification and analysis of ergonomic performance during work (job/school/play):
7. Assessment of Quality of Life through use of appropriate questionnaire and generic or disease-specific scales (nice to know)
8. Identification and prioritization of impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed
9. State the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.
10. Determine the predicted level of optimal functioning and the time required to achieve that level.
11. Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame and ways to overcome them when possible.

B) COMPETENCY IN DEVELOPING PLAN OF CARE:

Student should be able to:

1. Identify patient goals and expectations.
2. Design a Plan of Care with measurable, prioritized and time bound functional goals (short-term and long-term)
3. Consult patient and/or caregivers to develop a mutual agreement regarding the plan of care.
4. Identify indications/ additional needs for consultation with other professionals & appropriate referrals.
5. Select the interventions that are safe, realistic and meet the specified functional goals and outcomes in the plan of care: - (a) identify precautions and contraindications, (b) provide evidence for patient-centered interventions that are identified and selected, (c) define the specificity of the intervention (time, intensity, duration, and frequency).
6. Measure and monitor patient response to intervention and modify elements of the plan of care and goals in response to changing patient/client status, as needed.
7. Establish criteria for discharge based on patient goals and current functioning and disability.

C) COMPETENCY IN PHYSIOTHERAPEUTIC INTERVENTION:

Important influences on neuromuscular physiotherapy management choices may include but not limited to:

1. Diverse settings of care including critical, acute, long term, rehabilitation, and community care;
2. Lifespan issues ranging from the neonatal stage to those associated with aging
3. Life style modification for diseases and for prevention.
4. Skill of application of physical and electrical agents for relief of acute & chronic pain and swelling.
5. Facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skillful use of various therapeutic exercise techniques with appropriate therapeutic gymnasium equipment.
6. Skill of application of Neurotherapeutic modes of improving neuromuscular strength, endurance, movement control, coordination.
7. Functional training in self care, home, work (job, school and play), community and leisure activities

CLINICAL SKILLS:

Learning of facilitatory and inhibitory Neurotherapeutic techniques related to adult and paediatric neurological conditions

- Sensory testing – Sensory Re-education
- MMT / voluntary control – muscle re-education
- Use of appropriate electrical modalities for muscle reeducation / pain relief
- Management of tone
- Postural assessment & postural correction
- Transfer training
- Functional re-education
- Gait assessment- gait training
- Co-ordination testing & training
- Strategies for balance training
- Fitness training for patients having neurological problems.
- Use of outcome measures & quality of life questionnaire.

Presentation & documentation of 8 cases for patient management using ICF model as following:

(Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome)

- 1) U.M.N. lesion – 4 cases: Stroke / S.C.I. / Traumatic brain injury / Degenerative disorders / Demyelinating disorders etc...
- 2) L.M.N. lesion – 2 cases: Peripheral nerve injuries / Brachial plexus injury / G.B.S. etc.
- 3) Paediatric neuro-2 cases: C.P. / Myopathies / Meningocele etc.

RECOMMENDED TEXT BOOKS:

1. Cash's Text book for Physio Therapist in Neurological disorders-Jaypee bros.
2. Proprioceptive Neuro muscular Facilitation – Herman Kabat
3. Practical Physical Therapy – Margaret Hollis
4. Therapeutic exercise – O'Sullivan
5. "Right in the middle" – Patricia Davis
6. Stroke rehabilitation – Margaret Johnstone
7. Paediatric Physiotherapy – Roberta Shepherd.

RECOMMENDED REFERENCE BOOKS:

1. Neurological rehabilitation – Darcy Umphred
2. Paediatric physical therapy – Stephen Tecklin
3. Brain's disorders of Nervous system
4. Paediatric Physiotherapy – Sophie Levitt
Neurological Rehabilitation - Optimising Motor Performance – Carr and Shepherd

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS		Marks
* The question paper will give appropriate weightage to all the topics in the syllabus.		100
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15]	50
	Q-2- answer any FIVE out of SIX [5x 7 =35]	
Section B -L.A.Q.	LAQ's Based on topics- structured question based on ICF model with emphasis to goal setting and treatment intervention Q-3] L.A.Q (any ONE out of TWO) U.M.N. condition (adult / paediatric) a) b) 15 marks	30
	Q-4] L.A.Q (any ONE out of TWO) L.M.N. condition (adult / paediatric) a) b) 15 marks L.A.Q. should give break up of 15 marks e.g. [3 +5+7]	
Total Marks		80

PRACTICAL		Marks
80 MARKS + I.A. – 20 MARKS		100
LONG CASE	a. Subjective and Physical Examination -10 marks b. Evaluation and Physical therapy diagnosis (ICF) – 10 marks c. Plan of care - Goal setting – 10 marks d. Demonstration of any one important test and treatment intervention on patient – 10 marks [To be evaluated in cognitive, psychomotor and affective domains.]	40
SHORT CASE	Two Short cases on Demonstrations of physiotherapy intervention skills for effective patient management 2 x 10 marks	20
SPOTS	5 spots - (5 x2 Marks= 10 Marks) 3 minutes for each spot E.M.G./N.C. Studies / Orthoses/ Prostheses & Neurological assessment, Scales	10
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with I.C.F.	5
COMMUNICATION SKILLS		5
Total Marks		80

INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each TOTAL - 160 marks
2. Internal Assessment to be calculated out of 20 marks.
3. In Practicals of Terminal & Preliminary examinations, Spots will be of 15 marks instead of 10 marks (3 marks X 5), No marks will be allotted for the journal in Terminal & Preliminary examinations
4. Internal assessment (Theory) as per University pattern.

CARDIO-VASCULAR & RESPIRATORY PHYSIOTHERAPY

(INCLUDING CRITICAL CARE)

(Didactic-60HRS + Clinical 140HRS) TOTAL 200 HRS

COURSE DESCRIPTION:

This course includes a study of applied anatomy and physiology of the Cardiovascular and Respiratory system along with pathological changes and pathomechanics of the system. It discusses relevant tests and measures for determining impairment and differentiating the diagnosis based on the specificity and sensitivity of the assessment instruments as related to patients with disorders of the Cardiovascular and Respiratory system.

Cardiovascular and Respiratory Physiotherapy focuses on maximizing functional independence and well-being. This course uses a patient-centered model of care with multi-system assessment, evidence based interventions and a significant patient education component to promote healthy active lifestyle and community-based living. The candidate will have a sound understanding of theory, scientific evidence and best practices in the areas of the Cardio vascular and Respiratory System including critical care, Psychosocial Sciences, Movement Sciences and Physiotherapy.

Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours
1	REVIEW OF BASIC APPLIED ANATOMY & PHYSIOLOGY	3		3
2	INVESTIGATION AND EXERCISE TESTING	4	10	14
3	EXERCISE PHYSIOLOGY	5	10	15
4	PHYSIOTHERAPY SKILLS	8	34	42
5	APPLICATION OF ICF MODEL	2		2
6	PHYSIOTHERAPY MANAGEMENT	20	53	73
7	CARDIAC REHABILITATION	4	10	14
8	PULMONARY REHABILITATION	2	5	7
9	ICU EVALUATION & MANAGEMENT	8	12	20
10	INTRODUCTION TO FUNCTIONAL SCALES	2	1	3
11	BASIC LIFE SUPPORT (C.P.C.R.)	2	5	7
	TOTAL	60	140	200

OBJECTIVES:

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

Cognitive:

- a. Identify and analyze cardio-vascular & pulmonary dysfunction in terms of bio-mechanical, and Bio-physical basis and correlate the same with the Health condition, routine electrophysiological, radiological, and biochemical investigations and arrive at appropriate Physical therapy diagnosis using WHO-ICF tool (Disability, Functioning and contextual factors) with clinical reasoning.

- b. Plan, prescribe appropriate, safe physiotherapy interventions with clinical reasoning for and prevention of impairments, activity limitations, participation restrictions and environmental barriers related to cardio-vascular & pulmonary dysfunction in acute care settings, at home , work place, in society & in leisure activities.

Psychomotor:

- a. Utilise skills such as executing exercise tests, PFT, Ankle brachial index, arterial & venous insufficiency tests
- b. Utilise psychomotor skills to implement appropriate bronchial hygiene therapy, therapeutic exercise, electrotherapeutic modalities, CPR, Intensive (critical) care, joint and soft tissue mobilisations, offering ergonomic & energy conservation advice for patients with cardio-vascular & pulmonary dysfunction.
- c. Utilise the knowledge about contextual factors to enhance capacity and performance of activities and participation in society
- d. Utilise the skill to deliver cardiac, pulmonary & vascular rehabilitation

Affective:

- a. Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
- b. Develop bedside behavior, respect & maintain patients' confidentiality

SYLLABUS

Sr. No.	Topics	Didactic Hours	Practical/ Lab Hours	Total Hours
1	REVIEW OF BASIC APPLIED ANATOMY & PHYSIOLOGY	3		3
	<ul style="list-style-type: none"> a. Pulmonary Anatomy & Physiology b. Cardiac anatomy & Physiology c. Cardiac and Respiratory Pharmacology d. Biomechanics of Thorax (Revision) 			
2	INVESTIGATION AND EXERCISE TESTING	4	10	14
	<ul style="list-style-type: none"> a. Investigation & Clinical Implication - X-ray, PFT, ABG, ECG, ABI, claudication time, pulses, auscultation, postural hypotension b. Stress testing <ul style="list-style-type: none"> i. 6 Minute Walk test & Harward Step test Skill & Interpretation ii. Shuttle Walk Test & Modified Bruce Protocol (should be interpretation only) 			
3	EXERCISE PHYSIOLOGY	5	10	15
	<ul style="list-style-type: none"> a. Nutrition (Bioenergetics) b. Total energy expenditure (MET) sources c. Acute and chronic adaptation to exercise d. Complication of bed rest/ Immobilization & prevention e. Aerobic & Anaerobic Training, f. Principles of Exercise Prescription 			

Sr. No.	Topics	Didactic Hours	Practical/ Lab Hours	Total Hours
4	PHYSIOTHERAPY SKILLS	8	34	42
	<ul style="list-style-type: none"> a. Bronchial Hygiene Therapy- Postural Drainage, Forced Expiratory Technique, ACBT, Autogenic Drainage b. Adjunct Therapy – Flutter & PEP Therapy c. Therapeutic positioning to improve ventilation & perfusion matching, d. Therapeutic positioning to alleviate dyspnoea e. Nebulisation & Humidification, f. Lung Expansion Therapy g. Neurophysiologic facilitation of respiration h. Electrotherapeutic modalities for pain, swelling, & wound healing. i. Therapeutic exercise program to alleviate pain, to achieve mobility, to correct posture and improve peripheral circulation. j. Therapeutic exercise program to strengthen respiratory muscles k. Deliver Ergonomic advice, energy conservation advice, Home exercise Program, & modifications of contextual factors. l. Applied Yoga in Cardio-respiratory conditions 			
5	APPLICATION OF ICF MODEL	2	-	2
	<ul style="list-style-type: none"> a. To plan effective Short term and long term goals to enhance functioning of Cardiovascular & Respiratory Dysfunction b. Set patient specific goals and expected outcome within time frame with clinical reasoning c. Documentation 			

Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours
6	PHYSIOTHERAPY MANAGEMENT in :	20	53	73
	a. Medical & Surgical Cardiovascular Diseases i. Hypertension ii. I.H.D. , Myocardial Infarction iii. Valvular Heart Disease iv. Congenital v. Acquired vi. Thrombosis, Phlebitis and Phlebothrombosis vii. Varicose Veins and ulcers viii. Other Arterial disorders	4	5	9
	b. Obstructive & Restrictive Respiratory disorders i. Bronchitis ii. Emphysema iii. Bronchial Asthma iv. Cystic Fibrosis v. Occupational lung diseases vi. Interstitial Lung Diseases	2	10	12
	c. General Respiratory Infection i. Tuberculosis ii. Pneumonia iii. Lung Abscess iv. Bronchiectasis v. Pneumothorax vi. Hydropneumothorax vii. Atelectasis viii. Pleuritis ix. Pleural Effusion x. Empyema & other Pleural Disorders	2	10	12
	d. Neonatal & Paediatric Respiratory Infection i. ARDS ii. Meconium aspiration iii. Pneumonitis iv. Pneumonia v. Childhood Asthma vi. Cystic fibrosis and chronic lung disease	2	4	6

Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours
	e. Pulmonary Surgeries Traumatic and Surgical conditions of Chest, Lung, Pleura and Mediastinum	2	4	6
	f. General abdominal & Oncological Surgeries i. Pre and Post Operative care ii. Complication & Management.	2	5	7
	g. Burns (Head Face neck & thoracic, inhalation burns) Acute care Management Only	1	5	6
	h. Diabetic & Vascular Ulcers/ Amputations (Stump care only)	2	4	6
	i. Metabolic Syndrome i. Diabetes (Mellitus & Insipidus) ii. Obesity	2	4	6
	j. Musculoskeletal dysfunction i. Flail chest ii. Scoliosis iii. Kyphosis	1	2	3
7	CARDIAC REHABILITATION (A.H.A./A.C.S.M. guidelines)	4	10	14
	a. Definition, b. Indications, Contraindications c. Phases(I,II,III,& IV) d. Outcome Measures			
8	PULMONARY REHABILITATION (A.A.C.V.P.R. /A.T.S. guidelines)	2	5	7
	a. Definition, b. Indications c. Contraindications d. Components of management e. Outcome measures			
9	I.C.U. EVALUATION & MANAGEMENT	8	12	20
	a. Basic evaluation b. Principles of ICU Monitoring c. Mechanical Ventilator modes d. Suctioning & Humidification e. Therapeutic intervention in i. Tetanus, Head Injury,			
	ii. Pulmonary Oedema,			
Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours

	iii. Multiple Organ Failure, iv. Neuromuscular Disease, v. Smoke Inhalation, vi. Poisoning, vii. Aspiration near Drowning, viii. A.R.D.S. ix. Shock x. Guillan Barre Syndrome xi. Spinal Cord Injury & Other Acute respiratory Disorders			
10	INTRODUCTION TO FUNCTIONAL SCALES	2	1	3
	a. Generic and disease specific b. Patient's perception of his disability and functioning and correlating the same with therapist evaluation			
11	BASIC LIFE SUPPORT (C.P.C.R.)	2	5	7

S. No.	PRACTICAL
1	Positioning, breathing control strategies (e.g. Pursed Lip Breathing, Sustained Maximal Inspiration, deep breathing), ventilator muscle training. Relaxation training, positioning, early mobilization.
2	Airway clearance techniques, Suctioning, use of mechanical assistive devices (e.g. Positive Expiratory Pressure, Flutter, Vest, etc.), postural drainage and percussions, coughing maneuvers, medication delivery e.g. Nebulization ,oxygen
3	Physical handling Techniques (e.g. positioning and donning, doffing, fitting and adjusting Stockings for vascular disorders, bandaging , dressing, taping, splints and orthotics pertaining to cardiovascular and pulmonary impairments)
4	PNF for breathing facilitation and inhibition.
5	Ability to use a variety of exercise/movement equipment (e.g. treadmill, heart rate monitor, Oximeter, pressure biofeedback unit, free weights, balance boards, theraballs, etc)
6	Prescription and education: aerobic, endurance and interval exercise training, resistance (strength, Endurance and power) training, flexibility training. Formulating cardiac, pulmonary rehabilitation programme
7	Develop skills to monitor compliance of the client in executing rehabilitation program & identifying comorbid & contextual factors affecting it.
8	Familiarity and skill of use of various monitoring and treatment equipments in ICU.
9	Use of physical and electrical agents for pain relief and wound care
10	Skill of administering basic life support

CLINICAL COMPETENCIES:

A) COMPETENCY IN ASSESMENT AND CLINICAL REASONING :

Student should be able to apply the ICF framework in selecting measurement tools to ensure a holistic approach to evaluation of body structure and function, activities , participation; and select and administer assessment/evaluation tools and techniques suitable for the patient's problems and condition(s) based on the best available evidence and interpret the information obtained demonstrating evidence-based decision-making and safe handling technique such as:

1. Risk factor screening (Red flags & Yellow flags).
2. Assessment of Cardiovascular & Respiratory dysfunction.
3. Interpretation of Radiological, Haematological and Biochemical investigations.
4. Aerobic fitness and Functional performance testing as appropriate
5. Identification and quantification of environmental and home barriers and facilitators
6. Identification and analysis of body mechanics during self-care, home management, work, community, tasks, or leisure activities.
7. Identification and analysis of ergonomic performance during work (job/school/play)
8. Assessment of Quality of Life through use of appropriate questionnaire and generic or disease-specific scales (nice to know)
9. Identification and prioritization of impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed.
10. State the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.
11. Determine the predicted level of optimal functioning and the time required to achieve that level.
12. Recognize barriers that may influence the achievement of optimal functioning within a predicted period and devise ways to overcome them when possible.

BJ COMPETENCY IN DEVELOPING PLAN OF CARE:

Student should be able to:

1. Identify patient goals and expectations.
2. Design a Plan of Care with measurable, prioritized and time bound functional goals (short-term and long-term)
3. Consult patient and/or caregivers to develop a mutual agreement regarding the plan of care.
4. Identify indications/ additional needs for consultation with other professionals & appropriate referrals.
5. Select the interventions that are safe, realistic and meet the specified functional goals and outcomes in the plan of care: (a) identify precautions and contraindications, (b) provide evidence for identified and selected patient-centered interventions that are identified and selected, (c) define the specificity of the intervention (time, intensity, duration, and frequency).
6. Measure and monitor patient response to intervention and modify elements of the plan of care and goals in response to changing patient/client status, as needed.
7. Establish criteria for discharge based on patient goals and current functioning and disability.

CJ COMPETENCY IN PHYSIOTHERAPEUTIC INTERVENTION:

Important influences on Cardiovascular & Respiratory physiotherapy management choices may include but not limited to:

1. Diverse settings of care including critical, acute, long term, rehabilitation, and community care
2. Lifespan issues ranging from the neonatal stage to those associated with aging;
3. Life style modification for diseases and for prevention.
4. Skill of application of physical and electrical agents for relief of acute & chronic pain and swelling.
5. Facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skilful use of various therapeutic exercise techniques with appropriate therapeutic gymnasium equipment.
6. Skill of application of therapeutic modes of improving cardiovascular & respiratory performance. Functional training in self care, home, work (job, school and play), community and leisure activities

Documentation:

Presentation & Documentation of 8 cases for patient management using ICF Model as following:

(Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome)

1. Medical Respiratory condition
2. Paediatric respiratory condition
3. Thoracic Surgical condition
4. Cardiac Medical condition
5. Cardiac Surgical condition
6. Peripheral vascular disorders
7. Burns of Head, Neck & Face (Acute phase only)
8. Abdominal surgical condition

RECOMMENDED TEXT BOOKS

1. Cash's Textbook for Physiotherapists in Chest, Heart & Vascular diseases
2. Cash's text book in General Medicine & Surgical conditions for Physiotherapists
3. Chest Physical therapy & pulmonary rehabilitation -- Donna Frown Filter
4. Brompton's hospital guide
5. Physiotherapy in respiratory and cardiac problem - Pryor and Prasad
6. Physiotherapy in Cardio – Vascular rehabilitation – Webber
7. Chest physiotherapy in intensive care Colin Mackenzie
8. Mechanical ventilation – Ashfaq Hasan
9. Management of Mechanical ventilation – Pierce

RECOMMENDED REFERENCE BOOKS

1. Exercise & the Heart – Wenger
2. ECG – P.J. Mehta
3. Cardiopulmonary Physical Therapy -- Irwin Scott
4. Fundamental of respiratory care - Egan's
5. Essential of cardio pulmonary physical therapy – Hillgass And Sodosky
6. Exercise physiology, energy, nutrition and human performance – M'cardle
7. Exercise testing and prescription - Skinner
8. Exercise in health and disease-Pollock

SCHEME OF UNIVERSITY EXAMINATION

THEORY		Marks
80 MARKS + I.A. – 20 MARK * The question paper will give appropriate weightage to all the topics in the syllabus.		100
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15]	50
	Q-2- answer any FIVE out of SIX [5x 7 =35]	
Section B -L.A.Q.	* LAQ's Based on topics - ICF model. Q-3] L.A.Q (any ONE out of TWO) a) b) 15 marks	30
	Q-4] L.A.Q (any ONE out of TWO) a) b) 15 marks L.A.Q. should give break up of 15 marks – e.g. [3 +5+7]	
Total Marks		80

PRACTICAL		Marks
80 MARKS + I.A. – 20 MARKS		100
LONG CASE	a. Subjective and Physical Examination -10 marks b. Evaluation and Physical therapy diagnosis (ICF) – 10 marks c. Plan of care - Goal setting – 10 marks d. Demonstration of any one important test and treatment intervention on patient – 10 marks [Student will be evaluated in cognitive, psychomotor and affective domains.]	40
	Two Short cases on Demonstrations of physiotherapy intervention skills for effective patient management 2 x 10 marks	
SHORT CASE		20
SPOTS	(5 spots x 2 Marks = 10 Marks) Chest/Cardiac X-ray, ABG, PFT, ECG, Adjunct/devices	10
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	5
COMMUNICATION SKILLS		5
Total Marks		80

INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each TOTAL - 160 marks
2. Internal Assessment to be calculated out of 20 marks.
3. In Practicals of Terminal & Preliminary examinations, Spots will be of 15 marks instead of 10 marks (3 marks X 5). No marks will be allotted for the journal in Terminal & Preliminary examinations.
4. Internal assessment (Theory) as per University pattern.

COMMUNITY PHYSIOTHERAPY

(Didactic 85 hrs + Clinical 115 hrs) **TOTAL 200 HRS**

COURSE DESCRIPTION:

Community Physiotherapy describes the roles & responsibilities of the Physiotherapist as an efficient member of the society. This component introduces the Physiotherapist to a proactive preventive oriented philosophy for optimization & betterment of health.

Community Physiotherapy is not apart from the other sections of Physiotherapy described in this syllabus. In fact, it is the in-depth application of these same aspects viz. Musculoskeletal, Neurological & Cardio Vascular & Respiratory to the entire society. This is done by understanding the sections & sub sections of the societies, the national & international health policies, role of Government & Non Government Organizations.

The applications of Community Physiotherapy are not limited to conditions & dysfunctions but as attributed to promotion of Health & rehabilitation in Communities like Elderly, Women, and Occupational Health etc.

Sr. No.	Topic	Didactic Hours	Clinical Hours	Total Hours
1	HEALTH PROMOTION	10	15	25
2	WOMEN'S HEALTH	20	20	40
3	GERIATRICS HEALTH	20	20	40
4	REHABILITATION	11	20	31
5	HEALTHCARE DELIVERY & DISASTER MANAGEMENT	04	-	04
6	INDUSTRIAL HEALTH	20	20	40
7	SYNOPSIS	-	20	20
TOTAL		85	115	200

OBJECTIVES:

At the end of the course the student shall:

Cognitive:

Be able to describe:

- The general concepts about health, disease and physical fitness.
- Physiology of aging process and its influence on physical fitness.
- National policies for the rehabilitation of disabled – role of PT.
- The strategies to access prevalence and incidence of various conditions responsible for increasing morbidity in the specific community – role of PT in reducing morbidity, expected clinical and functional recovery, reasons for non-compliance in specific community environment & solution for the same.
- The evaluation of disability and planning for prevention and rehabilitation.
- Rehabilitation in urban and rural set up.
- Able to be a part of decision making team regarding the policies for the welfare of special communities & on issues of disability

Psychomotor:

- a) Be able to identify with clinical reasoning the prevailing contextual {e.g. environmental and psycho-social cultural} factors, causing high risk responsible for various dysfunctions and morbidity related to sedentary life style and specific community like women, children, aged as well as industrial workers and describe planning strategies of interventional policies to combat such problems at community level.
- b) Be able to gain the ability to collaborate with other health professionals for effective service delivery & community satisfaction
- c) Utilize the research methodology knowledge for formulation of a research question (synopsis)

Affective:

Be an empathetic health professional, especially for those in the community, who is away from the health institutions and having difficulty in healthcare access

SYLLABUS

Sr. No.	Topics	Didactic Hours	Field Hours	Total Hours
1	HEALTH PROMOTION	10	15	25
	a. W.H.O. definition of health and disease.	01		
	b. Health Delivery System – 3 tier	01		
	c. Physical Fitness: definition and evaluation related to:	08		
	i. Effect in Growing Age	02		
	ii. Effect in Obesity	02		
	iii. Physical Fitness in women - Pregnancy, Menopause, Osteoporosis	02		
	iv. Physiology of Aging -- Related to physiological changes in Aging	02		
	Preventive Measures in all the above groups of community with their related complications of physiological changes, growth, degenerative changes and lifestyle diseases.			

