

# **D. Y. Patil Education Society (Deemed to be University), Kolhapur**

Re-accredited by NAAC with 'A' Grade

*"Imparting knowledge with Excellence"*

## **D. Y. PATIL COLLEGE OF PHYSIOTHERAPY**

**KOLHAPUR**

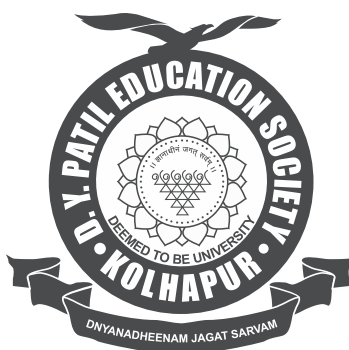


**Syllabus For**

# **Bachelor of Physiotherapy - II**

**(B. P. Th.)**

**D. Y. PATIL EDUCATION SOCIETY, KOLHAPUR**  
(DEEMED TO BE UNIVERSITY)



**D. Y. Patil College of Physiotherapy**

SYLLABUS FOR

**BACHELOR OF PHYSIOTHERAPY - II**  
(B. P. Th.)

Year of Implementation : 2020-21

Year of Examination : 2021-22



## **Vision**

- To be an excellence in training Physiotherapy students
- To train future leaders for education, research and practice in Physiotherapy using advance techniques
- To promote sustainable development by using various skills and techniques in certain conditions by assuring best teaching and educational centre.
- To seek a leadership role in institutional and community research through developing innovative, multidisciplinary collaborative approaches.

## **Mission**

- The mission of course is to impart in-depth knowledge in various specialties with regards to scope and upliftment in our profession.
- To advance basic knowledge of Physiotherapy by understanding how it works in various diseases, disorders and dysfunction.
- To develop holistic approach in society for success in life.

## II- BACHELOR OF PHYSIOTHERAPY

Program Code	Exam Code	Course Name	Subject Name	Sub/Course Code
16	1601	I B.P.Th	Human Anatomy	160101
			Human Physiology	160102
			Biochemistry	160103
			Fundamentals of Kinesiology & Kinesiotherapy	160104
			Fundamentals of Electrotherapy	160105
	1602	II B.P.Th	Pathology & Microbiology	160201
			Pharmacology	160202
			Psychiatry & Psychology	160203
			Kinesiology	160204
			Kinesiotherapy	160205
			Electrotherapy	160206
	1603	III B.P.Th	Surgery I	160301
			Surgery II	160302
			Medicine I	160303
			Medicine II	160304
			Community Health & Sociology	160305
			Functional Diagnosis and Physiotherapeutic Skills	160306
	1604	IV B.P.Th	Musculoskeletal Physiotherapy	160401
			Neuro Physiotherapy	460402
			Cardio-Vascular & Respiratory Physiotherapy	160403
			Community Physiotherapy	160404

## PROGRAM OUTCOME

**PO1:** Ability to acquire knowledge about normal- abnormal basic medical and human movement sciences, understand relevant investigations, role of drugs related to various medical conditions, surgical treatment and application of Physiotherapy interventions.

**PO2:** To gain knowledge about planning and problem solving abilities to delineate the cognitive, affective and psychomotor skills to perform as a competent physiotherapist who will be able to evaluate, plan and effectively perform the physiotherapeutic skills.

**PO3:** Demonstrate the ability to acquire good listening potential with effective interpersonal and intra personal communication skills.

**PO4:** Extend the acquired knowledge to conduct research activities and publications that contribute to the upliftment in field of Physiotherapy and betterment of society.

**PO5:** Understand moral value, professional ethics and accountability towards patient and colleagues; develop good behaviour skills with confidentiality and humanitarian approach maintaining the respect and privacy of patient.

**PO6:** Develop leadership skills, time management, logical reasoning, values required for self directed and lifelong learning, soft skills for professional development and execute their professional role in society as a physiotherapist at various academic institutions, Hospital/ Clinics, Organizations, Research laboratories and Rehabilitation centres.

**PO7:** Understanding about society's needs in terms of health and wellness, to improve multicultural competency among professional and general public, promoting social policies that affect the demands of patients in terms of function, health and wellness, develop a character with good moral values, human values, good social behaviour, gratitude, honesty, ethics, safety, hygiene, responsibility, confidence, tolerance and critical thinking.

**PO8:** Able to contribute in sustainable development to achieve the national sustainable development goal, further the relationship between the environment, human health and functioning and Physiotherapy are considered and respected to mutually benefit patient's health. Ensure healthy lifestyle and promote wellbeing for all at all ages.

**PO9:** Demonstrate ability to acquire new knowledge skills and reflect upon their experience to enhance personal, professional growth and apply the information for patient care.

## **Pathology & Microbiology**

**CO1:** Describe the concept of cell injury & change produced by different tissues, organs & capacity of the body in healing process and understand in brief, about the common hematological disorders & investigations necessary to diagnose them.

**CO2:** Acquire the knowledge of common immunological circulatory disorders vitamin deficiency & their resultant effects on the human body and develop an understanding of neoplastic change in the body in appreciate need for early diagnostic & their management of neoplasia.

**CO3:** Recall the Etiology, pathogenesis, the pathological effects, the clinical & pathological correlation of common infections, non-infectious diseases & genital diseases. Understand correlate normal & alternate morphology of different organ system in different diseases needed for understanding disease process their clinical significance.

**CO4:** Knowledge about scope & the subject with classification of various Micro-organisms, demonstrate knowledge about laboratory diagnosis of the different micro-organisms causing infections epidemiology & prevention of the disease, prophylaxis and best methods to prevent the development of infections in sets and patients (Universal safety precautions).

