MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

SYLLABUS FOR

BACHELOR OF PHYSIOTHERAPY (B.P.Th.)

DEGREE COURSE

This syllabus is applicable from the academic year 2012-2013

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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).

b. 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.

PROFESSIONAL DRESS CODE STANDARDS:

It is important to portray a professional image. A clinician with inappropriate dress, grooming or conduct can damage the patient's confidence in the quality of their care, sometimes even resulting in a delay in the restoration of health.

Haircuts, hairstyling, and personal grooming need to be neat, conservative and inconspicuous. Grooming and style should be practical and allow one's duties to be performed without embarrassment or inconvenience

DRESS:

Modest casual wear is appropriate on campus and in class.

Clinical /Lab Dress: Aprons for all clinical assignments, any class that is held in a clinical facility and in any class where patients are present.

FRAMEWORK OF THE CURRICULUM

COURSE DURATION: Four years and Six months of Internship.

I B.P.Th.

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 B.P.Th.

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 B.P.Th.

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 B.P.Th.

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.

II B. P.Th.

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**

II B.P.Th.

SYLLABUS

Transcript Hours- 1400

Sr. No.	Subject	Theory Hours	Practical / Clinical Hours	Total Hours
	PROFESSIONAL PRACTICE			
1	Professional practice & Ethics *(College Examination in final year)*	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) (***not for examination***)		090	090
5	Supervised clinical practice (To practice clinical skills under the supervision, at the O.P.D./ I.P.D. set up) ➢ Clinical assignments should include Observation, Clinical History taking & technical assistance to the clinicians • 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 sociocultutural 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.

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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	**G.I. 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

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Sr. No.	Topics	Didactic Hours
1	**GENERAL PATHOLOGY**	**4**
	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-Amylidosis	
Sr. No.	**Topics**	**Didactic Hours**
2	**INFLAMMATION & REPAIR**	**6**

	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**
	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**
	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**	**4**
	a. Atrophy, Hypertrophy, Hypoplasia, Metaplasia,	

	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**	**10**
	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.	
Sr. No.	**Topics**	**Didactic hrs**
	c. **Neuropathology:** i. Reaction of nervous tissue to injury, infection & ischemia ii. Meningitis: Pyogenic, T.B.M., Viral iii. Cerebro-Vascular Diseases – Atherosclerosis – Thrombosis, Embolism, Aneurysm, Hypoxia,	

	Infarction & Hemorrhage, Hydrocephalous, Increased Intracranial Pressure iv. Leprosy v. Parkinsonism	
9	**MUSCULAR DISORDERS** a. Classification of Muscular disorders with emphasis on Muscular Dystrophies	**3**
10	**NEURO-MUSCULAR JUNCTION**	**1**
	a. Myasthenia gravis b. Myasthenic syndrome	
11	**BONE & JOINTS**	**5**
	a. Osteomyelitis – Rickets – Osteomalacia – Osteoporosis b. Arthritis- degenerative (Osteoarthritis, Calcaneal spur, Periarthritis, Spondylosis) - inflammatory (R.A., Ankylosing Spondylitis, Gout) c. Miscellaneous-P.I.D., Haemarthosis d. Infective-T.B.	
12	**G.I. SYSTEM**	**1**
	a. Gastric / Duodenal ulcer, Enteric fever, T.B., Enteritis, Gastritis (related to consumption of NSAID)	
13	**ENDOCRINE**	**2**
	a. Hypo and Hyperthyroidism b. Diabetes	
14	**HEPATIC DISEASES** a. Cirrhosis – emphasis to systemic effects of portal hypertension	**1**
Sr. No.	**Topics**	**Didactic Hours**
15	**CLINICAL PATHOLOGY**	**3**
	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**	**4**	**1**	**5**
	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			
2	**LABORATORY DIAGNOSIS OF INFECTION**	**2**	**1**	**3**
	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			
3	**IMMUNOLOGY**	**5**		**5**
	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			
4	**SYSTEMIC BACTERIOLOGY**	**7**		**7**
	a. Infection caused by gram +ve cocci Staphylococcus, Streptococcus and Pneumococcus b. Infection caused by gram –ve cocci Gonococci and Meningococci			
Sr. No.	**Topics**	**Didactic**	**Practical/Lab**	**Total**