Sr. No.	Topics	Didactic Hours	Field Hours	Total Hours
2	WOMEN'S HEALTH	20	20	40
	a. Women in India.	1		
	b. Social issue having impact on physical Function.	1		
	c. Legal rights and benefits related to health.	1		
	d. Anatomical & Physiological variations associated with pregnancy & menopause.	8		
	e. Antenatal, post natal care, advice on labour positions, pain relief.	4		
	f. Urogenital dysfunction, prolapse, incontinence, malignancy and their therapeutic interventions.	5		
3	GERIATRICS	20	20	40
	a. Senior citizens in India	1		
	b. NGO's and Health related Legal rights and benefits for the elderly.	1		
	c. Institutionalized & Community dwelling elders	1		
	d. Theories of Aging	3		
	e. Physiology of ageing: Musculoskeletal, neurological, Cardio respiratory, metabolic changes	12		
	f. Scheme of evaluation & role of PT in Geriatrics.	2		
4	CONCEPTS OF REHABILITATION	11	20	31
	a. Disability- evaluation, types, prevention.	2		
	b. Rehabilitation- definition, types {Institutional, Reach out and Community}	1		
	c. National policies for rehabilitation of	1		
	d. Rehab Team work: Medical practitioner, P.T. / O.T., A.S.T., P.&O., Clinical psychologist, and vocational counselors and social workers.	2		
	e. CBR – Role of Physiotherapy & Physiotherapist	1		
	f. CBR strategies in: i. Urban area e.g. UHC, community centre, clubs, mahila mandals, Social centers, Schools, industries, sports centers. ii. Rural area- by using PHC / rural hospital, district hospital infrastructure. Loco motor aids using local resources.	4		
5	INTRODUCTION TO DISASTER MANAGEMENT	2		2

Sr. No.	Topics	Didactic Hours	Field Hours	Total Hours
6	INDUSTRIAL HEALTH	20	20	40
	a. Introduction to Industrial Health: Definition, Model of Industrial Therapy (Traditional Medical & Industrial Model)	4		
	b. Worker Care Spectrum:			
	i. Ability Management – Job analysis:- Job description, Job demand Analysis, Task Analysis, Ergonomics Evaluation, Injury Prevention, Employee Fitness Program.	5		
	ii. Disability Management: - Acute care, Concept of Functional Capacity assessment, Work Conditioning, Work Hardening.	5		
	iii. Environmental stress in the industrial area – accidents due to	3		
	a) Physical agents e.g. heat/cold, light, noise, vibration, UV radiation, ionizing radiation.			
	b) Chemical agents- inhalation, local action and ingestion.			
	c) Mechanical hazards-overuse/fatigue injuries due to ergonomic alternation and ergonomic evaluation of work place.			
	iv. Mechanical stresses:	3		
	a) Sedentary table work-executive's clerk.			
	b) Inappropriate seating arrangement-vehicle drivers.			
	c) Constant standing- watchman, defense forces, surgeons.			
	d) Over execution in labourer's-stress management.			
	e) Psychological hazards e.g. monotonicity and dissatisfaction in job, anxiety of work completion with quality, Role of PT. in industrial set up and stress management relaxation modes.			
PROJECT SYNOPSIS				
<p>Students (Individual/group) have to select a study to be done under the guidance of a teacher of any subject related to physiotherapy. After the finalization of the topic, he/ she/group has to decide the methodology of the study to be done (which has to be undertaken during the internship) Student (Individual/group) will present defend the synopsis of this study to be done during the University Practical examination of Community Physiotherapy.</p>				

CLINICAL		- 115 hrs
1	UHC & PHC visits, Industrial Visit, Geriatric Home Visit	
2	Institutional adoption of close by area/ vicinity.	
3	Perform surveys in adopted localities for ANC, disability, exercises & health promotion, preventive aspects for smoking/ alcohol/ drugs in youth etc.	
4	Students may make a case dependent evaluation proforma/ questionnaire.	

RECOMMENDED TEXT BOOKS

1. Physiotherapy in Gynecological & Obstetrical conditions –Mantle
2. Therapeutic Exercise – Kisner
3. Text book of Community Health for Physiotherapists – Bhaskar Rao
4. Geriatrics Physiotherapy – Andrew Guccione
5. Industrial Therapy – Glenda Key
6. Text of Physiotherapy for obstetrics and Gynecology – G.B. Madhuri & Pruthvish

RECOMMENDED REFERENCE BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		Marks
		100
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15]	50
	Q-2- answer any FIVE out of SIX [5x 7 =35]	
Section B -L.A.Q.	* LAQ's Based on topics- Health Promotion / Women's Health/Geriatrics /Industrial Health. Q-3] L.A.Q (any ONE out of TWO)	30
	a) b) 15 marks	
	Q-4] L.A.Q (any ONE out of TWO)	
	a) b) 15 marks LAQ should give break up of 15 marks – e.g. [3 +5+7]	
Total Marks		80

PRACTICAL 80 MARKS + I.A. – 20 MARKS		Marks
		100
LONG CASE	Rehabilitation/ Women's Health / Geriatric/ Industrial Health / Health Promotion.	45
PROJECT SYNOPSIS	(Synopsis can be on any topic to be done during Internship project/ monogram (Musculoskeletal, Neurosciences, Cardio Respiratory or Community). [Introduction, Aims & Objectives, Methods & Methodology & Review of Literature Expected]	25
JOURNAL	1. 1 cases each of Rehabilitation, Health Promotion, Industrial Health, Women's Health & Geriatrics (Total 5 cases only) 2. Documentation of visits (Minimum One) to either Industry, Geriatric Home, Community assessment	5
COMMUNICATIONSKILLS		5
Total Marks		80

INTERNAL ASSESSMENT:

- Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each
TOTAL - 160 marks
- Internal Assessment (Theory) as per University pattern.
- A. Practical examination for Terminal examination to be taken with 2 Long Cases of 40 marks each.
B. Practical examination for Preliminary examination to be taken with 1 Long Case of 50 marks & Project Synopsis for 30 marks.
- Internal Assessment to be calculated out of 20 marks.

PRINCIPLES OF BIOENGINEERING

(COLLEGE EXAMINATION)

(Didactic 27 hrs + Practical /Laboratory-03 hrs) TOTAL 30 HRS

COURSE DESCRIPTION:

The course is designed to give knowledge & application of biomechanical principles related to Orthotics & Prosthetics. Students will also learn the principles of the prescription & the checkout procedures of aids & appliances as per the physical dysfunction of the person. They will learn to fabricate simple splints.

OBJECTIVES:

At the end of the course, the candidate shall

Cognitive:

- a) Acquire knowledge about biomechanical principles of application of variety of aids & appliances used for ambulation, protection & prevention.
- b) Acquire in brief knowledge about various material used for splints/ Orthoses & prostheses and their selection criteria

Psychomotor:

Acquire the skill of fabrication of simple splints made out of Low cost material

SYLLABUS

Sr. No.	TOPIC	Didactic Hours
1.	Introduction to bioengineering- Classification of Aids & appliances (Splints/ Orthoses for spine, upper & lower limb; Prostheses for Lower limbs & Upper limbs)	1
2.	Biomechanical principles in designing of appliances & assessment; Procedures for static & dynamic alignment of the Orthoses & Prostheses:	26
	a. Introduction to Orthotics, Solid Ankle foot Orthoses (AFO)	1
	b. Articulated AFO, Various Shoe modifications	1
	c. Knee Ankle Foot Orthoses (KAFO)	1
	d. Knee Orthoses (KO)	1
	e. Hip Knee Ankle Foot orthoses (HKAF0), Hip Orthoses (HO)	1

Sr. No.	TOPIC	Didactic Hours
	f. Fracture Bracing and Flexible Lumbo-sacral Orthoses (LSO) and Thoraco-Lumbo-sacral Orthoses (TLSO)	1
	g. Rigid TLSOs and Cervical Orthoses (CO)	1
	h. Orthotic mgmt. of Scoliosis, Milwaukee and low profile scoliosis orthoses, Scheuermann's Kyphosis & Osteoporosis	1
	i. Orthoses for LBP, Introduction to Upper limb Orthotics and Shoulder orthoses (SO)	1
	j. Shoulder (SO), Elbow Orthoses (EO) & Wrist Hand Orthoses (WHO)	2
	k. Introduction to Gait in relation to the use of Orthoses / Prostheses	1
	l. Prosthetic management of Forefoot amputees	1
	m. Prosthetic management of Syme's and hind foot Amputees	1
	n. Below Knee Prosthesis & Prosthetic foot pieces	1
	o. Alignment of Below Knee Prosthesis and gait deviations	1
	p. Prosthetic Knees and Knee Disarticulation mgmt.	
	q. Above Knee Prosthesis, alignment, gait deviations	1
	r. AK Checkouts, Prosthetic mgmt. of Hip Disarticulation, hemipelvectomy, Bilateral amputees and Congenital cases	1
	s. Introduction to Upper Limb Prosthetics, Prosthetic mgmt. of Partial Hand amputees	2
	t. Cosmetic Prostheses for all levels of Amputations	1
	u. Task Specific Prostheses, Prosthetic mgmt. of Wrist Disarticulation, Myoelectric Below Elbow prosthesis	2
	v. Body Powered Below Elbow Prostheses and it's components	1
	w. Harnessing in BE	1
	x. Prosthetic mgmt. of Elbow Disarticulation and Above Elbow Amputation.	1

3.	Project: Temporary splints: To fabricate ONE splint each [to use P.O.P, aluminum strips /sheets /wires rubber bands, Rixin, Orfit,etc]	3
	Splinting- Practical Demonstration of the following a) Cock up (dorsal/volar) b) Outrigger, c) Opponence splint d) Anterior and posterior guard splints for gait training, e) Foot drop splint f) Facial splint g) Mallet Finger Splint h) C bar for 1st web space of hand	

RECOMMENDED REFERENCE BOOKS

1. Orthotics in Functional Rehabilitation of Lower limb- Deborah A. Nawoczenski, Marcia E. Epler
2. Orthotics –clinical Practice and Rehabilitation Technology- Published by- Churchill Livingstone
3. Atlas of Orthotics- Biomechanical principles and application (American Academy of Orthopedic Surgeons)- The C. V. Mosby Company

SCHEME OF COLLEGE EXAMINATION

THEORY ONLY: 50 MARKS		Marks
[There shall be no LAQ in this paper]		
* The question paper will give appropriate weightage to all the topics in the syllabus.		50
Q-1 & Q2	SAQ-to answer any FIVE out of SIX [5 x 3]	15
	SAQ – to answer any FIVE out of SIX [5 x 7]	35
Total Marks		50
Passing in the exam is Mandatory Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than 50%.		

RESEARCH METHODOLOGY AND BIostatISTICS

(COLLEGE EXAMINATION)

[DIDACTIC: 30 HRS]

COURSE DESCRIPTION:

To provide the students with the necessary concepts of statistics to enable them to realize a research project in the field of Physiotherapy. It involves selection of appropriate statistical techniques to address questions of medical and physiotherapeutic relevance; selects and applies appropriate statistical techniques for managing common types of medical / physiotherapeutic data. It uses various software packages for statistical analysis and data management. It interprets the results of statistical analyses and critically evaluates the use of statistics in the medical literature. It communicates effectively with statisticians and the wider medical community, in writing and orally through presentation of results of statistical analyses. It explores current and anticipated developments in medical statistics as applied to physiotherapists. It is designed to teach entry-level physical therapy students the fundamentals of reading and understanding research methods, design, and statistics.

OBJECTIVES:

At the end of the study of this subject the student should be able to:

1. Enumerate the steps in Physiotherapy research process.
2. Describe the importance & use of biostatistics for research work.
3. Acquire skills of reviewing literature, formulating a hypothesis, collecting data, writing research proposal etc.

