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

INDEX

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.

IV B.P.Th.

TRANSCRIPT HOURS -1465

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

IV B.P.Th.

SYLLABUS

Transcript Hrs-1465

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

PROFESSIONAL PRACTICE AND ETHICS

(COLLEGE EXAMINATION)

Total -60Hrs (I to IV year)

COURSE DESCRIPTION:

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

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

OBJECTIVES:

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

Cognitive: The student will

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

Psychomotor: The student will be able to:

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

Affective: The student will be able to:

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

SYLLABUS

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

RECOMMENDED REFERENCE LITERATURE

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

SCHEME OF COLLEGE EXAMINATION

<table>
<tr><td colspan="2">THEORY ONLY
[There shall be no LAQ in this paper]

* The question paper will give appropriate weightage to all the topics in the syllabus.</td><td>Marks

50</td></tr>
<tr><td>Section A-Q-1</td><td>MCQs – based on MUST KNOW area [20 X1]</td><td>20</td></tr>
<tr><td rowspan="2">Section-B-Q-2 & Q3</td><td>SAQ-to answer any FIVE out of SIX [5 x 3]</td><td>15</td></tr>
<tr><td>SAQ – to answer any THREE out of FOUR [3 x 5]</td><td>15</td></tr>
<tr><td colspan="2">Total Marks</td><td>50</td></tr>
<tr><td colspan="3">Passing in the examination is Mandatory

Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%,
C = less than50%.</td></tr>
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ADMINISTRATION, MANAGEMENT & MARKETING

(COLLEGE EXAMINATION)

Total – 20 HRS

COURSE DESCRIPTION:

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

OBJECTIVES:

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

Cognitive:

The student will:

a. Learn the management basics in fields of clinical practice, teaching, research and physiotherapy practice in the community.

b. Acquire communication skills in relation with patients, peers, seniors and other professionals & the community.

c. Acquire the knowledge of the basics in Managerial & Management skills, & use of Information technology in professional Practice

Psychomotor:

The student will be able to:

a. Develop psychomotor skills for physiotherapy practice.

b. Develop skill to evaluate and make decision for plan of management based on sociocultutural values and referral practice.

Affective:

The student will be able to:

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

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

RECOMMENDED REFERENCE BOOK

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

SCHEME OF COLLEGE EXAMINATION

THEORY 50 MARKS [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 [20 x1]	20
Section-B-Q-2 & Q3	SAQ-to answer any FIVE out of SIX [5 x 3]	15
	SAQ – to answer any THREE out of FOUR [3 x 5]	15
Total Marks		**50**
Passing in the exam is Mandatory Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%.		

MUSCULOSKELETAL PHYSIOTHERAPY

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

COURSE DESCRIPTION:

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

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

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

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

OBJECTIVES:

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

Cognitive:

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

Psychomotor:

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

Affective:

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

SYLLABUS

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

	1. Evaluation, interpretation of investigations and appropriate clinical reasoning for Functional diagnosis (ICF). 2. Evidence-based analysis of tools and techniques, (including Quality of Life questionnaires), and planning, prescription & implementation of short term & long term goals of Physiotherapy with appropriate documentation of the same. 3. Application of appropriate electro therapeutic modes for relief of acute & chronic pain, swelling and for wound healing, muscle / movement re-education etc with clinical reasoning. 4. Application of appropriate exercise therapeutic modes for improving joint mobility, muscle strength & endurance and motor control. 5. Application of advanced therapeutic modes of manual mobilization techniques (non-thrust techniques to be applied on extremities only), Friction Massage, Myofascial Release, Muscle Energy Techniques and Neuro Dynamic Techniques on patients. 6. Application of appropriate therapeutic exercise using therapeutic gymnasium tools as and when indicated, for relief of pain, enhancing structural stability, strength & endurance, and functional maintenance &/ or restoration including posture correction and gait training including preventive measures. 7. Prescription of appropriate orthotic & prosthetic devices. 8. Various taping techniques for support & pain relief; principles, indications, contra-indications, types of tapes used & relevant terminology. 9. Appropriate Home Program & Ergonomic advise for preventive measures & functional efficiency at home, work place and during recreation. Advice to Parents & Care Givers.	
	Physiotherapy interventions with goal setting for dysfunctions due to impairments of Pain, Mobility, Muscle performance(Strength), Endurance, Motor Control, Muscle length, Posture and Movement Balance and Gait for common health conditions secondary to conservative or surgical management of the following regions, with appropriate consideration of red flags:	