**CO5:** Knowledge about immunity its types, structure and function various antigen antibody reactions with its application and demonstrate the knowledge of etio-pathogenesis of different micro-organisms (bacteria, viruses, fungi and parasites).

**CO6:** Knowledge of prevalent communicable diseases and the agents responsible for causing clinical infections pertaining to CNS, CVS musculoskeletal, respiratory, genitourinary, wound infections and of newer emerging pathogens.

## **Psychiatry (including Psychology)**

**CO1:** Understand the increasing awareness of psycho-social disorders with significance of various points in the continuum of health & disability.

**CO2:** Understand the term psychology with its importance in the health delivery system, knowledge of psychological maturation during human development & growth with alterations during aging process.

**CO3:** Interpret theories of learning and its role in human life with the importance of psychological status on health & disease; environmental & emotional influence on the mind & personality.

**CO4:** Evaluate psychiatric history, a mental status examination of various conditions like Schizophrenia, Anxiety disorders, personality disorders, somatoform disorders, childhood & Organic brain disorders, mood & eating disorders, with genetic psychology.

**CO5:** Knowledge about management of various psychiatric disorders with the help of ECT, pharmacotherapy, group therapy, psychotherapy, cognitive behavioral therapy & rational emotive therapy.

## **Pharmacology**

**CO1:** Describe the Pharmacokinetics & Pharmacodynamics, indications & contra-indications, interactions & adverse reactions, precautions, formulations & routes of drug administration of various drugs.

**CO2:** Demonstrate knowledge about various drugs acting on CNS, Autonomic Nervous System, CVS, Respiratory System, Endocrine System, GIT tract.

**CO3:** Demonstrate knowledge about various hematologic & dermatological drugs.

## **Kinesiology**

**CO1:** Understands the principles of Biomechanics.

**CO2:** Acquire the knowledge of kinetics & kinematics of Spine, Extremities, Thoracic Cage.

**CO3:** Acquire the knowledge of musculoskeletal movements during normal gait & activities of daily living.

## **Kinesiotherapy**

**CO1:** Understand the Biophysical properties of connective & non connective tissue & mechanical loading, & factors which influence the muscle strength & mobility of articular & peri articular soft tissues.

**CO2:** Apply the biomechanical principles for the efficacy in the assessment methods & Acquire the skills of subjective & objective methods of muscle strengthening, joint mobility, muscle stretching, manual muscle testing.

**CO3:** Describe the physiological effects, therapeutic uses of Hydrotherapy & Demonstrate various therapeutic exercises on self & acquire the skills of application on models with home program.

**CO4:** Analyse the correct & faulty posture & all views of posture and acquire the knowledge of postural mechanism & factors affecting on posture, motor control, postural control & balance.

**CO5:** Demonstrate & acquire the skills of functional reeducation techniques on models & also skills of balance & co-ordination exercise.

**CO6:** Acquire the skill of using various walking aids for training of gait.

**CO7:** Acquire the knowledge & skills of demonstrating breathing exercise & postural drainage techniques.



## **Electrotherapy**

**CO1:** Acquire the knowledge of pain physiology; pain pathways methods of pain modulation & appropriate modality for pain modulation.

**CO2:** Describe the physiological effects, therapeutic uses, indications & contraindications of various low, medium & High frequency currents also with acquire the skills of application of these currents on models for the purpose of assessment & treatment.

**CO3:** Describe the physiological effects & therapeutic uses of various therapeutic ions & topical pharmacological therapeutic agents to be used for application of iontophoresis & phonophoresis.

**CO4:** Describe the physiological effects, therapeutic uses, indications & contraindications of actinotherapy, IRR, UVR, LASER & acquire an ability to select the appropriate mode as per the tissue specific & area specific application.

**CO5:** Acquire the knowledge of types of wound & skills of application of therapeutic currents – US, U.V.R & LASER.

## **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 sequel 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 behaviours 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.

## **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, affective and psychomotor 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 applied 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 cardio pulmonary resuscitation.

**3. Fine motor/hand skills:**

1. 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.
2. Safely apply and adjust the dials or controls of therapeutic modalities.
3. 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 caregivers.
- 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 Orthopedics, General Surgery, Medicine, Neurology, Pediatrics, 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 electro diagnosis 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 neuro developmental 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 analyze, 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 Orthopedics, Cardiovascular & Respiratory including ICU, Neurology & Neurosurgery Pediatrics, 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.

### SYLLABUS

Transcript Hours- 1400

Sr. No.	Subject	Theory Hours	Practical / Clinical Hours	Total Hours
	<b>PROFESSIONAL PRACTICE</b>			
1	Professional practice & Ethics (College Examination in final year )	005	010	015
	<b>MEDICAL SCIENCES</b>			
1	Pathology	050	-	050
2	Microbiology	031	004	035
3	Pharmacology	050	-	050
4	Psychiatry (Including Psychology)	030	020	050
	<b>PHYSIOTHERAPY</b>			
1	Kinesiology	080	-	080
2	Kinesiotherapy	080	160	240
3	Electrotherapy	100	200	300
4	Seminar (including introduction to <b>terms</b> 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) ➤ Clinical assignments should include Observation, Clinical History taking & technical assistance to the clinicians <ul style="list-style-type: none"> <li>• Therapeutic Gymnasium</li> <li>• Fundamentals of Exercise therapy&amp;</li> <li>• Electrotherapy</li> </ul> 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 Behaviour 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.