SYLLABUS

Sr. No.	Topics	Didactic Hours
1	RESEARCH IN PHYSIOTHERAPY	5
	a. Introduction b. Research for Physiotherapist: Why? How? When? c. Research – Definition, concept, purpose, approaches d. Internet sites for Physiotherapists.	
2	RESEARCH FUNDAMENTALS	5
	a. Define measurement b. Measurement framework c. Scales of measurement d. Pilot Study e. Types of variables f. Reliability & Validity g. Drawing Tables, Graphs, Master chart	
Sr. No.	Topics	Didactic Hours

3	WRITING A RESEARCH PROPOSAL	3
	<ul style="list-style-type: none"> a. Defining a problem b. Review of Literature c. Formulating a question, Operational Definition d. Inclusion & Exclusion criteria e. Methodology- Forming groups Data collection & method for analysis f. Informed Consent Steps of documentation – Title to Scope of study 	
4	RESEARCH ETHICS	2
	<ul style="list-style-type: none"> a. Importance of Ethics in Research b. Main ethical issues in human subjects" research c. Main ethical principles that govern research with human subjects d. Components of an ethically valid informed consent for research. 	
5	OVERVIEW OF STUDY DESIGNS	3
	<ul style="list-style-type: none"> a. Observational- <ul style="list-style-type: none"> i. Descriptive-Case study/ series, Cross sectional, Normative, Correlational ii. Analytical; case control, cohort b. Experimental- True & quasi experimental 	
t x	SAMPLING	3
	<ul style="list-style-type: none"> a. Random and non-random sampling. b. Various methods of sampling – simple random, stratified, systematic, cluster and multistage. Sampling and non-sampling errors and methods of minimizing these errors. 	
7	BASIC PROBABILITY DISTRIBUTIONS AND SAMPLING DISTRIBUTIONS	2
	<ul style="list-style-type: none"> a. Concept of probability and probability distribution. b. Normal, Poisson and Binomial distributions, parameters and application. c. Concept of sampling distributions. d. Standard error and confidence intervals. e. Skewness and Kurtosis 	

Sr. No.	Topics	Didactic Hours
8	TESTS OF SIGNIFICANCE	3
	a. Basics of testing of hypothesis – Null and alternate hypothesis, type I and type II errors, level of significance and power of the test, p value. b. Tests of significance (parametric) - t – test (paired and unpaired), Chi square test and test of proportion, one way analysis of variance. c. Repeated measures analysis of variance. d. Tests of significance (non-parametric)-Mann-Whitney u test, Wilcoxon test, e. Kruskal-Wallis analysis of variance. Friedman’s analysis of variance.	
9	CORRELATION AND REGRESSION	1
	Simple correlation – Pearson’s and Spearman’s; testing the significance of correlation coefficient, linear and multiple regressions.	
10	STATISTICAL DATA	2
	Tabulation, Calculation of central tendency and dispersion, Using software packages, Analysis, Presentation of data in diagrammatic & Graphic form	
11	RESEARCH REPORT	1
	Overview, Types and Publication	

RECOMMENDED TEXT BOOK

1. Methods in Biostatistics - B.K. Mahajan
2. Research for physiotherapist-Hicks

SCHEME OF COLLEGE EXAMINATION

THEORY : 50 Marks		Marks
[There shall be no LAQ in this paper]		50
* The question paper will give appropriate weightage to all the topics in the syllabus.		
Q-1 & Q2	SAQ-to answer any FIVE out of SIX [5 x3]	15
	SAQ – to answer any FIVE out of SIX [5 x7]	35
Total Marks		50
Passing in the examination is Mandatory		
Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than 50%.		

SCHEME OF EXAMINATIONS AT A GLANCE – IV BPT

Subjects	<u>UNIVERSITY EXAMINATIONS</u>						<u>COLLEGE LEVEL EXAMS</u> (Theory only)
	Theory			Practical			
	University	I.A.	Total	University	I.A.	Total	
Musculoskeletal Physiotherapy	80	20	100	80	20	100	---
Neuro Physiotherapy	80	20	100	80	20	100	---
Cardio-Vascular & Respiratory Physiotherapy	80	20	100	80	20	100	---
Community Physiotherapy	80	20	100	80	20	100	---
Professional Practice & Ethics	---	---	---	---	---	---	50
Administration, Management & Marketing	---	---	---	---	---	---	50
Principles of Bioengineering	---	---	---	---	---	---	50
Research Methodology & Biostatistics	---	---	---	---	---	---	50
Total	320	80	400	320	80	400	200

GENERAL RULES & REGULATIONS OF INTERNSHIP

Internship is a phase of training where in a candidate is expected to conduct actual Physiotherapy practice, with fair independence in clinical decision making in low risk cases where as to work under supervision at high risk areas; so that at the end of

Internship he/ she is capable to practice Physiotherapy independently.

The Internship programme shall mainly focus on acquisition of specific skills listed in the major areas of training by —hands onl experience & also on ability to conduct a scientific project.

- 1) The Chief of parent institute shall be responsible for implementation of Internship programme & also for the issue of Internship completion certificate.
- 2) Internship shall commence not later than One week from the day of declaration of results of IV BPT examination.
- 3) Compulsory Internship shall include rotational clinical assignments, administrative skills & Scientific project over a period of 26 weeks.
- 4) On successful completion of Internship, to the satisfaction of the Head of Physiotherapy Dept & the Chief of the parent institution, the Internship completion certificate shall be issued towards the award of BPT Degree.

OBJECTIVES -

At the end of Internship programme, the candidate shall be able to-

- 1) Detect & evaluate Anatomical, Patho-physiological, & Psycho-somatic impairments resulting in Dysfunction of MOVEMENT of all the ages, & occupations ;as well as epidemiological sectors in the population ;& arrive at the appropriate Physical & Functional diagnosis..
- 2) Understand the rationale & basic investigative approach to the Medical system & Surgical intervention regimens & accordingly, Plan & implement specific Physiotherapeutic measures effectively Or make a timely decision for referral to appropriate specialty
- 3) Select strategies for cure & care; adopt preventive, restorative & Rehabilitative measures for maximum possible independence of a client/ patient, at home, work place & in the community.

- 4) Help in all types of emergencies medical, surgical, neonatal, & paediatric by appropriate therapeutic procedures & shall be able to implement, as a first level care, the. Cardio Pulmonary resuscitation, providing support to the injured area, splinting etc, in the situation when medical aid is not available
- 5) Demonstrate skill to promote Health in general as well as competitive level , such as sports, work productivity ,Geriatric &, Womens' health etc, keeping in mind National Health policies;
- 6) Develop skill to function as an essential member in co-partnership of the health team organized to deliver the health & family welfare services in existing socioeconomic, political & cultural environment
- 7) Develop communication skill for purpose of transfer of suitable techniques to be used creatively at various stages of treatment, compatible with the psychological status of the beneficiary & skill to motivate the client & his family to religiously carry out prescribed home exercise programme & compliance to follow ergonomic advice given as a preventive / adoptive measure.
- 8) Demonstrate skill of managing patients attending Physiotherapy services , by developing skills to use appropriate manipulative mobilization methods, Neurophysiological maneuvers, techniques of Bronchial hygiene, Breathing retraining; application of Electro-therapeutic modalities & Therapeutic exercise; .for the purpose of ,evaluation, assessment ,diagnostic procedures ; & for the purpose of treatment as well, bearing in mind their indications & contraindications
- 9) Develop ability to prescribe, assess [fitting] & use of appropriate orthotic & prosthetic devices; in addition to an ability to fabricate simple splints for extremities, for the purpose of prevention, support & training for ambulation & activities of daily living.
- 10) Develop ability to do Functional Disability evaluation of Movement; & recommend for rest or alternative work substitution during the period of recovery or in case of permanent disability.
- 11) Practice professional autonomy & ethical principle with referral as well as first contact client in conformity with ethical code for Physiotherapists.

INTERNSHIP SCHEDULE -

Candidate shall be posted to four Rotational Clinical assignments of total 26 weeks, including administrative skills pertaining to Physiotherapy practice & a scientific project of 3 hours per week [total not less than 78 hours].

The schedule of Internship shall be as follows:

Assignment	Discipline	Duration
Musculoskeletal Physiotherapy	OPD/Indoor Orthopaedics /Burns/ Surgical Amputations	4 weeks
	Optional-Hand rehab. /Sports injury /wound & skin care	2 weeks
Neurophysiotherapy	OPD/Neurology/ Neurosurgery/	4 weeks
	Optional-Paediatrics /EMG	2 weeks
Cardio-pulmonary Physiotherapy	OPD /Medical/surgical	4 weeks
	Intensive care	4 weeks
Community Physiotherapy	* Womens health + Geriatric health at primary health centre or community	4 weeks
	Optional – Industrial health/fitness clinic	2 weeks

* Clinical Posting in Community P.T can also be conducted at the Rural set up with prior permission from the HOD and the Dean/ Principal of the parent institution.

SCIENTIFIC PROJECT

During the Internship, candidate shall undertake a scientific project of 3 hours per weeks [total duration not less than 78 hours]. Selection of topic & place for the conduct shall be in consultation & with consent of the H.O.D. P.T. dept & the ethical committee of parent institution. Scientific inquiry shall be based on Comparative diagnostic or clinical trials, having a sample size of not less than 20. The candidate shall submit the project not earlier than two weeks & not later than 4 weeks of the last day of internship & the HOD, P.T. dept of parent institution shall sign on the same if the project is up to her /his satisfaction.

Candidate shall then present the project in front of senior Faculty, & if found satisfactory, the evaluators shall offer an appropriate Grade [As per MUHS criteria] in consultation with each other.

EVALUATION

During the rotational posting, student shall treat not less than 10 patients per day & also undertake skills of maintaining administrative records & Maintenance of equipment. The candidate shall maintain a log book & record all the events of the respective posting He /She shall be closely monitored by the senior Physiotherapy staff in charge through out the posting & the same shall also sign in the Log book on completion of the assignment

There shall be Formative & summative assessment at the end of each of the 4 postings given in the schedule & score will be given to each by the panel of minimum 3 teachers involved in supervision of the student during the respective assignment. Student shall repeat the respective assignment for a period of 25% of the period allotted to the respective posting, if he /she fails to score minimum 3 in the average of overall Formative + Summative score obtained during the respective posting.

During the Internship, student MUST CONDUCT following procedures---

A) Electro-therapeutic procedures –

- 1) Application of Low frequency currents [galvanic/faradic like, rectangular, triangular, surged, interrupted etc] for- I]-Electro-diagnosis-a]-short-long pulse test, b]- motor points,c]-S.D. curves, d]- sensory threshold, e]-Pain threshold & tolerance, II]-Therapeutic purpose-Iontophoresis of various pharmaco-therapeutic drugs, Cathodal & anodal galvanism, Electrical reeducation, T.N.S, Interfrential current therapy ,Beat frequency, medium frequency currents , strong surged faradic stimulations, for pain relief & reduction of swelling etc.
- 2) Application of Superficial & Deep thermal agents- Cryotherapy, Hot packs, Paraffin wax bath, Infra red radiations, Short wave diathermy,
- 3) Calculation of appropriate dosage & application of a]-U.V.R [B /C] for wound care, & U.V.A .for skin conditions, b]-Continuous & pulsed Ultrasound of 1 & 3 MHz frequency for direct application, with coupling agents, water bags & phonophoresis.
- 4) Testing of all the electrical equipment

B) Therapeutic Gymnastic Procedures-

- 1) Selection & application of appropriate gymnastic too for the management of dysfunction of mobility, strength, power, endurance, balance, coordination, cardio-pulmonary fitness; & for functional training such as transfers, mat activity, postural correction, gait training with or without aids, ambulation & A.D.L.
- 2) Group activity procedures-Select & implement group activity by effective & appropriate command & demonstration,-such as Jacobson`s Relaxation exercises, standard Yoga postures, Mat exercises, transfer exercises, shoulder/ Back class, General fitness/ Aerobic exercises .Balancing exercises , Breathing exs
- C) Manipulative mobilisation procedures - a]- massage maneuvers, for extremities, face , neck & back, b]-assessment of Physiological movements, & end-feel.; identification of target soft tissue to be mobilized, & application of NON-Thrust mobilization techniques of Kaltenborne ,Maitland, Mulligan ,Buttler, Cyriax, Mckenzie & muscle energy methods, passive sustained stretching on Spine & extremities, , manual traction for cervical & lumbar spine.,
- D) Therapeutic exercise [including auto-stretching exercises.]- for Home programme, for restoration & maintenance of function , prevention of Dysfunction
- E) Neuromotor & Psychosomatic procedures- a]-Manual muscle testing [group & individual], identification of trick movements, muscle imbalance, b]-assessment of posture [static & dynamic] & its deviations, c]-assessment of Gait & its deviation; selection of appropriate walking aids, & training, stair climbing; d]- Neuro- developmental & /neurophysiological methods of assessment & treatment [P.N.F, N.D.T., Brunstromme, Bobath, Butler, Patricia Devis] of voluntary control, spasticity, [Ashworth `s scale],coordination, balance, abnormal movements, functional re- education, standing, gait training, ADL training, b]-assessment of L.O.C, Tilt table standing for Ca⁺⁺ balance, passive mobilization for maintenance of paralytic limbs, c]-Assessment of peripheral sensations, dermatomes, superficial & deep reflexes,
- F) Cardio-Pulmonary Procedures- A]- assessment of B.P., R.R., Pulse, body temp. , Abnormal breath sounds, breathing pattern, chest expansion, exercise tolerance [6 min. walk test] , P.E.F.R., b]selection & application of nebulisation, humidification, positioning for postural drainage, percussion manipulations for bronchial hygiene, coughing -huffing maneuvers, suctioning for tracheostomized & non- tracheostomized patient, comatose patient, assist in bronchial hygiene in patients with Oxygen support or artificial ventilation; c]- selection & implementation of appropriate Breathing exercise,[inspiratory/ expiratory /modified inspiratory;] d]-Cardio-pulmonary esuscitation

- G) Other Therapeutic procedures- a]-Fabrication [with plaster of Paris bandages/ thermoplast/similar material-] splints- cock up, knuckle bender, outriggers, opponence splint, soft cervical collar; posterior guards for gait training, b]-strapping & Taping of extremities for support, & pain relief c]- application of elastocrape bandage for prevention of swelling, shaping of amputated stump, d]-wound care-application of U.V.R., TNS, etc, dressing; UVR application for vitiligo, & psoriasis
- H) Community Physiotherapy procedures- a]-Collect, analyse, interpret, & present , simple community & hospital based data, b]-participate as a member in co-partnership in the Rehabilitation work in the community c]-participate in the programmes in prevention & control of locally prevalent functional disorders, d]- be capable of conducting survey & employ its findings as a measures towards arriving at a community functional diagnosis e]- Provide health education to an individual / community on- i]-General fitness, ergonomic alterations for better quality life at home & work place ,ii]-preventive tools to avoid accidents, in the industrial area iii] skin care in case of loss /impairment of sensations, iv]-care of the back, v]-antenatal/ post-natal exercises; management of pelvic dysfunction [urinary / anorectal incontinence; per vaginal prolapse vi]-specific warming up activities & appropriate maintenance exercises to elderly patients

TO ASSIST IN PROCEDURES –

- a) Fabrication of pylon
- b) Electromyography,
- c) Physiotherapy in Intensive care
- d) Disaster management

EVALUATION SCHEME- Skills during Formative Evaluation shall include following

- 1) Musculo-skeletal Physiotherapy—relevant Skills mentioned at - A ,B ,C ,D ,& G above
- 2) Neuro-Physiotherapy- Relevant Skills mentioned at A ,B ,D ,E ,& G above
- 3) Cardio-pulmonary Physiotherapy – Relevant skills mentioned at B, D , & F above
- 4) Community Physiotherapy- Relevant Skills mentioned at D, G & H above

Overall total marks per evaluation scheme is 10 marks.