		Hours	Hours	Hours
	c. Clostridium d. Enterobacteriaceae (E.Coli, Klebsiella) and Pseudomonas e. Salmonella and Vibrio f. Mycobacterial infection: i. Tuberculosis-Leprosy ii. Atypical Mycobacterium g. Syphilis and Leptospirosis- Morphology & pathogenesis			
5	**MYCOLOGY**	**2**	**1**	**3**
	a. Introduction and Superficial mycosis b. Mycetoma and opportunistic fungal infection c. Mycology and Virology demonstration			
6	**VIROLOGY**	**5**		**5**
	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**
	a. Introduction- Entamoeba histolytica b. Malaria, Filaria c. Toxoplasma – Cystisarcosis & Echinococcus			
8	**APPLIED MICROBIOLOGY**	**3**		**3**
	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 Pathology-50 marks + Microbiology-30 marks 80 marks + I.A.:20 marks [There shall be no LAQ in this paper] *Emphasis to be given to topics related to Musculo Skeletal / Neurological / Cardiovascular / Respiratory conditions & Wound / Ulcers.		**Marks** 100
Section A-Q-1 &Q-2	MCQs – based on **MUST KNOW** area Q-1 based on **PATHOLOGY** [1 x 20] Q-2 Based on **MICROBIOLOGY** [1 x 10]	30
Section B-Q-3 & Q- 4	Questions based on **PATHOLOGY** SAQ Q-3 -to answer any FIVE out of SIX [5x3] SAQ Q-4-to answer any THREE out of FOUR [3x5]	30
Section C- Q-5	Questions based on **MICROBIOLOGY** SAQ – to answer any FOUR out of FIVE [4x5]	20
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 phonoporesis 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 G.I. 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:

a. Describe Pharmacological effects of commonly used drugs by patients referred for Physiotherapy; list their adverse reactions, precautions, contraindications, formulation & route of administration.

b. Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice versa

c. 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**
	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**
	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	1 2 1 2 3 1 1
3	**DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM**	**7**
	i. Adrenergic ii. Cholinergic iii. Skeletal muscle relaxants	
4	**DRUGS ACTING ON C.V.S.**	**7**
	i. Antihypertensives ii. Antianginal- Antiplatelets, Myocardial Infarction iii. C.C.F. iv. Shock v. Coagulants and Anticoagulants	2 2 1 1 1
5	**DRUGS ACTING ON RESPIRATORY SYSTEM**	**3**
	i. Cough ii. Bronchial asthma iii. C.O.P.D.	
6	**CHEMOTHERAPY**	**3**
	i. General principles ii. Anti Tuberculosis iii. Anti –Leprosy	
7	**OTHER CHEMO THERAPEUTIC DRUGS**	**3**
	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 G.I. TRACT**	**2**
	i. Peptic ulcer ii. Diarrhoea, Constipation & Antiemetics	
10	**HEAMATINICS** i. Vitamin B, Iron	**1**
11	**DERMATOLOGICAL DRUGS** i. Scabies, Psoriasis, Local antifungal	**1**

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 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		Marks 50
Section A-Q-1	MCQs – based on **MUST KNOW** area	10
Section-B-Q-2 & Q-3	SAQ Q-2 to answer any FIVE out of SIX [5x3]	15
	SAQ Q- 3 to answer any THREE out of FOUR[3x5]	15
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:

a. 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.

b. Understand the importance of psychological status of the person in health & disease; environmental & emotional influence on the mind & personality.

c. Have the knowledge and skills required for good interpersonal communication.

Psychomotor:

a. Enumerate various Psychiatric disorders with special emphasis to movement / Pain & ADLs

b. Acquire the knowledge in brief, about the pathological & etiological factors, signs / symptoms & management of various Psychiatric conditions.

c. 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 – 3 rd edn- Ahuja – Jaypee bros – medical publishers
6. Short Textbook of Psychiatry- 7th edition -M.S. Bhatia
7. Shah L.P. Handbook of Psychiatry

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY 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.		Marks 50
Section A-Q-1	MCQs – based on **MUST KNOW** area on **PSYCHIATRY** (1x10)	10
Section-B-Q-2	SAQ- Questions based on **PSYCHOLOGY** to answer any FIVE out of SIX (5x 3)	15
Section C- Q-3	SAQ – Questions based on **PSYCHIATRY** to answer any THREE out of FOUR (3x 5)	15
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, Temporo-Mandibular 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	10
	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.	
	b. Joint Biomechanics	10
	i. Basic principles of joint design ii. Classification of joints iii. Osteokinematics & Arthrokinematics iv. Concave Convex Rule v. Joint function, kinetics & kinematics	

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**
	a. GAIT	10
	i. Human locomotion	
	ii. Subjective & Objective evaluation	
	iii. Gait cycle & Measurable parameters (Step Length, Step Width, Stride Length, Foot Angle, Cadence)	
	iv. Kinetics and kinematics of gait	
	v. Determinants of gait	
	b. KINETICS AND KINEMATICS OF VARIOUS ACTIVITIES OF DAILY LIVING	10
	i. Supine to Sitting, Sitting to Standing, Squatting, Climbing up & down	
	ii. Lifting, Pulling, Pushing, Overhead activities,	
	iii. Running, Jogging.	