**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.

**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 socio cultural values and referral practice.

**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		
	<b>TOTAL</b>	<b>05</b>	<b>10</b>	<b>15</b>

## 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	05
5	PATHOLOGIC CHANGES IN VITAMIN DEFICIENCIES	01
6	GROWTH DISTURBANCES	04
7	MEDICAL GENETICS	01
8	SPECIFIC PATHOLOGY	11
9	MUSCULAR DISORDERS	02
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:

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

**Affective:****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 Hematological 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	<b>GENERAL PATHOLOGY</b> 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, Dystrophies & Metastasis e. Extra-cellular accumulation- Amyloidosis	4
2	<b>INFLAMMATION &amp; REPAIR</b> 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	6
3	<b>IMMUNO –PATHOLOGY</b> 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
4	<b>CIRCULATORY DISTURBANCES</b> 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	5



9	<b>MUSCULAR DISORDERS</b> a. Classification of Muscular disorders with emphasis on Muscular Dystrophies	2
10	<b>NEURO-MUSCULAR JUNCTION</b> a. Myasthenia gravis b. Myasthenic syndrome	1
11	<b>BONE &amp; JOINTS</b> a. Osteomyelitis, Rickets, Osteomalacia, Osteoporosis b. Arthritis- degenerative, (Osteoarthritis, Calcaneal spur, Periarthritis, Spondylosis) inflammatory (R.A., Ankylosing Spondylitis, Gout) c. Miscellaneous Prolapse intervertebral disc (P.I.V.D.), Haemarthrosis d. Infective-T.B.	5
12	<b>G.I. SYSTEM</b> a. Gastric / Duodenal ulcer, Enteric fever, T.B., Enteritis, Gastritis (related to consumption of NSAID)	1
13	<b>ENDOCRINE</b> a. Hypo and Hyperthyroidism b. Diabetes Mellitus – type I & II	2
14	<b>HEPATIC DISEASES</b> a. Cirrhosis – emphasis on systemic effects of portal hypertension	1
15	<b>CLINICAL PATHOLOGY</b> a. Anemia & Platelets disorders – (deficiency) – Total count (T.C.) Direct count (D.C.) Eosinophilia Anemia b. Muscle / Skin / Nerve biopsy c. Microscopic appearance of muscle necrosis – fatty infiltration	3

#### RECOMMENDED TEXT BOOKS

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

#### RECOMMENDED REFERENCEBOOKS

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).

### Congestive –

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)

**Affective –**

- a. Students formed positive characteristics related to attitudes, interests, self-concepts, and values.
- b. With the implementation of the curriculum in microbiology lectures through mini-research learning patterns have a positive impact on honesty, responsibility, cooperation, respect for others, and always want to do well.

**Psychomotor –**

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

## SYLLABUS

Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours
1	<b>General Microbiology</b>	<b>4</b>	<b>1</b>	<b>5</b>
	<ul style="list-style-type: none"> <li>a. Introduction &amp; scope</li> <li>b. Classification of Micro-organisms and Bacterial Anatomy (cell wall, capsule, spore, flagella and types as per their shape and arrangement)</li> <li>c. Sterilization</li> <li>d. Disinfection</li> <li>e. Demonstration for General Microbiology</li> </ul>			
2	<b>LABORATORY DIAGNOSIS OF INFECTION</b>	<b>2</b>	<b>1</b>	<b>3</b>
	<ul style="list-style-type: none"> <li>a. Culture media and identification of bacteria</li> <li>b. Sample collection for smear examination and cultures</li> <li>c. Demonstration of Gram staining, ZN staining and culture media</li> </ul>			
3	<b>IMMUNOLOGY</b>	<b>5</b>		<b>5</b>
	<ul style="list-style-type: none"> <li>a. Innate immunity &amp; acquired immunity</li> <li>b. Structure and function of immune system and Immune response – normal /abnormal</li> <li>c. Define Antigen, Antibody and Antigen - antibody reaction &amp; application for diagnosis</li> <li>d. Hyper –sensitivity</li> <li>e. Auto-immunity</li> </ul>			
4	<b>SYSTEMIC BACTERIOLOGY</b>	<b>7</b>		<b>7</b>
	<ul style="list-style-type: none"> <li>a. Infection caused by gram positive cocci Staphylococcus, Streptococcus and Pneumococcus</li> <li>b. Infection caused by gram negative cocci Gonococci and Meningococci</li> <li>c. Clostridium</li> <li>d. Enterobacteriaceae (E.Coli, Klebsiella) and Pseudomonas</li> <li>e. Salmonella and Vibrio</li> <li>f. Mycobacterial infection: <ul style="list-style-type: none"> <li>i. Tuberculosis-Leprosy</li> <li>ii. A typical Mycobacterium</li> </ul> </li> <li>g. Syphilis and Leptospirosis- Morphology &amp;pathogenesis</li> </ul>			



5	<b>MYCOLOGY</b>	<b>2</b>	<b>1</b>	<b>3</b>
	<ul style="list-style-type: none"> <li>a. Introduction and Superficial mycosis</li> <li>b. Mycetoma and opportunistic fungal infection</li> <li>c. Mycology and Virology demonstration</li> </ul>			
6	<b>VIROLOGY</b>	<b>6</b>		<b>6</b>
	<ul style="list-style-type: none"> <li>a. Introduction &amp; general properties,</li> <li>b. DNA virus</li> <li>c. Measles, Mumps, Rubella, polio and congenital viral infections</li> <li>d. Hepatitis and Rabies</li> <li>e. H.I.V.</li> <li>f. Morphology, Pathogenesis, clinical features &amp; lab diagnosis of COVID – 19 Environmental factors influencing spread of SARS – COV-2, Prophylaxis &amp; precautions to prevent the spread of SARS-COV-2</li> </ul>			
7	<b>PARASITOLOGY</b>	<b>3</b>	<b>1</b>	<b>4</b>
	<ul style="list-style-type: none"> <li>a. Introduction- Entamoeba histolytica</li> <li>b. Malaria, Filaria</li> <li>c. Toxoplasma – Cystisarcosis &amp; Echinococcus</li> </ul>			
8	<b>APPLIED MICROBIOLOGY</b>	<b>2</b>		<b>2</b>
	<ul style="list-style-type: none"> <li>a. Hospital acquired infections, Universal safety precautions and Waste disposal</li> <li>b. Diseases involving Bones, Joints- Nerves-Muscles- Skin-Brain- Cardiopulmonary system, Burn and wound infections</li> </ul>			