LEAVE FOR INTERNS -

An internee shall be entitled for maximum 6 days leave during six months period of internship posting. An internee will not be permitted to avail more than 2 days leave in any department. Period of leave in excess of 2 days in a department will have to be repeated in the same department. Under any circumstances this period will not be condoned by any authority.

Issue of Internship completion certificate

Internee will be issued internship completion certificate by the Director /Principal only after completion of internship training programme satisfactorily.

Start of Internship programme

The programme will commence within 10 days after the declaration of Final BPT result by the University. Before commencement of the Internship Training Programme three days Orientation Workshop will be conducted, to orient the internees to get acquainted with the details of Internship Training Programme. The Orientation Workshop shall cover Disaster Management, Specific Emergency care of Patients, Hands-on, Medico-legal issues, Rehabilitation of patients, Internal Evaluation Scheme, Mandatory Skills to be acquired, Social and ethical aspects, National Health Policy, Patient Management. It shall be mandatory for the internees to attend the Orientation Workshop. The period of three days shall be included in the period of six months Internship.

FORMAT OF INTERNSHIP EVALUATION

Name :- _____ duration from _____

to _____

Assignment :-

SUMMATIVE EVALUATION		FORMATIVE EVALUATION	
MAXIMUM SCORE	5 Marks each	MAXIMUM SCORE	5 Marks each
Punctuality		Cognitive (Problem solving /clinical decision & reasoning/planning Treatment	
Attitude towards patients & colleagues/ Character		Physical Assessment Skills	
Urge for learning / Initiative		Skills of Treatment maneuvers	
Accountability / Responsibility		Skills of equipment handling	
Administrative ability (records / maintenance of equipment)		Participation in Academic activities	
Total		Total	

1: Poor 2 : Below Average 3 : Average -
 4 : Good ; 5 : Excellent

Head of the Dept.

Director/Principal

Minimum Grade required for passing – Average of overall score obtained from the respective assignment is to be considered. Minimum score for passing shall be - 3 : Average .

BPT Internship

Name of the College :

Ref. No: MGM/UDPT/ /

Date:

This is to certify that Mr/Ms/Mrs :

has successfully completed the Rotational Internship from To

Details of the posting is as follows-

NO.	DEPARTMENT	PERIOD	GRADE
1	Musculo-skeletal Physiotherapy:	To	
2	Neuro-Physiotherapy:	To	
3	Cardio-pulmonary physiotherapy :	To	
4	Community Physiotherapy:	To	
5	Extension due to absentee / Unsatisfactory performance	To	

At the Department :

6 Project :

Title:

[Sign]
Interns Incharge

[Sign]
Director/Principal

R. M. Patil

Professor - Director
University Department of Physiotherapy
MGMIHS, Navi Mumbai

188

BOM - 40/2015, dated 13.03.2015

Resolution No. 3.7 (b): Resolved to implement the HMS & Electro Journals for I BPT & II BPT with suggested changes regarding having printed documentation of minimum number of practicals/cases. (Annexure-12 & 13)

Resolution No. 3.7 (d): Resolved unanimously to implement proposed changes in MPT transcript including UGC nomenclature to change MPTh. to MPT. (Annexure-16)



MGM Institute's

(Deemed University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

University Department of Physiotherapy

Sector 1, Plot No. 1 & 2, Kamothe, Navi Mumbai 410209

MGM/UDPT/184/2016

Date: 27/5/2016

To,
The Controller of Examination,
MGM Institute of Health Sciences
Kamothe Navi Mumbai.

Sub : Typographical error in Scheme of University Examination in Human Physiology
syllabus -- I BPT curriculum

Respected Sir,

Please note a typographical error in Scheme of University Examination in Human Physiology syllabus – I BPT curriculum. Presently it reads as “Section A- S.A.Q. Q.2 Answer any THREE out of FOUR”. It should read as “Answer any FIVE out of SIX (5x7=35)”.

May we request for needful action to allow the correction to be implemented at July 2016 university examination. Please find enclosed the corrected scheme of University Examination for Human Physiology.

We look forward to your support.

Thanking you,

Kind Regards,

Rajani Mullerpatan

Dr. Rajani Müllerpatan

BOS Chairperson

Professor - Director

University Department of Physiotherapy

MGM IHS, Navi Mumbai

CC: Registrar, MGM Institute of Health Sciences, Kamothe Navi Mumbai.

Recd & JTS
JTS
I BPT syllabus
JTS

RECOMMENDED TEXT BOOKS

1. Text book on Medical Physiology – Guyton
2. Textbook of Physiology – A K Jain (for MBBS students)

RECOMMENDED REFERENCE BOOKS

1. Review of Medical Physiology – Ganong
2. Samson & Wright's Applied Physiology
3. Textbook of Medical Physiology – Bern and Levy

SCHEME OF UNIVERSITY EXAMINATION

THEORY		Marks
80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		100
Section A- S.A.Q.	Q-1 - Answer any FIVE out of SIX [5 x 3 = 15] Based on: Blood/G.I. tract / Electrolyte balance / Endocrine / Uro-genital System / General physiology /Special Senses (Eye/Ear/Skin)	50
	Q-2- Answer any FIVE out of SIX [5 x 7 =35] Based on: Cardio-vascular system / Respiratory system / Exercise Physiology/ Nerve	
Section B -L.A.Q.	Q-3] L.A.Q (any ONE out of TWO) Based on Musculoskeletal a) b) -15 marks	30
	Q-4] L.A.Q (any ONE out of TWO) Based on: C.N.S./ Spinal Cord/ Electro-Neuro-Physiology /C.V.S. /R.S. a) b) 15 marks LAQ should give break up of 15 marks – e.g. [3 +5+7]	
Total Marks		80

Rajiv Kumar
27-05-2016

PRACTICAL 80 MARKS + I.A. – 20 MARKS		Marks
		100
Spots	Based on: Topic 1,2,3,6,7,8,9,11&12 (10 X 2 Marks)	20
Viva	Based on theory	20
Demonstration	On Clinical Physiology C.V.S. 10 Marks R.S. 10 Marks	35
	C.N.S. Cranial Nerves and Special Senses 15 Marks	
Journal	Year work on practicals performed	05
Total Marks		80

INTERNAL ASSESSMENT:

1. Two exams – Terminal and prelims of 80 marks each (Theory & Practical) **TOTAL - 160 marks**
2. I.A. to be calculated out of 20 marks (Theory & Practical)
3. Internal assessment as per University pattern.

K S

MGM INSTITUTE OF HEALTH SCIENCES
(Deemed University u/s 3 of UGC Act, 1956)
Grade 'A' Accredited by NAAC
Sector-1, Kamothe, Navi Mumbai - 410209
Tel. No. 022-27432471, 022-27432994, Fax No. 022 - 27431094
E-mail : registrar@mgmuhs.com ; Website : www.mgmuhs.com

Date : 23.02.2016

MGM/01/A-41(1)/2016/563

To

The Director,
MGM Institute's University Department of Physiotherapy (Navi Mumbai & Aurangabad),
MGM Institute

Ref. : **BPT syllabus implementation as per Resolution passed in BOM-43/2015 dated**
6/11/2015 – Reg.

Dear Madam,

Please find enclosed the approved BPT syllabus to be implemented from 2015-16 batch onwards. Also note that this is to be implemented for 2014-15 batch from their 2nd year onwards.

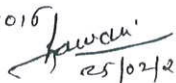
With regards,


Registrar
Registrar

MGM INSTITUTE OF HEALTH SCIENCES
(DEEMED UNIVERSITY u/s 3 of UGC Act, 1956)
KAMOTHE, NAVI MUMBAI

Copy for information to :

1. Vice Chancellor, MGM Institute of Health Sciences, Navi Mumbai
2. Pro Vice Chancellor, MGM Institute of Health Sciences, Navi Mumbai
3. Pro Vice Chancellor (Research), MGM Institute of Health Sciences, Navi Mumbai
4. Dr. P.M. Jadhav, Hon'ble Trustee, MGM Institute of Health Sciences, Navi Mumbai
5. Dean Faculty, MGM Medical College, Navi Mumbai and Aurangabad
6. Deputy Registrar, MGM Institute of Health Sciences, Navi Mumbai and Aurangabad
7. COE, MGM Institute
- ✓ 8. Academic Section, MGM Institute

Recd from Admin section
on 25/02/2016

25/02/2016

193

Resolution No. 1.3.13.1 of BOM-51/2017: Resolved to accept the Handbook for BPT Course.
[Annexure-XXI]

Resolution No. 1.3.13.2 of BOM-51/2017: Resolved to accept the Journals in the subjects of Fundamentals of Electrotherapy (I BPT), Electrotherapy (II BPT), Fundamentals in Kinesiotherapy (IBPT) and Kinesiotherapy (II BPT) from 2017-18. **Annexure-XIII**

Resolution No. 3.11.2 of BOM-52/2018: Resolved to increase time duration of following subjects to 2 hours at internal & University examination, with effect from batch appearing in University July 2018 examination onwards:

BPT

Sr. No.	Year	Name of Subject
1.	I BPT	Biochemistry
2.	II BPT	Pharmacology
3.	II BPT	Psychiatry (including Psychology)
4.	III BPT	Surgery I
5.	III BPT	Surgery II
6.	III BPT	Medicine I
7.	III BPT	Medicine II

Resolution No. 4.6.2 of BOM-53/2018: Resolved to approve:

- For BPT course - 40% marks in internal assessment (**theory & practical/clinical combined wherever applicable**) to be considered as eligibility criteria to appear for University Examination in each subject with immediate effect.
- For BPO course -40% marks in internal assessment (**theory & practical/clinical combined wherever applicable**) to be considered as eligibility criteria to appear for University Examination in each subject with immediate effect.

Resolution No. 4.6.3 of BOM-53/2018: Resolved to include “Textbook of Prevention Practice and Community Physiotherapy” by Dr. Bharati Vijay Bellare in BPT & MPT curriculum.
[Annexure-XXVI]

our website www.jaypeebrothers.com, for detailed information on physiotherapy books, visit our website www.jaypeebrothers.com

1

Textbook of Prevention Practice and **COMMUNITY PHYSIOTHERAPY**



Chief Editor
Dr Bharati Vijay Bellare

Sub-Editors
Pavithra Rajan
Dr Unnati Nikhil Pandit



ANNEXURE 4 -

BOS PT MARCH 2018

199

Textbook of Prevention Practice and Community Physiotherapy

Chief Editor

Dr Bharati Vijay Bellare

BSc (PT), PGCR, FIAAP, PhD

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Lokmanya Tilak Municipal Medical College

Ex-Prof

MGM School of Physiotherapy, Navi Mumbai, Maharashtra, India

Sub-Editors

Pavithra Rajan

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PhD Candidate in Physiotherapy

Faculty of Health Sciences

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MPT (CVR), PhD

Prof-Director, Dept of Physiotherapy

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Textbook of Prevention Practice and Community Physiotherapy

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Resolution No. 4.4.2.1 of BOM-55/2018 :

- (i) Resolved to incorporate Vision & Mission before Preamble in existing BPT curriculum which was approved through resolution no. 3.7(a) in BOM-43/2015 dated 06/11/2015. [Annexure 17]
- (ii) Resolved to incorporate well defined program outcome and program specific outcome after Preamble in existing BPT curriculum which was approved through resolution no. 3.7(a) in BOM-43/2015 dated 06/11/2015. [Annexure 18]
- (iii) Resolved to incorporate well defined course outcomes before syllabi of each courses in existing BPT curriculum which was approved through resolution no. 3.7(a) in BOM-43/2015 dated 06/11/2015. [Annexure 19]
- (iv) Resolved to include Ability Enhancement Compulsory Courses (AECC) at the end of existing BPT curriculum. [Annexure 20]
- (v) Resolved to add "Mechanical/Electrical/Continuous/Intermittent" after Traction (Cervical & Lumbar) in course Kinesiotherapy of II BPT under topic 1(g) named Biophysics.