	Topics	Didactic Hours	Clinical/ Pract Hrs	Total hours
	1. **Manifestations of trauma and their complications:**	**16**	**40**	**56**
	a. Bones – fractures & fracture-dislocations of extremities & spine and their complications & management	08	20	
	b. Soft tissues injuries of extremities & spine and their complications & Management, contused lacerated wounds (CLWs) Burns complications and management, Crush injuries and its conservative and post surgical management.	08	20	
	2. **Degenerative Arthritis** a. Osteoarthritis of knee b. Peri-arthritis of shoulder c. Spinal degenerative conditions like Sponylosis, Spondylysis, Spondylolisthesis, and Spinal Canal Stenosis	**07**	**45**	**52**
	3. **Inflammatory conditions** a. Rheumatoid, Gouty, Septic arthritis b. Spondylo-arthropathies e.g. Ankylosing Spondylitis. c. Cellulites and its complications. d. Post incisional inflammation and infection. e. Myositis ossificans and traumatica. f. Avascular necrosis	**04**	**05**	**09**
	4. **Infectious Diseases of bones & joints of extremities & spine** a. Tuberculosis b. Osteomyelitis	**02**	**05**	**07**
	5. **Metabolic & Hormonal Disorders** a. Osteoporosis b. Osteomalacia	**02**	**05**	**07**
	6. **Congenital & Acquired Deformities of extremities & spine** a. CTEV b. DDH b. Kyphosis d. Scoliosis e. Genu valgus / varus f. Cubitus varus / valgus g. Coxa vara / valga etc. h. Deformities of the foot	**06**	**10**	**16**
	7. **Peripheral Nerve Injuries & Plexus Injuries-** complications & management	**03**	**05**	**08**
	8. **Soft tissue injuries during sports and as a result of Over-use:** conservative and operative management	**04**	**05**	**09**
	9. **Musculo-skeletal complications in Cerebral Palsy & Poliomyelitis and reconstructive surgeries.**	**02**	**05**	**07**
	Topics	**Didactic**	**Clinical/**	**Total**

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

CLINICAL:

SUPERVISED CLINICAL PRACTICE:

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

CLINICAL COMPETENCIES:

A.**COMPETENCY IN ASSESMENT AND CLINICAL REASONING**:

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

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

(job/school/play):

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

B. COMPETENCY IN DEVELOPING PLAN OF CARE:

Student should be able to:

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

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

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

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

DOCUMENTATION

Presentation & Documentation of 8 Cases (4 traumas, 4 cold) for patient management using ICF model as following:
(Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome)

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

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY 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 [20 x 1=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- structured question based on ICF model with emphasis to goal setting and treatment intervention 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	a. Subjective and Physical Examination -10 marks b. Evaluation and Physical therapy diagnosis (ICF) – 10 marks c. Plan of care - Goal setting – 10 marks d. Demonstration of any one important test and treatment intervention on patient –15 marks [Student will be evaluated in cognitive, psychomotor and affective domains.]	**45**
SHORT CASE	One Short case on: Demonstrations of two physiotherapy intervention skills for effective patient management 2 x 10 marks	**20**
SPOTS	5 spots - (5 x2 Marks= 10 Marks) 3 minutes for each spot X– ray of extremities and spine, Orthoses, Prostheses, Metal Implant	**10**
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	**5**
Total Marks		**80**

INTERNAL ASSESSMENT:

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

NEUROPHYSIOTHERAPY

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

COURSE DESCRIPTION:

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

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

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

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

OBJECTIVES:

At the end of the course, student will

Cognitive:

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

Psychomotor:

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

Affective:

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

SYLLABUS

Sr. No.	Topics	Didactic Hours	Practical Hours	Total Hours
1.	Features of ICF model (bio, psycho and social) to plan efficient, effective and cost-contained short term and long term goals to enhance functioning in a patient with health condition of nervous system. a. Clinical utility of bi-directional relationships among the ICF model's domain b. Environment and Personal factors-Facilitators and Barriers that affect disablement and functioning c. Capacity and Performance related Activities and Participation to enhance Functioning d. Set patient specific goals and expected outcome with clinical reasoning e. Documentation of disability and functioning Red flags-recognizing signs and symptoms	02	--	**02**
2.	Theoretical basis of motor control and learning to understand various neurophysiotherapeutic approaches.	02	--	**02**
3.	a. Plasticity of the intact brain i. motor learning ii. training iii. plasticity Plasticity following brain lesion • nature of spontaneous recovery • effect of environment behavior and recovery • adaptation of motor performance • muscle adaptation b. Strength training and physical conditioning in neuro rehabilitation to optimize functional performance c. Skill acquisition in restoration of functional performance • information, instruction, demonstration • feedback • practice	01 02 02	-- --	**01** **02** **02**
4.	Quality of Life scales & Independence Measures	02	--	**02**
	The following topics are applicable to all conditions related to Neuromuscular dysfunction throughout lifespan in acute care setting, hospital, chronic conditions at			

home and in community on the basis of:

1. Evaluation, interpretation of investigations and appropriate clinical reasoning for Functional diagnosis (I.C.F.).
2. Evidence-based analysis of tools and techniques, (including Quality of Life questionnaires), and planning, prescription & implementation of short term & long term goals of Physiotherapy with appropriate documentation of the same.
3. Manifestation of movement dysfunction following disease or trauma of the central or peripheral nervous system.
    a. Bed mobility
    b. lying to sitting
    c. standing up and sitting down
    d. walking
    e. balance
    f. reaching
    g. manipulation
4. Selecting appropriate assessment/evaluation tools and techniques suitable for the patients health condition and key indicators and interpret information obtained demonstrating evidence based decision making-use of biomechanical measures, generic scales/instruments to measure arousal, cognition, sensation, tone, strength, locomotion and balance, upper extremity function, anxiety and depression, quality of life and independence, Self assessment and self efficacy scales and common disease specific scales.
    - GCS
    - Mini Mental State Examination
    - Ashworth scale
    - Gait-D.G.I.
    - Balance- BBS, Functional Arm Reach Test.
    - T.U.G.
    - Barthel A.D.L. index
    - SF – 36
    - Disease specific measures – S.T.R.E.A.M., Brunnstrom, Fugl–Meyer assessment. A.S.I.A. Scale, U.P.D.R.S., E.D.S.S.

5 **PHYSIOTHERAPY MANAGEMENT – ADULT**

Planning of short term and long term goals in accordance with ICF for all the conditions in neurosciences by doing detail assessment and appropriate outcome measures and planning evidence based treatment program-for key indicator conditions

Topic	Didactic Hours	Practical/ Lab Hours	Total Hours
a. Stroke – cerebral circulation, types of stroke and manifestations, assessment and management	08	10	**18**

	b. Acquired brain injury; trauma and pathology (S.O.L.)	03	05	**08**
	c. Spinal cord disorders – traumatic and non – traumatic, management including bladder training	04	08	**12**
	d. Peripheral neuropathies – traumatic & non traumatic - upper limb & lower limb - brachial plexus - nerve root lesions - metabolic & endocrine	06	08	**14**
	e. Vestibular disorders – central and peripheral	02	05	**07**
	f. VII th cranial nerve	01	04	**05**
	g. Demyelinating diseases - Multiple Sclerosis & G.B. syndrome	02	05	**07**
	h. Cerebellar diseases and Ataxia	02	10	**12**
	i. Extrapyramidal diseases, with emphasis on Parkinson's disease	03	15	**18**
	j. Anterior Horn Cell diseases – heredity and acquired e.g. M.N.D., P.M.A., S.M.A., Poliomyelitis	02	05	**07**
	k. Myopathies	02	10	**12**
	l. Disorders of A.N.S. – Horner's syndrome, Hypo/Hypertension, Autonomic Dysreflexia	01	05	**06**
	m. Psychosomatic pain & paralysis	01	05	**06**
	Treatment programme includes: 1. Application of appropriate electro-therapeutic modes for relief of pain and functional re-education with clinical reasoning. 2. Application of skills as Neurotherapeutic approaches (Brunnstrom, Roods, Bobath, N.D.T., M.R.P., mental imagery, Constraint induced movement therapy, learning transfers), co-ordination and balancing exercise by using techniques based on neurophysiological principles. 3. Tools and adaptive equipments used for neuro-rehabilitation like Vestibular balls Tilt boards, Bolsters, Wedges, Graded Benches, Therapeutic mats etc. 4. Application of transfer and functional re-education exercise, postural exercise and gait training. 5. Bladder and bowel training 6. Developing a philosophy for caring 7. Prescription for appropriate orthotic devices and fabrication of temporary splints 8. Lifting techniques, wheel chair modifications, adaptive devices 9. Ergonomic advice for prevention/rehabilitation for the patients as well as for parents/care givers education about handling of patients.			