#### RECOMMENDED TEXT BOOKS

1. Concise Textbook of Microbiology – Ananth narayan
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)

<b>THEORY</b> 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 Musculoskeletal / Neurological / Cardiovascular / Respiratory conditions/ Wound / Ulcers/ Bacteria/Micro organisms/ Virus & Parasites.s		<b>Marks</b>
		<b>100</b>
<b>Section A-Q-1 &amp;Q-2</b>	MCQs – based on important area Q-1 based on <b>PATHOLOGY</b> [1 x 12] Q-2 Based on <b>MICROBIOLOGY</b> [1 x08]	<b>20</b>
<b>Section B-Q-3 &amp;</b>	Questions based on <b>PATHOLOGY</b> Q-3 -to answer any SEVEN outofEIGHT [7x5]	<b>35</b>
<b>Section C- Q-4</b>	Questions based on <b>MICROBIOLOGY</b> SAQ – to answer any FIVE out of SIX [5x5]	<b>25</b>
<b>Total Marks</b>		<b>80</b>

#### INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination of 80 marks each TOTAL - 160marks
2. Internal Assessment to be calculated out of 20marks
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 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:

- 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

#### Affective:

#### 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	<b>GENERAL PHARMACOLOGY</b>	<b>4</b>
	<ul style="list-style-type: none"> <li>i. Pharmacokinetics</li> <li>ii. Routes of administration</li> <li>iii. Adverse drug reaction and reporting</li> <li>iv. Factors modifying drug effect</li> </ul>	
2	<b>DRUGS ACTING ON C.N.S.</b>	<b>11</b>
	<ul style="list-style-type: none"> <li>i. Introduction</li> <li>ii. Alcohols + Sedatives &amp; Hypnotics</li> <li>iii. Anti-convulsants</li> <li>iv. Drug therapy in Parkinsonism</li> <li>v. Analgesics &amp; antipyretics –especially Gout &amp; R.A.</li> <li>vi. Psycho Therapeutics</li> <li>vii. Local anaesthetics, counterirritants</li> </ul>	1 2 1 2 3 1 1
3	<b>DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM</b>	<b>7</b>
	<ul style="list-style-type: none"> <li>i. Adrenergic</li> <li>ii. Cholinergic</li> <li>iii. Skeletal muscle relaxants</li> </ul>	
4	<b>DRUGS ACTING ON C.V.S.</b>	<b>7</b>
	<ul style="list-style-type: none"> <li>i. Anti-hypertensive</li> <li>ii. Anti anginal- Anti platelets, drugs used for Myocardial Infarction</li> <li>iii. Congestive cardiac failure (C.C.F.)</li> <li>iv. Shock</li> <li>v. Coagulants and Anticoagulants</li> </ul>	2 2 1 1 1
5	<b>DRUGS ACTING ON RESPIRATORY SYSTEM</b>	<b>3</b>
	<ul style="list-style-type: none"> <li>i. Cough</li> <li>ii. Bronchial asthma</li> <li>iii. Chronic obstructive pulmonary disease (C.O.P.D.)</li> </ul>	
6	<b>CHEMOTHERAPY</b>	<b>3</b>
	<ul style="list-style-type: none"> <li>i. General principles</li> <li>ii. Anti Tuberculosis</li> <li>iii. Anti–Leprosy</li> </ul>	
7	<b>OTHER CHEMO THERAPEUTIC DRUGS</b>	<b>3</b>
	<ul style="list-style-type: none"> <li>i. Drugs used in Urinary Tract Infection</li> <li>ii. Tetra /cholera</li> <li>iii. Penicillin</li> <li>iv. Cephalosporin</li> <li>v. Amino-glycosides</li> <li>vi. Macrolides</li> </ul>	

8	<b>ENDOCRINE</b>	<b>8</b>
	i. Insulin and oral Anti diabetic drugs	2
	ii. Steroids-Anabolic steroids	2
	iii. Drugs for osteoporosis, Vitamin D, Calcium, Phosphorus	2
	iv. Thyroid & Ant thyroid	1
	v. Estrogen + Progesterone	1
9	<b>DRUGS IN G.I. TRACT</b>	<b>2</b>
	i. Peptic ulcer	
	ii. Diarrhea, Constipation & Antiemetics	
10	<b>HEAMATINICS</b>	<b>1</b>
	i. Vitamin B, Iron	
11	<b>DERMATOLOGICAL DRUGS</b>	<b>1</b>
	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)

<b>THEORY</b>		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		<b>50</b>
<b>Section A</b>	Q1. MCQs – based on Important area [1x10]	<b>10</b>
<b>Section-B-</b>	Q-2 .SAQ answer any SIX out of SEVEN [6x5]	<b>30</b>
<b>Total Marks</b>		<b>40</b>

### INTERNAL ASSESSMENT

1. Two exams – Terminal and preliminary examination of 40 marks each TOTAL - 80marks
2. Internal Assessment to be calculated out of 10marks.
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
	<b>TOTAL</b>	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, & 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 inter personal communication.

#### Affective:

- Have the knowledge and skills required for good interpersonal communication.
- Acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.