Annexure-17

VISION AND MISSION OF MGM SCHOOL OF PHYSIOTHERAPY, NAVI MUMBAI

Vision

MGM Institute of Health Sciences aims to be a top ranking centre of Excellence in Health Science Education, Health Care and Research.

Mission

- Students graduating from the Institute will have the required skills to deliver the quality health care to all the sections of the society with compassion and benevolence, without prejudice or discrimination at an affordable cost.
- As a Research Centre, it shall focus on finding better, safer and affordable ways of diagnosing, treating and preventing diseases. In doing so, it will maintain highest ethical standard.

**PROGRAM OUTCOMES
BACHELOR OF PHYSIOTHERAPY**

PO 1	Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
PO 2	To develop healthy physiotherapist – patient relationship
PO 3	To understand the moral and ethical values and apply in physiotherapy management
PO 4	To understand the structural and functional anatomy, physiology and co relate the applied anatomy, physiology in physiotherapy practice.
PO 5	To understand the pathology of medical conditions in context with physiotherapy, interpret& use medical communication.
PO 6	To understand the knowledge of bio mechanics and apply in physiotherapy management.
PO 7	Students acquire knowledge of all the clinical subjects like Orthopedics, General Surgery, Medicine, Neurology, Pediatrics, Dermatology & Gynecology & Obstetrics, Community Medicine and Sociology and apply in physiotherapy management
PO 8	To be able to demonstrate the maneuvers of passive movements, massage, stretching, strengthening, and various manual therapy techniques. Students will organize the physiotherapeutic evaluation skills including electro diagnosis on patients to arrive at a Functional/ Physical Diagnosis in Neuromuscular, Cardiovascular conditions.
PO 9	<p>To understand and imbibe concepts of energy conservation, global warming and pollution and contribute in day-today work by optimally using available resources.</p> <ul style="list-style-type: none"> • To understand personal finance, entrepreneurship and demonstrate managerial skills related to task in day-to-day work for personal & societal growth. • To develop and utilize basic computer applications for data management, data storage, generating data bases and for research purposes.

**PROGRAM SPECIFIC OUTCOMES
BACHLEOR OF PHYSIOTHERAPY
PHYSIOTHERAPIST AS A PROFESSIONAL**

Reflect, learn and teach others

PSO 1	Acquire, assess, apply and integrate new knowledge, learn to adapt to changing circumstances and ensure that patients receive the highest level of professional care.
PSO 2	Establish the foundations for lifelong learning and continuing professional development, including a professional development portfolio containing reflections, achievements and learning needs.
PSO 3	Continually and systematically reflect on practice and, whenever necessary, translate that reflection into action, using improvement techniques and audit.
PSO 4	Manage time and prioritize tasks, and work autonomously when necessary and appropriate.
PSO 5	Recognize own personal and professional limits and seek help from colleagues and supervisors when necessary.
PSO 6	Function effectively as a mentor and teacher including contributing to the appraisal, assessment and review of colleagues, giving effective feedback, and taking advantage of opportunities to develop these skills.

Learn and work effectively within a multi-professional team

PSO 7	Understand and respect the roles and expertise of health and social care professionals in the context of working and learning as a multi-professional team.
PSO 8	Understand the contribution that effective interdisciplinary team working makes to the delivery of safe and high-quality care.
PSO 9	Work with colleagues in ways that best serve the interests of patients, passing on information and handing over care, demonstrating flexibility, adaptability and a problem-solving approach.
PSO 10	Demonstrate ability to build team capacity and positive working relationships and undertake various team roles including leadership and the ability to accept leadership by others.

PHYSIOTHERAPIST AS A SCHOLAR AND A SCIENTIST

Physiotherapy graduate will be able to apply biomedical scientific principles, method and knowledge relating to: anatomy, physiology, biochemistry, cell biology, pathology, microbiology, pharmacology and psychology to Physiotherapy clinical practice.

The graduate will be able to:

PSO 11	Explain normal human structure and functions.
PSO 12	Explain the scientific basis for common musculoskeletal, neurological, cardio-respiratory, women's health related, geriatric and sports related disorders.
PSO 13	Justify selection of appropriate clinical examinations and investigations for common clinical cases.
PSO 14	Select appropriate forms of rehabilitation goals for common disorders.
PSO 15	Make accurate observations of clinical presentation and appropriate critical analysis of clinical data.
PSO 16	Recognize the role of environmental and occupational hazards in ill-health and discuss ways to mitigate their effects.
PSO 17	Evaluate check-up findings (history, reviewing applications, tests and procedures) to decide on the appropriate clinical treatments for patients.

Apply scientific method and approaches to Physiotherapy research

PSO 18	Do research experiments to evaluate the current practices and find innovative physiotherapy interventions, based on evidence, to provide the highest quality levels of healthcare.
PSO 19	Critically appraise the results of relevant qualitative and quantitative studies as reported in scientific literature.
PSO 20	Formulate simple relevant research questions and design appropriate studies or experiments to address the questions.
PSO 21	Apply findings from the literature to answer questions raised by specific clinical problems.
PSO 22	Understand the ethical issues involved in research.

PHYSIOTHERAPIST AS A PRACTITIONER

The graduate will be able to carry out a consultation with a patient:

PSO 23	Take and record a patient's medical history, including family and social history, talking to relatives or other caretakers where appropriate.
PSO 24	Elicit patients' questions, their understanding of their condition and treatment options, and their views, concerns, values and preferences.
PSO 25	Perform a thorough clinical examination.
PSO 26	Determine the extent to which patients want to be involved in decision-making about their care and treatment.
PSO 27	Provide explanation, advice, reassurance and support.

Diagnose and manage clinical presentations

PSO 28	Interpret findings from the history, physical examination and investigations.
PSO 29	Make an initial assessment of a patient's problems and a differential diagnosis.
PSO 30	Interpret the results of investigations, including pathology reports, x-rays and the results of the diagnostic procedures.
PSO 31	Make clinical judgements and decisions, based on the available evidence, in conjunction with colleagues and as appropriate for the graduate's level of training and experience.
PSO 32	Formulate a treatment plan according to established principles and best evidence, in partnership with the patient, their caretakers, and other health professionals as appropriate.
PSO 33	Respond to patients concerns and preferences, obtain informed consent, and respect the rights of patients to reach decisions with their doctor about their treatment and care and to refuse or limit treatment.
PSO 34	Support patients in caring for themselves.

Communicate effectively with patients and colleagues in a medical context

PSO 35	Communicate clearly, sensitively and effectively with patients, their relatives or other caretakers, and colleagues from the medical and other professions, by listening, sharing and responding.
PSO 36	Communicate clearly, sensitively and effectively with individuals and groups regardless of their age, social, cultural or ethnic backgrounds or their disabilities including when English is not the patient's first language.
PSO 37	Communicate by spoken, written and electronic methods (including medical records), and be aware of other methods of communication used by patients.
PSO 38	Communicate appropriately in difficult circumstances, such as when breaking bad news, and when discussing sensitive issues, such as alcohol consumption, smoking or obesity.
PSO 39	Communicate appropriately with difficult or violent patients.
PSO 40	Communicate appropriately with people with mental illness.
PSO 41	Communicate appropriately with vulnerable patients.

Provide immediate care in medical emergencies

PSO 42	Assess and recognize the severity of a clinical presentation and a need for immediate emergency care.
PSO 43	Provide basic first aid.
PSO 44	Provide cardio-pulmonary resuscitation or direct other team members to carry out resuscitation.

Carry out clinical assessment/examinations safely and effectively

PSO 45	Be able to perform a range of appropriate clinical assessments and measure and record the findings
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Use information effectively in a medical context

PSO 46	Keep accurate, legible and complete clinical records.
PSO 47	Make effective use of computers and other information systems, including storing and retrieving information.
PSO 48	Keep to the requirements of confidentiality and data protection legislation and codes of practice in all dealings with information.
PSO 49	Access information sources and use the information in relation to patient care, health promotion, giving advice and information to patients, and research and education.

PHYSIOTHERAPY COURSE OUTCOMES

I BPT

1. Name of the Course: Professional Practice and Ethics

At the end of the course, the student will be compliant in following domains:

Cognitive: The student will	
CO 1	Be able to understand the moral values and meaning of ethics and its application in Physiotherapy practice.
CO 2	Acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.
CO 3	Follow and maintain procedures to achieve a safe working environment
CO 4	Recognize and report unsafe situations, identify and take necessary precautions as per standard operating procedures
CO 5	Identify and observe policies and procedures with regard to illness or accident.
CO 6	Identify personal protective equipment and use the same as per various Physiotherapy techniques
CO 7	Acquire knowledge of basic first-aid and life saving skills to use them under different circumstances.
CO 8	Understand use of Physiotherapy techniques using optimal resources, avoidance of waste and environment friendly approach
Psychomotor: The student will be able to:	
CO 9	Develop psychomotor skills for physiotherapist-patient relationship.

2. Name of the Course: Human Anatomy

MUSCULOSKELETAL ANATOMY

CO 1	The student should be able to identify & describe Anatomical aspects of muscles, bones, joints, their attachments & to understand and analyze movements.
CO 2	Application of knowledge of anatomy on the living (living anatomy).
CO 3	To understand the Anatomical basis of various clinical conditions.

NEURO ANATOMY

CO 4	To identify & describe various parts of nervous system.
CO 5	To describe blood circulation of C.N.S. & spinal cord.
CO 6	Be able to identify the Structures of various C.N.S Trans-sections.
CO 7	To identify and describe the course of peripheral nerves.
CO 8	To understand anatomical basis of clinical conditions of nervous system.

CARDIOVASCULAR & RESPIRATORY ANATOMY

CO 9	To identify & describe various structures of the Cardio Vascular & Respiratory system and the course of blood vessels
CO 10	Identify and describe various structures of Thoracic cage and mechanisms of Respiration
CO 11	Be able to apply knowledge of Living anatomy with respect to Cardio Vascular and Respiratory system.
CO 12	To understand anatomical basis of clinical conditions of cardiovascular & Respiratory system

CO 13	To Obtain Knowledge of other systems & sensory organs.
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3. Name of the Course: Human Physiology

At the end of the course, the candidate will:

CO 1	Acquire the knowledge of the relative contribution of each organ system in maintenance of the Milieu Interior (Homeostasis)
CO 2	Be able to describe physiological functions of various systems, with special reference to Musculo-skeletal, Neuro-motor, Cardio-respiratory, Endocrine, Uro-genital function, & alterations in function with aging
CO 3	Analyze physiological response & adaptation to environmental stresses-with special emphasis on physical activity, altitude, temperature
CO 4	Acquire the skill of basic clinical examination, with special emphasis to Peripheral & Central Nervous system, Cardiovascular & Respiratory system, & Exercise tolerance / Ergography.

4. Name of the Course: Biochemistry

The student would know :

CO 1	Various biomolecules which are present in the body and functions
CO 2	The formation and fate of these biomolecules
CO 3	Their normal levels in body fluids required for functioning and their abnormal levels to understand the disease process

5. Name of the Course: Fundamentals of Kinesiology and Kinesiotherapy

Cognitive:	
At the end of the course, the candidate will be able to:	
CO 1	Define the various terms used in relation to Mechanics, Biomechanics & Kinesiology
CO 2	Recall the basic principles of Biophysics related to mechanics of movement / motion & understand the application of these principles to the simple equipment designs along with their efficacy in Therapeutic Gymnasium & various starting positions used in therapeutics.
Psychomotor:	
At the end of the course, the candidate will be able to:	
CO 3	Describe & also acquire the skills of use of various tools of the Therapeutic Gymnasium
CO 4	Demonstrate the movements in terms of various anatomical planes and axes. Demonstrate various starting & derived positions used in therapeutics.
CO 5	Describe physiological principles & acquire the skills of application of therapeutic massage
CO 6	Acquire the skills of assessment of basic evaluation like sensations, reflexes & vital parameters
CO 7	Acquire the skill of objective assessment of Range of Motion of the joints by Goniometry
CO 8	Describe physiological basis and principle of relaxation and acquire the skills of relaxation methods
CO 9	Describe physiological responses and principles of aerobic exercises for general fitness & demonstrate fitness skills on self-group.