PHYSIOTHERAPY MANAGEMENT – PAEDIATRIC

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

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

CLINICAL

SUPERVISED CLINICAL PRACTICE:

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

CLINICAL COMPETENCIES:

A] COMPETENCY IN ASSESMENT AND CLINICAL REASONING :

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

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

B] COMPETENCY IN DEVELOPING PLAN OF CARE:

Student should be able to:

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

C] COMPETENCY IN PHYSIOTHERAPEUTIC INTERVENTION:

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

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

CLINICAL SKILLS:

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

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

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

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

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

RECOMMENDED TEXT BOOKS:

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

RECOMMENDED REFERENCE BOOKS:

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS * 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 [20x 1=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- structured question based on ICF model with emphasis to goal setting and treatment intervention Q-4] L.A.Q Compulsory U.M.N. condition (adult / paediatric)) - 15 marks Q-5] L.M.N. condition (adult / paediatric) - 15 marks OR Q-5] L.M.N. condition (adult / paediatric) - 15 marks L.A.Q. 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	a. Subjective and Physical Examination -10 marks b. Evaluation and Physical therapy diagnosis (ICF) – 10 marks c. Plan of care - Goal setting – 10 marks d. Demonstration of any one important test and treatment intervention on patient – 15 marks [To be evaluated in cognitive, psychomotor and affective domains.]	**45**
SHORT CASE	One Short case on: Demonstrations of two physiotherapy intervention skills for effective patient management 2 x 10 marks	**20**
SPOTS	5 spots - (5 x2 Marks= 10 Marks) 3 minutes for each spot E.M.G./N.C. Studies / Orthoses/ Prostheses & Neurological assessment, Scales	**10**
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with I.C.F.	**5**
Total Marks		**80**

INTERNAL ASSESSMENT:

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

CARDIO-VASCULAR & RESPIRATORY PHYSIOTHERAPY

(INCLUDING CRITICAL CARE)

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

COURSE DESCRIPTION:

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

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

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

OBJECTIVES:

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

Cognitive:

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

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

Psychomotor:

a. Utilise skills such as executing exercise tests, PFT, Ankle brachial index, arterial & venous insufficiency tests

b. Utilise psychomotor skills to implement appropriate bronchial hygiene therapy, therapeutic exercise, electrotherapeutic modalities, CPCR, Intensive (critical) care, joint and soft tissue mobilisations, offering ergonomic & energy conservation advice for patients with cardio-vascular & pulmonary dysfunction.

c. Utilise the knowledge about contextual factors to enhance capacity and performance of activities and participation in society

d. Utilise the skill to deliver cardiac, pulmonary & vascular rehabilitation

Affective:

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

b. Develop bed side behavior, respect & maintain patients' confidentiality

SYLLABUS

Sr. No.	Topics	Didactic Hours	Practical/ Lab Hours	Total Hours
1	**REVIEW OF BASIC APPLIED ANATOMY & PHYSIOLOGY**	**3**		**3**
	a. Pulmonary Anatomy & Physiology b. Cardiac anatomy & Physiology c. Cardiac and Respiratory Pharmacology d. Biomechanics of Thorax (Revision)			
2	**INVESTIGATION AND EXERCISE TESTING**	**4**	**10**	**14**
	a. Investigation & Clinical Implication - X-ray, PFT,ABG,ECG, ABI, claudication time, pulses, auscultation, postural hypotension b. Stress testing i. 6 Minute Walk test & Harward Step test Skill & Interpretation ii. Shuttle Walk Test & Modified Bruce Protocol (should be interpretation only)			
3	**EXERCISE PHYSIOLOGY**	**5**	**10**	**15**
	a. Nutrition(Bioenergetics) b. Total energy expenditure (MET) sources c. Acute and chronic adaptation to exercise d. Complication of bed rest/ Immobilization & prevention e. Aerobic & Anaerobic Training, f. Principles of Exercise Prescription			