#### 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.	<b>PSYCHOLOGY</b>	<b>10</b>
	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 Defense mechanisms, Stress –common reactions to frustrations	1
	g. Caring for mental health as a consequence of long/post COVID – 19 syndrome	1
2.	<b>PSYCHIATRY</b>	<b>20</b>
	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 disorders	2
	f. Organic brain disorders (delirium, dementia, Amnestic syndromes, Organic personality disorders)	2
	g. Anxiety disorders: Phobia, Obsessive Compulsive Disorders, Post Traumatic Disorders and Conversion disorders	2
	h. Somatoform disorders ( Hypochondriasis, Dissociative disorders, Conversion disorder, & Pain disorders)	1
	i. Somatization disorders	1
	j. Personality disorders	1
	k. Substance abuse disorders (alcohol)	1
	l. <b>Disorders of infancy, childhood &amp; adolescence</b>	2
	i. Attention Deficit Hyperactivity Disorder(ADHD)	
	ii. Mental Retardation (MR)	
	iii. Conduct disorders	
	iv. Pervasive developmental disorders	
	v. Enuresis	
	vi. Speech disorders	
	m. Geriatric Psychiatry	1
	n. Eating disorders	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 Disorders
3. Personality Disorders
4. Somatoform Disorders
5. Childhood Disorders (ADHD,MR)
6. Organic Brain Disorders (dementia)

**B. Seminar/ Workshop on Communication skills****RECOMMENDED TEXTBOOKS:**

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 C o.]
3. Clinical Psychology –Akolkar
4. Developmental Psychology-Elizabeth B. Hurlock( 5<sup>th</sup> edition, Tata Mc-Graw Hill)
5. A short book of Psychiatry – 3<sup>rd</sup> edn- Ahuja – Jaypee bros – medical publishers
6. Short Textbook of Psychiatry- 7<sup>th</sup> edition -M.S. Bhatia
7. Shah L.P. Handbook of Psychiatry

**SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)**

<b>THEORY</b>		Marks
40 marks + I.A. – 10 Marks		
[There shall be no LAQ in this paper]		<b>50</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A-Q-1</b>	MCQs – based on important area on <b>PSYCHIATRY</b> (1x10)	<b>10</b>
<b>Section-B-Q-2</b>	SAQ- Questions based on <b>PSYCHOLOGY</b> to answer any TWO out of THREE (2x5)	<b>10</b>
<b>Section C- Q-3</b>	SAQ – Questions based on <b>PSYCHIATRY</b> to answer any FOUR out of FIVE (4x5)	<b>20</b>
<b>Total Marks</b>		<b>40</b>



**CLINICAL EXAMINATION: (College Examination only)**

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

**Total: 40marks**

**INTERNAL ASSESMENT:**

1. Two exams – Terminal and preliminary examination (Theory only) of

**40marks each**

**TOTAL - 80marks**

2. InternalAssessmenttobecalculatedoutof10marks (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	15
2.	REGIONAL KINESIOLOGY	45
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 Musculoskeletal movements during normal Gait and Activities of Daily Living

### **Cognitive –**

- a. Able to understand the Basics of mechanics of force system, equilibrium, lever and pulley. Able to Describe the joint structure, classification and function of joints And biomechanics of Connective tissue
- b. Able to Describe the muscle structure and function of muscles, types of muscles, contractions and factors effecting muscle recruitment and function
- c. Able to Describe all the regional joint biomechanics and its applied

### **Affective -**

Psychomotor - Acquire the skills of analysis of kinetic and kinematics of vertebral column. Acquire the skills of analysis of kinetic and kinematics of all peripheral joints

Psychomotor:

- a. Acquire the skills of analysis of kinetic and kinematics of vertebral column.
- b. Acquire the skills of analysis of kinetic and kinematics of all peripheral joints

## SYLLABUS

Sr. No.	TOPICS	DIDACTIC HOURS
1	<b>INTRODUCTION TO BIOMECHANICS</b>	<b>15</b>
	<div><div><b>a. Muscle Biomechanics</b></div><div><div>i. Elements of muscle structure – fiber, size, motor unit, length tension, arrangement &amp; number relationship</div><div>ii. Classification of muscles</div><div>iii. Mobility and Stability of muscles</div><div>iv. Types of muscle contraction and factors affecting muscle function.</div></div><div><b>b. Joint Biomechanics</b></div><div><div>i. Basic principles of joint design</div><div>ii. Classification of joints</div><div>iii. Osteokinematics &amp; Arthrokinematics</div><div>iv. Concave Convex Rule</div><div>v. Joint function, kinetics &amp; kinematics</div></div></div>	<div>07</div> <div>08</div>
2	<b>REGIONAL KINESIOLOGY</b>	<b>45</b>
	a. Vertebral Column	10
	b. Thorax	2
	c. Shoulder Complex	5
	d. Elbow joint	2
	e. Wrist And Hand Complex	5
	f. Hip Joint	7
	g. Knee Complex	7
	h. Ankle – Foot complex	5
	i. Temporo-Mandibular Joint	2
3	<b>KINETICS AND KINEMATICS OF GAIT &amp; ADLs</b>	<b>20</b>
	<div><div><b>a. GAIT</b></div><div><div>i. Human locomotion</div><div>ii. Subjective &amp; Objective evaluation</div><div>iii. Gait cycle &amp; Measurable parameters ( Step Length, Step Width, Stride Length, Foot Angle, Cadence)</div><div>iv. Kinetics and kinematics of gait</div><div>v. Determinants of gait</div></div><div><b>b. KINETICS AND KINEMATICS OFVARIOUS ACTIVITIES OF DAILYLIVING</b></div><div><div>i. Supine to Sitting, Sitting to Standing, Squatting, Climbing up &amp; down</div><div>ii. Lifting, Pulling, Pushing, Overhead activities,</div><div>iii. Running, Jogging.</div></div></div>	<div>10</div> <div>10</div>

### 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
- 6.

### SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

<b>THEORY</b> 80 MARKS + I.A. – 20 MARKS		<b>Marks</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		<b>100</b>
<b>Section A-M.C.Qs.</b>	Q-1 - MCQs – based on Important area [1 x20]	<b>20</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any SIX out of SEVEN [6 x 5] Based on introduction to biomechanics 1 ( a and b) / Regional kinesiology	<b>30</b>
	Q-3- Answer any SIX out of SEVEN [6 x 5] Based on Kinetics and kinematics of gait & ADL's (a and b)	<b>30</b>
<b>Total Marks</b>		<b>80</b>

### 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 designs 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 & peri articular of tissues.