CO 10	Describe physiological principles and acquire the skill of performing Pranayama & Yogasanas.
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6. Name of the Course: Fundamentals of Electrotherapy

Cognitive:	
At the end of the course, the candidate will be able to:	
CO 1	Recall the physics principles & Laws of Electricity, Electro magnetic spectrum, & ultra sound
CO 2	Describe effects of environmental & man made electromagnetic field at the cellular level & risk factors on prolonged exposure.
CO 3	Describe the Main electrical supply, Electric shock, precautions
CO 4	Enumerate Types & Production of various Therapeutic electrical currents & describe the panel diagrams of the machines
Psychomotor:	
At the end of the course the candidate will be able to –	
CO 5	Test the working of the various electrotherapeutic equipments
CO 6	Describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc & the simple instruments used to test / calibrate these components [such as potentiometer, oscilloscope , multimeter] of the circuit ; & will be able to identify such components.
CO 7	Describe & identify various types of electrodes used in therapeutics, describe electrical skin resistance & significance of various media used to reduce skin resistance.
CO 8	Acquire knowledge of various superficial thermal agents such as Paraffin wax bath, Cryotherapy, Hydrocollator packs, Home remedies, their physiological & therapeutic effects, Merits / demerits & acquire the skill of application.

20 2014
215

PHYSIOTHERAPY COURSE OUTCOMES

II BPT

1. Name of the Course: Professional Practice and Ethics

At the end of the course, the student will be compliant in following domains:

Cognitive: The student will	
CO 1	Be able to understand the moral values and meaning of ethics and its application in Physiotherapy practice.
CO 2	Acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.
CO 3	Follow and maintain procedures to achieve a safe working environment
CO 4	Recognize and report unsafe situations, identify and take necessary precautions as per standard operating procedures
CO 5	Identify and observe policies and procedures with regard to illness or accident.
CO 6	Identify personal protective equipment and use the same as per various Physiotherapy techniques
CO 7	Acquire knowledge of basic first-aid and life saving skills to use them under different circumstances.
CO 8	Understand use of Physiotherapy techniques using optimal resources, avoidance of waste and environment friendly approach
Psychomotor: The student will be able to:	
CO 9	Develop psychomotor skills for physiotherapist-patient relationship.

2. Name of the Course: Pathology

At the end of the course, the candidate:	
Cognitive:	
CO 1	Will have sound knowledge of concepts of cell injury & changes produced by different tissues, organs and capacity of the body in healing process.
CO 2	Acquire the knowledge of general concepts of neoplasia with reference to the Etiology, gross & microscopic features, & diagnosis, in different tissues, & organs of the body.
CO 3	Acquire knowledge of common immunological disorders & their resultant effects on the human body.
	Psychomotor:
CO 4	Recall the Etiology–pathogenesis, the pathological effects & the clinico–pathological correlation of common infections & non-infectious diseases.
CO 5	Understand in brief, about the common Hematological disorders & investigations necessary to diagnose them.

3. Name of the Course : Microbiology

At the end of the course, the candidate will	
CO 1	Have sound knowledge of prevalent communicable diseases and the agents responsible for causing clinical infections, pertaining to C.N.S, C.V.S, Musculoskeletal system, Respiratory system, Genitourinary system, wound infections and of newer emerging pathogens
CO 2	Know the importance and practices of best methods to prevent the development of infections in self and patients (universal safety precautions).

4. Name of the Course: Pharmacology

At the end of the course, the candidate will be able to:	
Cognitive:	
CO 1	Describe Pharmacological effects of commonly used drugs by patients referred for Physiotherapy; list their adverse reactions, precautions, contraindications, formulation & route of administration.
CO 2	Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice versa
CO 3	Indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency, & safety for individual needs.

5. Name of the Course : Psychiatry (including Psychology)

At the end of the course, the candidate will be able to:	
Cognitive:	
CO 1	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.
CO 2	Understand the importance of psychological status of the person in health & disease; environmental & emotional influence on the mind & personality.
CO 3	Have the knowledge and skills required for good interpersonal communication.
Psychomotor:	
CO 4	Enumerate various Psychiatric disorders with special emphasis to movement / Pain & ADLs
CO 5	Acquire the knowledge in brief, about the pathological & etiological factors, signs /symptoms & management of various Psychiatric conditions. c. Understand the patient more empathetically.

6. Name of the Course : Kinesiology

At the end of the course, the candidate will be able to –	
CO 1	Understand the principles of Biomechanics.
CO 2	Acquire the knowledge of kinetics and kinematics of Spine, Extremities, Temporo- Mandibular joint, Thoracic cage
CO 3	Acquire the knowledge of Musculo skeletal movements during normal Gait and Activities of Daily Living

7. Name of the Course: Kinesiotherapy

At the end of the course, the candidate will be able to	
Cognitive:	
CO 1	CO 1: Describe the Biophysical properties of connective tissue, & effect of mechanical loading, & factors which influence the muscle strength, & mobility of articular & periarticular soft tissues.
Psychomotor:	
CO 2	CO 2: Apply the biomechanical principles for the efficacy in the assessment methods for mobility, muscle strength
CO 3	Acquire the skill of subjective and objective assessment of individual & group muscle strength
CO 4	Acquire the skills of subjective and objective methods of muscle strengthening
CO 5	Describe the physiological effects, therapeutic uses, merits / demerits of various exercise modes including Hydrotherapy
CO 6	Demonstrate various therapeutic exercises on self; & acquire the skill of application on models with Home Programs
CO 7	Analyze normal Human Posture [static & dynamic].
CO 8	Acquire the skill of functional re-education techniques on models
CO 9	Acquire the skill of Balance and Coordination Exercises
CO 10	Acquire the skill of using various walking aids for Gait Training
CO 11	Acquire the skill of demonstrating breathing exercises and retraining on self and others
CO 12	Acquire the skill of demonstrating Postural Drainage on models.

8. Name of the Course: Electrotherapy

At the end of the course, the candidate will be able to:	
Cognitive:	
CO 1	Acquire the knowledge about the physiology of pain, Pain pathways & Methods of pain modulation, selection of appropriate modality for Pain modulations.
CO 2	Describe the Physiological effects, Therapeutic uses, indication & contraindications of various Low/ Medium & High Frequency modes / Actinotherapy
CO 3	Describe the Physiological Effects & therapeutic uses of various therapeutic ions & topical pharmaco -therapeutic agents to be used for the application of iontophoresis & sono/ phonophoresis
Psychomotor:	
CO 4	Acquire the skills of application of the Electro therapy modes on models, for the purpose of Assessment & Treatment.
CO 5	Acquire an ability to select the appropriate mode as per the tissue specific & area specific application.

PHYSIOTHERAPY COURSE OUTCOMES

III BPT

1. Name of the Course: Professional Practice and Ethics

At the end of the course, the student will be compliant in following domains:

Cognitive: The student will	
CO 1	Be able to understand the moral values and meaning of ethics and its application in Physiotherapy practice.
CO 2	Acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.
CO 3	Follow and maintain procedures to achieve a safe working environment
CO 4	Recognize and report unsafe situations, identify and take necessary precautions as per standard operating procedures
CO 5	Identify and observe policies and procedures with regard to illness or accident.
CO 6	Identify personal protective equipment and use the same as per various Physiotherapy techniques
CO 7	Acquire knowledge of basic first-aid and life saving skills to use them under different circumstances.
CO 8	Understand use of Physiotherapy techniques using optimal resources, avoidance of waste and environment friendly approach
Psychomotor: The student will be able to:	
CO 9	Develop psychomotor skills for physiotherapist-patient relationship.

2. Name of the Course: Surgery-I

At the end of the course, the candidate will be able to:	
CO 1	Describe the effects of surgical trauma & Anaesthesia in general
CO 2	Clinically evaluate & describe the surgical management in brief of a) General Surgery b) Neuro Surgery c) Cardiovascular and Thoracic Surgery d) ENT & Ophthalmic Surgery e) Plastic & Reconstructive Surgery
CO 3	Describe pre-operative evaluation, surgical indications in various surgical approaches, management and post operative care in above mentioned areas with possible complications.
CO 4	Be able to read & interpret findings of the relevant investigations.

3. Name of the Course: Surgery-II (Orthopedics)

At the end of the course, the candidate will –	
CO 1	Be able to discuss the, etiology, Pathophysiology, clinical manifestations & conservative/ surgical management of various traumatic & cold cases of the Musculoskeletal Conditions.
CO 2	Gain the skill of clinical examination; apply special tests & interpretation of the preoperative old cases & all the post-operative cases.
CO 3	Be able to read & interpret salient features of the X-ray of the Spine & Extremities and correlate the radiological findings with the clinical findings.
CO 4	Be able to interpret Pathological / Biochemical studies pertaining to Orthopedic conditions.

4. Name of the Course: Medicine-I

At the end of the course, the candidate will:	
CO 1	Be able to describe Etiology, Pathophysiology, Signs & Symptoms & Management of the various Endocrinal, Metabolic, Geriatric & Nutrition Deficiency conditions.
CO 2	Be able to describe Etiology, Pathophysiology, Signs & Symptoms, Clinical Evaluation & Management of the various Rheumatologic Cardiovascular & Respiratory Conditions.
CO 3	Acquire skill of history taking and clinical examination of Musculoskeletal, Respiratory, Cardio-vascular & Neurological System as a part of clinical teaching.
CO 4	Be able to interpret auscultation findings with special emphasis to pulmonary system.
CO 5	Study Chest X-ray, Blood gas analysis, P.F.T. findings & Hematological studies, for Cardiovascular, Respiratory, Neurological & Rheumatologically conditions.
CO 6	Be able to describe the principles of Management at the Intensive Care Unit.
CO 7	Be able to acquire the skills of Basic Life Support.
CO 8	Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.

5. Name of the Course: Medicine-II

At the end of the course, the candidate will:	
CO 1	Be able to describe Etiology, Pathophysiology, signs & Symptoms & Management of the various Neurological & Pediatric conditions.
CO 2	Acquire skill of history taking and clinical examination of Neurological & Pediatric conditions as a part of clinical teaching.
CO 3	Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.
CO 4	Acquire knowledge in brief about intra-uterine development of the foetus. Immunization, breast-feeding & psychological aspect of development
CO 5	Be able to describe normal development & growth of a child, importance of
CO 6	Be able to describe neuromuscular, musculoskeletal, cardio-vascular & respiratory conditions related to immunological conditions, nutritional deficiencies, infectious diseases, & genetically transmitted conditions.
CO 7	Acquire skill of clinical examination of a neonate / child with respect to neurological, musculoskeletal & respiratory function

6. Name of the Course: **Community Health and Sociology**

CO 1	At the end of the course, the candidate shall be able to understand the contents given in the syllabus
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7. Name of the Course : Gynaecology and Obstetrics

At the end of the course, student will be able to describe:	
CO 1	Normal & abnormal physiological events, complications and management during Puberty.
CO 2	Normal and abnormal physiological events, complications and management of pregnancy (Pregnancy, Labour, Puerperium)
CO 3	Normal and abnormal physiological events, complications and management of menopause.
CO 4	Normal and abnormal physiological events, complications and management of uro- genital dysfunction.(Antenatal, Postnatal, during menopause)
CO 5	The student will be able to acquire the cognitive skill of clinical examination of the pelvic floor.

8. Name of the Course : Dermatology

CO 1	At the end of the course the student will be able to describe the Pathophysiology Signs & Symptoms Clinical Features Examination & Management of Common Skin Conditions like Leprosy Psoriasis Bacterial & Fungal Infections of the skin connective tissue disorder hand eczema drug reaction cutaneous manifestation of HIV & Sexually Transmitted Diseases.
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9. Name of the Course : **Functional Diagnosis and Physiotherapeutic Skills**

Cognitive:	
At the end of the course, student will be able to:	
CO 1	Understand the use of ICF.
CO 2	Acquire the knowledge of human growth and development from new life to birth and adulthood
CO 3	Understand structure and function of nerve and muscle as a base for understanding the electro-diagnostic assessment.
CO 4	Understand the use of appropriate tools or instruments of assessment in Musculoskeletal, Neurological and Cardio-vascular conditions.
CO 5	Understand the theoretical basis and principles of manipulative skills, neurotherapeutic skills and skills of cardiopulmonary care and resuscitation
CO 6	Document results of assessment to evaluate the patient from time to time.
Psychomotor:	
Student will be able to:	
CO 7	Perform assessment of measures of body structures and functions related to tissue mechanics.
CO 8	Perform assessment of measures of body structures and functions related to motor control affecting activity and participation, quality of life and independence.
CO 9	Perform the skill of electro-diagnosis (SD Curve) and observe skills of EMG and NCV studies, to understand the documentation of finding of these studies.
CO 10	Interpretation and analysis of assessment and findings.
CO 11	Demonstrate skills of manual therapy musculoskeletal, neurotherapeutics and cardiovascular and respiratory skills on models (Laboratory work)
Affective:	

Student will be able to:	
CO 12	Select appropriate assessment techniques to facilitate safety, sensitive practices in patient comfort and effectiveness.
CO 13	Demonstrate safe, respectful and effective performance of physical therapy handling techniques taking into account patient's clinical condition, need for privacy, resources available and the environment.
CO 14	Follow the principles of appropriate handling technique that is draping, hand placement, body part positioning, manual techniques, lifting and transfer techniques.
CO 15	Communicate with patients and their families/caregivers regarding the need and uses of various assessment techniques.