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 * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **100**
Section A-M.C.Qs.	Q-1 - MCQs – based on MUST KNOW area [1 x 20]	**20**
Section B- S.A.Q.	Q-2 - Answer any FIVE out of SIX [5 x 3 =15] Q-3- Answer any THREE out of FOUR [3 x 5 =15] Based on the topics 1(a & b)	**30**
Section C -L.A.Q.	* Based on topics 2 & 3 Q-4] L.A.Q -15 marks Q-5] -15 marks OR Q-5] -15 marks LAQ should give break up of 15 marks – e.g. [3 +5+7]	**30**
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**
	a. Biophysical Principles: i. Structures & Properties of connective and non connective tissues	2	-	02
	b. Stretching : 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	3	12	15
	c. Joint Mobility : 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)	10	17	27
	d. Manual Muscle Testing and assessment (subjective & objective) : i. Principle ii. Trick movements iii. Group Muscle Testing iv. Individual Muscle testing – Upper & Lower Limbs, Trunk & Face	6	35	41
Sr. No.	**TOPICS**	**Didactic Hours**	**Practical/ Laboratory Hours**	**Total Hours**

	e. Muscle Strengthening: i. Concepts -Strength, Power, Endurance ii. Factors influencing the Strength of normal muscle/ hypertrophy, recruitment of motor units, change after the training, training with isometric, isotonic & Isokinetic muscle contraction iii. Principles: Overload, Intensity, Motivation, Learning, Duration, Frequency, Reversibility, Specificity, Determinants iv. Methods : Subjective & Objective v. Individual joint Strengthening Exercises Upper Limb, Lower Limb & Spine vi. Concepts- 1 RM, 10 RM & Dynamometry vii. Progressive Resisted Exercise - Delorme, Zinoveiff, Mc queen protocols viii. Use of gymnasium equipments	10	45	55
	f. Hydrotherapy: i. Physiological effects ii. Indication and Contraindications iii. Techniques	4	-	4
	g. Traction (Cervical & Lumbar): i. Introduction ii. Types(Mechanical / Electrical, Continuous/Intermittent) iii. Indications and Contra indications iv. Techniques v. Effects and uses	3	6	9
	h. Home Program: i. Principles ii. Ergonomic advice for ADLs iii. Home based exercise program	2	-	2

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	3	7	10
	b. Walking Aids i. Types ii. Indications iii. Selection / Prescription iv. Pre ‘Walking Aids’ training v. Measurements vi. Gait with walking aids	7	8	15

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

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 * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **100**
Section A- M.C.Q.	Q-1 - MCQs – based on MUST KNOW area [1 x 20]	**20**
Section B- S.A.Q.	Q-2 - Answer any FIVE out of SIX [5 x 3 =15] Q-3- Answer any THREE out of FOUR [3 x 5 =15]	**30**
Section C -L.A.Q.	*** Based on topics 1(c, d & e), 2, & 7** Q-4] L.A.Q - 15 marks Q-5] -15 marks OR Q-5] -15 marks LAQ should give break up of 15 marks – e.g. [3 +5+7]	**30**
Total Marks		**80**

PRACTICAL 80 MARKS + I.A. – 20 MARKS		**Marks** **100**
LONG CASE	Muscle Strengthening / Mobility /Bronchial hygiene (On models)	**35**
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**
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**
	a. Pain pathway b. Pain gate theory c. Descending pain suppressing system d. Physiological block			
2	**LOW FREQUENCY CURRENTS**	**37**	**85**	**122**
	a. Faradic currents : Physiological & Therapeutic effects, indications, contraindications: i. Faradic type ii. Strong Surged Faradic iii. Sinusoidal currents iv. Application of Faradic current 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	12	20	32
	b. Galvanic / Direct currents (Continuous DC & Interrupted DC) : Physiological & Therapeutic effects, Indications, Contraindications 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 precautions	12	20	32
	c. High Voltage Currents	1	-	1
	d. Micro Currents	1	-	1
	e. Didynamic Currents	1	-	1
Sr. No.	**Topic**	**Didactic Hours**	**Practical Hours**	**Total Hours**

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

PRACTICAL 80 MARKS + I.A. – 20 MARKS		**Marks** **100**
LONG CASE	Motor points /Strength Duration Curve / Faradism under pressure (On models)	**35**
SHORT CASES	1. Based on Low or Medium Frequency modalities / High Frequency modalities 2. Actinotherapy (I.R./U.V.R.) 2 x 20 = 40 marks (Skill of application on models & rationale for selection of modality)	**40**
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 B.P.Th.

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**