#### Affective –

- Be able to develop behavioral skills and humanitarian approach while communicating with models
- Be able to develop bed side behavior, respect & maintain confidentiality

**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.	<b>BIOPHYSICS</b>	<b>40</b>	<b>115</b>	<b>155</b>
	<b>a. Biophysical Principles:</b> <ul style="list-style-type: none"> <li>i. Structures &amp; Properties of connective and non connective tissues</li> </ul>	2	-	02
	<b>b. Stretching:</b> <ul style="list-style-type: none"> <li>i. Definition</li> <li>ii. Types</li> <li>iii. Assessment of muscle length and fascia around the joint</li> <li>iv. Principles of stretching</li> <li>v. Techniques for all joints</li> <li>vi. Individual muscle stretching</li> </ul>	3	12	15
	<b>c. Joint Mobility:</b> <ul style="list-style-type: none"> <li>i. Definition</li> <li>ii. Causes of limitation of mobility</li> <li>iii. Indications and contraindications</li> <li>iv. Principles</li> <li>v. Techniques</li> <li>vi. Assessment methods</li> <li>vii. Individual joints mobility Exercises–Upper Limb, Lower Limb &amp; Spine(Using active, assisted, passive movements)</li> </ul>	10	17	27
	<b>d. Manual Muscle Testing and assessment (subjective &amp; objective):</b> <ul style="list-style-type: none"> <li>i. Principles</li> <li>ii. Trick movements</li> <li>iii. Group Muscle Testing</li> <li>iv. Individual Muscle testing – Upper &amp; Lower Limbs, Trunk &amp; Face</li> </ul>	6	35	41

	<p><b>e. Muscle Strengthening:</b></p> <ul style="list-style-type: none"> <li>i. Concepts -Strength, Power, Endurance</li> <li>ii. Factors influencing the Strength of normal muscle/ hypertrophy, recruitment of motor units, change after the training, training with isometric, isotonic &amp; Isokinetic muscle contraction</li> <li>iii. Principles: Overload, Intensity, Motivation, Learning, Duration, Frequency, Reversibility, Specificity, Determinants</li> <li>iv. Methods : Subjective &amp; Objective</li> <li>v. Individual joint Strengthening Exercises Upper Limb, Lower Limb &amp; Spine</li> <li>vi. Concepts- 1 RM, 10 RM &amp; Dynamometry</li> <li>vii. Progressive Resisted Exercise (PRE) programs- Delorme, Zinoveiff, Mc queen protocols</li> <li>viii. Use of gymnasium equipments</li> </ul> <p><b>f. Hydrotherapy:</b></p> <ul style="list-style-type: none"> <li>i. Physiological effects</li> <li>ii. Indication and Contraindications</li> <li>iii. Techniques</li> </ul> <p><b>g. Traction (Cervical &amp; Lumbar):</b></p> <ul style="list-style-type: none"> <li>i. Introduction</li> <li>ii. Types( Mechanical /Electrical, Continuous/Intermittent)</li> <li>iii. Indications and Contraindications</li> <li>iv. Techniques</li> <li>v. Effects and uses</li> </ul> <p><b>h. Home Program:</b></p> <ul style="list-style-type: none"> <li>i. Principles</li> <li>ii. Ergonomic advice for ADLs</li> <li>iii. Home based exercise program</li> </ul>	10	45	55
		4	-	4
		3	6	9
		2	-	2
<b>2.</b>	<b>POSTURE</b>	<b>5</b>	<b>5</b>	<b>10</b>
	<ul style="list-style-type: none"> <li>a. Definition</li> <li>b. Human posture –Changes from quadruped to biped</li> <li>c. Correct and faulty posture</li> <li>d. Postural patterns and Postural Mechanism</li> <li>e. Factors affecting posture</li> <li>f. Physiological deviations</li> <li>g. Analysis of all views</li> </ul>			