PHYSIOTHERAPY COURSE OUTCOMES

IV BPT

1. Name of the Course: Professional Practice and Ethics

At the end of the course, the student will be compliant in following domains:

Cognitive: The student will	
CO 1	Be able to understand the moral values and meaning of ethics and its application in Physiotherapy practice.
CO 2	Acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.
CO 3	Follow and maintain procedures to achieve a safe working environment
CO 4	Recognize and report unsafe situations, identify and take necessary precautions as per standard operating procedures
CO 5	Identify and observe policies and procedures with regard to illness or accident.
CO 6	Identify personal protective equipment and use the same as per various Physiotherapy techniques
CO 7	Acquire knowledge of basic first-aid and life saving skills to use them under different circumstances.
CO 8	Understand use of Physiotherapy techniques using optimal resources, avoidance of waste and environment friendly approach
Psychomotor: The student will be able to:	
CO 9	Develop psychomotor skills for physiotherapist-patient relationship.

2. Name of the Course : Administration, management & Marketing

At the end of the course the student will be compliant in following domains:	
Cognitive:	
The student will:	
CO 1	Learn the management basics in fields of clinical practice, teaching, research and physiotherapy practice in the community.
CO 2	Acquire communication skills in relation with patients, peers, seniors and other professionals & the community.
CO 3	Acquire the knowledge of the basics in Managerial & Management skills, & use of Information technology in professional Practice
Psychomotor:	
The student will be able to:	
CO 4	Develop psychomotor skills for physiotherapy practice.
CO 5	Develop skill to evaluate and make decision for plan of management based on sociocultural values and referral practice.
Affective:	
The student will be able to:	
CO 6	Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals.

3. Name of the Course : Musculoskeletal Physiotherapy

At the end of the course, student will be able to:	
Cognitive:	
CO 1	Identify, evaluate, analyze & discuss primary and secondary musculo-skeletal dysfunction, based on biomechanical, kinesiological & patho-physiological principles
CO 2	Correlate the same with radiological, electrophysiological, biochemical/haematological investigations as applicable & arrive at the appropriate Physiotherapy diagnosis with skillful evaluation of structure and function with clinical reasoning.
CO 3	Understand the pharmaco-therapeutics, its interaction with physiotherapeutic measures and modify physiotherapeutic intervention appropriately.
CO 4	Apply knowledge of psychosocial factors (personal and environmental factors in the context of disability associated with the musculo-skeletal system or multiple body systems) for behavioral and lifestyle modification and use appropriate training and coping strategies.
Psychomotor:	
CO 5	Apply theoretical basis of physiological effects, indications, contraindications; and best available evidence on the effectiveness, efficacy and safe application guidelines for a full range of physiotherapeutic strategies and interventions, including appropriate modes of soft tissue & joint mobilization, electrotherapy, therapeutic exercise, and appropriate ergonomic advise that can be employed to manage problems of the individual's structures, functions, activities and participation, capacity and performance levels associated with the musculo-skeletal system, for relief of pain & prevention, restoration and rehabilitation measures for maximum possible functional independence at home, workplace and in community.
CO 6	Prescribe and train for appropriate orthoses, prostheses and walking aids based on musculoskeletal dysfunction.
Affective:	

CO 7	Acquire ethical skills by demonstrating safe, respectful and effective performance of physical handling techniques taking into account the patient's clinical condition, the need for privacy, the physiotherapist, the resources available and the environment.
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4. Name of the Course Neurophysiotherapy

At the end of the course, student will	
Cognitive:	
CO 1	Be able to identify and analyze movement dysfunction due to neuromuscular skeletal disorders in terms of biomechanical and biophysical basis, correlate the same with the health condition, routine electrophysiological, radiological and biochemical investigations, and arrive at appropriate physical therapy diagnosis using WHO-ICF with clinical reasoning.
CO 2	Be able to plan realistic goals based on the knowledge of prognosis of the disease of the nervous system and prescribe appropriate, safe evidence based physiotherapy interventions with clinical reasoning.
CO 3	Understand infection control principles, best practices and techniques applicable to a range of setting where clients with neurological conditions would receive physiotherapy services.
CO 4	Know determinacy of health (environmental, nutritional, self-management/ behavioral factors) and chronic disease management principles related to neurological health.
Psychomotor:	
CO 5	Be able to develop psychomotor skills to implement timely and appropriate physiotherapy assessment tools/techniques to ensure a holistic approach to patient evaluation in order to prioritize patient's problems.
CO 6	Be able to select timely physiotherapeutic interventions to reduce morbidity and physiotherapy management strategies, suitable for the patients' problems and indicator conditions based on the best available evidence.
CO 7	Implement appropriate neuro-physiotherapeutic approaches, electrotherapeutic modalities, joint and soft tissue mobilizations and ergonomic advice for neuromuscular skeletal systems, contextual factors to enhance performance of activities and participation in society.

Affective:

CO 8	Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society and co-professionals, to promote individual and community health.
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5. Name of the Course : Cardiovascular & Respiratory Physiotherapy

At the end of the course, the student will be able to:	
Cognitive:	
CO 1	Identify and analyze cardio-vascular & pulmonary dysfunction in terms of bio- mechanical, and Bio-physical basis and correlate the same with the Health condition, routine electrophysiological, radiological, and biochemical investigations and arrive at appropriate Physical therapy diagnosis using WHO-ICF tool (Disability, Functioning and contextual factors) with clinical reasoning.
CO 2	Plan, prescribe appropriate, safe physiotherapy interventions with clinical reasoning for and prevention of impairments, activity limitations, participation restrictions and environmental barriers related to cardio-vascular & pulmonary dysfunction in acute care settings, at home , work place, in society & in leisure activities.
Psychomotor:	
CO 3	Utilise skills such as executing exercise tests, PFT, Ankle brachial index, arterial & venous insufficiency tests
CO 4	Utilise psychomotor skills to implement appropriate bronchial hygiene therapy, therapeutic exercise, electrotherapeutic modalities, CPR, Intensive (critical) care, joint and soft tissue mobilisations, offering ergonomic & energy conservation advice for patients with cardio-vascular & pulmonary dysfunction.
CO 5	Utilise the knowledge about contextual factors to enhance capacity and performance of activities and participation in society
CO 6	Utilise the skill to deliver cardiac, pulmonary & vascular rehabilitation
Affective:	
CO 7	Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
CO 8	Develop bed side behavior, respect & maintain patients' confidentiality.

6. Name of the Course : Community Physiotherapy

At the end of the course the student shall:	
Cognitive:	
Be able to describe:	
CO 1	The general concepts about health, disease and physical fitness.
CO 2	Physiology of aging process and its influence on physical fitness.
CO 3	National policies for the rehabilitation of disabled – role of PT.
CO 4	The strategies to access prevalence and incidence of various conditions responsible for increasing morbidity in the specific community – role of PT in reducing morbidity, expected clinical and functional recovery, reasons for non-compliance in specific community environment & solution for the same.
CO 5	The evaluation of disability and planning for prevention and rehabilitation.
CO 6	Rehabilitation in urban and rural set up.
CO 7	Able to be a part of decision making team regarding the policies for the welfare of special communities & on issues of disability
Psychomotor:	
CO 8	Be able to identify with clinical reasoning the prevailing contextual {e.g. environmental and psycho-social cultural} factors, causing high risk responsible for various dysfunctions and morbidity related to sedentary life style and specific community like women, children, aged as well as industrial workers and describe planning strategies of interventional policies to combat such problems at community level.
CO 9	Be able to gain the ability to collaborate with other health professionals for effective service delivery & community satisfaction
CO 10	Utilize the research methodology knowledge for formulation of a research question (synopsis)

Affective:	
CO 11	Be an empathetic health professional, especially for those in the community, who is away from the health institutions and having difficulty in healthcare access.

7. Name of the Course Principles of Bioengineering

At the end of the course, the candidate shall	
Cognitive:	
CO 1	CO 1: Acquire knowledge about biomechanical principles of application of variety of aids & appliances used for ambulation, protection & prevention.
CO 2	CO 2: Acquire in brief knowledge about various material used for splints/ Orthoses & prostheses and their selection criteria
Psychomotor:	
CO 3	CO 3: Acquire the skill of fabrication of simple splints made out of Low cost material.

8. Name of the Course : Research Methodology and Biostatistics

At the end of the study of this subject the student should be able to:	
CO 1	Enumerate the steps in Physiotherapy research process.
CO 2	Describe the importance & use of biostatistics for research work.
CO 3	Acquire skills of reviewing literature, formulating a hypothesis, collecting data, writing research proposal etc.



Annexure - 20

MGM INSTITUTE OF HEALTH SCIENCES

(Deemed University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

MGM SCHOOL OF PHYSIOTHERAPY

Sector-1, Kamothe, Navi Mumbai - 410209

**8 Module Syllabus for Ability Enhancement Compulsory Courses
(AECC - Environmental Studies)**

* Unit 1 -7 (45 hours) will be covered in II BPT

Unit 1: Introduction to environmental studies (2 Lectures)

- Multidisciplinary nature of environmental studies; components of environment - atmosphere, hydrosphere, lithosphere and biosphere.
- Scope and importance; Concept of sustainability and sustainable development.

Unit 2: Ecosystems (6 Lectures)

- What is an ecosystem?

Structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web and ecological succession.

Case studies of the following ecosystems: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 3: Natural Resources: Renewable and Non-renewable Resources (8 Lectures)

- Land Resources and land use change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).
- Heating of earth and circulation of air; air mass formation and precipitation.
- Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Unit 4: Biodiversity and Conservation

(8 Lectures)

- Levels of biological diversity: genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega-biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

Unit 5: Environmental Pollution

(8 Lectures)

- Environmental pollution: types, causes, effects and controls; Air, water, soil, chemical and noise pollution
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste.
- Pollution case studies.

Unit 6: Environmental Policies & Practices

(7 Lectures)

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture.
- Environment Laws : Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act; International agreements; Montreal and Kyoto protocols and conservation on Biological Diversity (CBD). The Chemical Weapons Convention(CWC).
- Nature reserves, tribal population and rights, and human, wildlife conflicts in Indian context

Unit 7: Human Communities and the Environment

(6 Lectures)

- Human population and growth: Impacts on environment, human health and welfares.
- Carbon foot-print.
- Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management: floods, earthquakes, cyclones and landslides.
- Environmental movements: Chipko, Silent valley, Bishnios of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

* Unit 8 will be covered in III BPT and IV BPT in the form of field visits (5 hours)

Unit 8: Field work

(5 Lectures)

- Visit to an area to document environmental assets; river/forest/flora/fauna, etc.
- Visit to a local polluted site – Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystems-pond, river, Delhi Ridge, etc.

Resolution No. 4.6.2 of BOM-53/2018: Resolved to approve:

- For BPT course - 40% marks in internal assessment (**theory & practical/clinical combined wherever applicable**) to be considered as eligibility criteria to appear for University Examination in each subject with immediate effect.
- For BPO course -40% marks in internal assessment (**theory & practical/clinical combined wherever applicable**) to be considered as eligibility criteria to appear for University Examination in each subject with immediate effect.

Resolution No. 4.13 of BOM-55/2018: Resolved as follows:-

- (i) Slow learners must be re-designated as potential learners.
- (ii) Students scoring less than 35% marks in a particular subjects/course in the 1st formative exam are to be listed as potential learners. These learners must be constantly encouraged to perform better with the help of various remedial measures.
- (iii) Students scoring more than 75% marks in a particular subjects/course in the 1st formative exam are to be listed as advanced learners. These learners must be constantly encouraged to participate in various scholarly activities.

Resolution No. 3.2.2.2 of BOM-57/2019:

- Resolved to conduct Pathology and Microbiology examination (in IInd Year BPT) of 40 marks each on two different days of University Examination Schedule w.e.f. July 2020 University Examination.
- It was resolved to have following University Examination Scheme for Pathology (40 marks) and Microbiology (40 marks) subjects w.e.f. July 2020 University Examination.

Proposed Scheme of Examination		
Q 1	Short Answer Question: Answer any SIX out of SEVEN (Marks 4 each) 6 X 4 M	24 M
Q 2	Long Answer Question: Answer any TWO out of THREE (Marks 8 each) 2 x 8 M	16 M
		Total 40 M

Resolution No. 3.2.2.10 of BOM-57/2019: Resolved to add a statement to the existing format of internship evaluation for BPT students “Student/Intern to repeat the clinical/ placement if overall evaluation score falls below 3(Average)”



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