3.	<b>MOTOR CONTROL, POSTURAL CONTROL AND BALANCE</b>	<b>03</b>	<b>-</b>	<b>03</b>
	<ul style="list-style-type: none"> <li>a. Motor Control</li> <li>b. Postural Alignment &amp; Weight Distribution</li> <li>c. Sensory Organisation</li> <li>d. C.N.S. Integration</li> <li>e. Motor Strategies</li> </ul>			
4.	<b>FUNCTIONAL RE-EDUCATION</b>	<b>5</b>	<b>5</b>	<b>10</b>
	<ul style="list-style-type: none"> <li>a. Principles &amp; Indications</li> <li>b. Mat exercises- mobility, strength and balance training</li> <li>c. Progression to sitting, standing and walking</li> <li>d. Transfers</li> </ul>			
5.	<b>NEUROMUSCULAR CO-ORDINATION AND BALANCE</b>	<b>5</b>	<b>5</b>	<b>10</b>
	<ul style="list-style-type: none"> <li>a. Definition</li> <li>b. Physiology related to coordination &amp; Balance</li> <li>c. Frenkel's exercise ( Principles &amp; Techniques)</li> <li>d. Balance Training Exercises</li> </ul>			
6.	<b>GAIT &amp; WALKING AIDS</b>	<b>10</b>	<b>15</b>	<b>25</b>
	<ul style="list-style-type: none"> <li>a. Gait <ul style="list-style-type: none"> <li>i. Definition,</li> <li>ii. Gait cycle and measurable Parameters(Step Length, Step Width, Stride Length, Foot Angle, Cadence</li> </ul> </li> <li>b. Walking Aids <ul style="list-style-type: none"> <li>i. Types</li> <li>ii. Indications</li> <li>iii. Selection /Prescription</li> <li>iv. Pre 'Walking Aids' training</li> <li>v. Measurements</li> <li>vi. Gait with walking aids</li> </ul> </li> </ul>	3       7	7       8	10       15
7.	<b>BRONCHIAL HYGIENE</b>	<b>12</b>	<b>15</b>	<b>27</b>
	<ul style="list-style-type: none"> <li>a. <b>Humidification &amp; Nebulisation</b> <ul style="list-style-type: none"> <li>i. Definition</li> <li>ii. Types</li> <li>iii. Method of delivery</li> <li>iv. Indications and contraindications</li> </ul> </li> <li>b. <b>Breathing Exercise–</b> <ul style="list-style-type: none"> <li>i. Types – Inspiratory , Expiratory (including forced expiratory technique)</li> <li>ii. Goals &amp;Uses</li> <li>iii. Techniques</li> </ul> </li> </ul>	3       5	1       6	4       11

	iv. Active Cycle of Breathing Technique (ACBT) v. Autogenic drainage <b>c. Postural Drainage:</b> i. Definition ii. Indications & Contraindications iii. Assessment & Principles iv. Techniques	4	8	12
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**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. Therapeutic Exercise- Kisner and Colby
5. Physical Rehabilitation- O’Sullivan

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		<b>Marks</b>
80 MARKS + I.A. – 20 MARKS		<b>100</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A- M.C.Q.</b>	Q-1 - MCQs – based on Important area [ 1 x 20]	<b>20</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any SIX out of SEVEN Based on biophysics/ Posture/ Motor & postural control, control and balance/ Functional re-education [6 x 7]	<b>30</b>
	Q-3- Answer any THREE out of FOUR Based on Gait and walking aids/bronchial hygiene/Neuro muscular co-ordination and balance [6 x 7]	<b>30</b>
<b>Total Marks</b>		<b>80</b>
<b>PRACTICAL</b>		<b>Marks</b>
80 MARKS + I.A. – 20 MARKS		<b>100</b>
<b>LONG CASE</b>	Muscle Strengthening / Mobility /Bronchial hygiene (On models)	<b>35</b>
<b>SHORT CASE</b>	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 / Stretching 2 x 20 = 40marks	<b>40</b>
<b>JOURNAL</b>	Documentation- Principles & applications for various Kinesiotherapeutics.	<b>5</b>
<b>Total Marks</b>		<b>80</b>

### INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination (Theory & Practical) of 80 marks each TOTAL - 160marks.
2. Internal Assessment to be calculated out of 20marks.
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 & contra indications of various Low/ Medium & High Frequency modes /Actino therapy
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

#### Affective –

- a. Ability to understand the safety measures while application of modalities and practice for the same.
- b. Ability to develop behavioral skills and humanitarian approach while communicating with models by respecting & maintaining confidentiality of the model.
- c. Ability to make appropriate clinical decision as to which modality to use and when followed with proper bedside behavior.

### 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 & are a specific application.

## SYLLABUS

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

	<b>c. High Voltage Currents</b> <b>d. Micro Currents</b> <b>e. Didynamic Currents</b> <b>f. Transcutaneous Electrical Nerve Stimulation (T.E.N.S.)</b> <ul style="list-style-type: none"> <li>i. Definition ,Types</li> <li>ii. Physiological &amp; Therapeutic effects</li> <li>iii. Technique &amp; Methods of Application</li> <li>iv. Indications &amp; contraindications</li> </ul> <b>g. Strength Duration Curves on model</b> <ul style="list-style-type: none"> <li>i. Principle of SD curves</li> <li>ii. Technique of plotting</li> <li>iii. Interpretation of normal curves</li> <li>iv. Chronaxie and Rheobase</li> </ul>	1 1 1 5 5	- - - 20 25	1 1 1 25 30
3	<b>MEDIUM FREQUENCY CURRENTS</b>	8	22	30
	<b>a. Interferential Therapy</b> <ul style="list-style-type: none"> <li>i. Definition ,Types</li> <li>ii. Physiological &amp; Therapeutic effects</li> <li>iii. Technique &amp; Methods of Application</li> <li>iv. Electrodes types ( including vacuum), Effects &amp; Uses</li> <li>v. Advantages of I.F.T. over Low frequency currents</li> <li>vi. Indications &amp; contraindications</li> </ul> <b>b. Russian Currents</b>			
4	<b>BIOFEEDBACK</b>	5	-	5
	<ul style="list-style-type: none"> <li>i. Principles</li> <li>ii. Methods: Electro biofeedback</li> <li>iii. Uses of Biofeedback</li> </ul>			
5	<b>HIGH FREQUENCY CURRENTS S.W.D</b>	12	28	40
	<ul style="list-style-type: none"> <li>i. Types: continuous /Pulsed</li> <li>ii. Definition and types</li> <li>iii. Physiological &amp; Therapeutic effects</li> <li>iv. Technique &amp; Methods of Application</li> <li>v. Electrodes types, Effects &amp;Uses</li> <li>vi. Indications &amp; contraindications</li> <li>vii. Dangers &amp; Precautions</li> </ul>			
6	<b>SOUND</b>	10	25	35
	Therapeutic Ultra Sound: Pulsed / Continuous <ul style="list-style-type: none"> <li>i. Physiological &amp; Therapeutic effects</li> <li>ii. Technique &amp; Methods of Application</li> <li>iii. Phonophoresis</li> <li>iv. Indications &amp; Contraindications</li> <li>v. Dangers &amp; Precautions</li> </ul>			
7	<b>ACTINOTHERAPY</b>	15	25	40
	<b>a. Radiant heat- Infra Red Radiation [I.R.R.]</b> <ul style="list-style-type: none"> <li>i. Physiological &amp; Therapeutic effects</li> <li>ii. Technique &amp; Methods of Application</li> <li>iii. Effects &amp;Uses</li> <li>iv. Indications &amp; contraindications</li> </ul>	5	5	10

	v. Dangers & Precautions			
	<b>b. Ultra Violet Radiation (U.V.R.)</b> 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
	<b>c. Light Amplification by the stimulated emission of Radiation (LASER) – He/ Ne, &amp; I. R. combination</b> i. Physiological & Therapeutic effects ii. Technique & Methods of Application iii. Effects & Uses iv. Indications & Contraindications v. Dangers & Precautions vi. Dosage	4	-	4
8	<b>ELECTROTHERAPY: FOR WOUND CARE</b> i. Types of wound ii. Application of Therapeutic currents, Ultrasound, U.V.R. & LASER	10	15	25

#### 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

<b>THEORY</b> 80 MARKS + I.A. – 20 MARKS		<b>Marks</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		
		<b>100</b>
<b>Section A- M.C.Qs.</b>	Q-1-MCQs – based on Important area [ 1 x20]	<b>20</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any SIX out of SEVEN [6 x 5] [MUST KNOW area] based on pain/ Low frequency currents/Medium frequency currents/Biofeedback	<b>30</b>
<b>Section C-L.A.Q.</b>	Q-3- Answer any THREE out of FOUR [6 x 5] based on Actino therapy(I.R./U.V.R./LASER)/high frequency currents/ Sound/Electrotherapy: Wound care	<b>30</b>
<b>Total Marks</b>		<b>80</b>
<b>PRACTICAL</b> 80 MARKS + I.A. – 20 MARKS		<b>Marks</b>
		<b>100</b>
<b>LONG CASE</b>	Motor points /Strength Duration Curve / Faradism under pressure (On models)	<b>35</b>
<b>SHORT CASES</b>	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)	<b>40</b>
<b>JOURNAL</b>	Documentation- Principles & applications for various Electrotherapy Modalities.	<b>5</b>
<b>Total Marks</b>		<b>80</b>

### INTERNAL ASSESSMENT:

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

## Standard of Passing

### B.P.Th

1. Minimum pass marks shall be 50 % in each of the theory and practical papers separately
2. A Candidate must have minimum of 80 % attendance (irrespective of the kind of absence ) in theory and practical in each subject for appearing for examination
3. A Candidate must have 80 % Attendance in each of the practical areas before award of degree,
4. A Candidate has to pass in theory and practical exam separately in each of the paper
5. If candidate fails in either theory and practical paper he/she has to re-appear for both the papers (Theory and practical)
6. The candidate if fails in two subject he/she can be permitted for admission to next year
7. The candidate shall have be clear all the previous examination before appearing for final year examination
8. No institution shall be submit average internal marks of the test students more than 75% i.e. if 40 students are admitted in a course the average score of the 40 students shall not exceed 75% of total internal marks (Example of 5 students : A=25, B=20, C= 22, D=21, E=24 average score =89.6%
9. The maximum period to complete the course successfully should not exceed 8 years
10. Maximum number of candidates for practical examination should not exceed 20 per day
11. Should secure at least 35% of total marks assigned for internal assessment in particular subject in order to be eligible to appear in the University examination of that subject.
12. Who fails in any other subject/subjects of first year BPTH, has to put one academic term before he/she becomes eligible to appear for the next examination.
13. Should secure at least 35% of total marks in college exam in subject for which University exam not recommended.
14. 1<sup>st</sup> Year B.P.Th subjects need to be cleared before writing into 3<sup>rd</sup> year B.P.Th. 2<sup>nd</sup> year B.P.Th subject need to cleared before writing into 4<sup>th</sup> year B.P.Th.
15. Grace marks will be given in only one subject student securing 39 marks in any one of the subject will be eligible for grace marks
16. Declaration of class will be as per University norms.
17. A candidate who has failed in their respective year university examination can carry over a maximum of two subjects to their next year, but will have to pass the subjects in the subsidiary examination before writing the examination of the next academic year.
18. A candidate who failed in 3 subject and more will not be allowed to keep the term.

19. Internship: There shall be six months of rotatory structured Internship after the final examination for candidate declared to have passed the examination in all the subjects. Internship should be done in a teaching hospital recognized by the university. No candidate shall be awarded degree certificate without successfully completing six months. Internship. The internship should be rotatory and cover all clinical branches concerned with Physiotherapy. End of the posting oral evaluation will be done.
20. Project work: Interns has to take up a project work in the internship period. The project work shall be termed as Short Project. The protocol approval shall be obtained in the 1<sup>st</sup> month of Internship; data shall be collected in the next 3 months after the approval of the protocol and project shall be submitted at the mid of 6th month. Submission of article to the journal shall be completed by end of 6th month. The written text of the project shall be of minimum 50 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") times new Roman, 12 font and bound properly. Spiral binding should be avoided. The intern shall provide plagiarism declaration in his/her project. The guide, head of the institution shall certify the written text of the project. Three copies of project work thus prepared shall be submitted to the head of the institution. The completion certificate of internship will be issued only after completing the research project.



**D. Y. Patil Education Society  
(Deemed to be University), Kolhapur**

Re-accredited by NAAC with 'A' Grade