Sr. No.	Topics	Didactic Hours	Practical/ Lab Hours	Total Hours
4	**PHYSIOTHERAPY SKILLS**	**8**	**34**	**42**
	a. Bronchial Hygiene Therapy- Postural Drainage, Forced Expiratory Technique,ACBT,Autogenic Drainage b. Adjunct Therapy – Flutter & PEP Therapy c. Therapeutic positioning to improve ventilation & perfusion matching, d. Therapeutic positioning to alleviate dyspnoea e. Nebulisation & Humidification, f. Lung Expansion Therapy g. Neurophysiologic facilitation of respiration h. Electrotherapeutic modalities for pain, swelling, &wound healing. i. Therapeutic exercise program to alleviate pain, to achieve mobility, to correct posture and improve peripheral circulation. j. Therapeutic exercise program to strengthen respiratory muscles k. Deliver Ergonomic advice, energy conservation advice, Home exercise Program, & modifications of contextual factors. l. Applied Yoga in Cardio-respiratory conditions			
5	**APPLICATION OF ICF MODEL**	**2**	**-**	**2**
	a. To plan effective Short term and long term goals to enhance functioning of Cardiovascular & Respiratory Dysfunction b. Set patient specific goals and expected outcome within time frame with clinical reasoning c. Documentation			

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

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

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

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

CLINICAL COMPETENCIES:

A] COMPETENCY IN ASSESMENT AND CLINICAL REASONING :

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

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

B] COMPETENCY IN DEVELOPING PLAN OF CARE:

Student should be able to:

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

C] COMPETENCY IN PHYSIOTHERAPEUTIC INTERVENTION:

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

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

Documentation:
Presentation & Documentation of 8 cases for patient management using ICF Model as following: (Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome) 1. Medical Respiratory condition 2. Paediatric respiratory condition 3. Thoracic Surgical condition 4. Cardiac Medical condition 5. Cardiac Surgical condition 6. Peripheral vascular disorders 7. Burns of Head, Neck & Face (Acute phase only) 8. Abdominal surgical condition

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY 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 [20x1= 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 - ICF model. Q-4] L.A.Q - 15 marks Q-5] (**RESPIRATORY SYSTEM**) - 15 marks OR Q-5] (**CARDIO VASCULAR SYSTEM**) - 15 marks L.A.Q. 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	a. Subjective and Physical Examination -10 marks b. Evaluation and Physical therapy diagnosis (ICF) – 10 marks c. Plan of care - Goal setting – 10 marks d. Demonstration of any one important test and treatment intervention on patient – 15 marks [Student will be evaluated in cognitive, psychomotor and affective domains.]	**45**
SHORT CASE	One Short case on: Demonstrations of two physiotherapy intervention skills for effective patient management 2 x 10 marks	**20**
SPOTS	(5 spots x 2 Marks = 10 Marks) Chest/Cardiac X-ray, ABG, PFT, ECG, Adjunct/devices	**10**
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	**5**
Total Marks		**80**

INTERNAL ASSESSMENT:

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

COMMUNITY PHYSIOTHERAPY

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

COURSE DESCRIPTION:

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

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

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

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

OBJECTIVES:

At the end of the course the student shall:

Cognitive:

Be able to describe:

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

Psychomotor:

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

Affective:

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

SYLLABUS

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

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

Sr. No.	Topics	Didactic Hours	Field Hours	Total Hours
6	**INDUSTRIAL HEALTH**	**20**	**20**	**40**
	a. Introduction to Industrial Health: Definition, Model of Industrial Therapy (Traditional Medical & Industrial Model)	4		
	b. Worker Care Spectrum: i. Ability Management – Job analysis:- Job description, Job demand Analysis, Task Analysis, Ergonomics Evaluation, Injury Prevention, Employee Fitness Program.	5		
	ii. Disability Management: - Acute care, Concept of Functional Capacity assessment, Work Conditioning, Work Hardening.	5		
	iii. Environmental stress in the industrial area – accidents due to a) Physical agents e.g. heat/cold, light, noise, vibration, UV radiation, ionizing radiation. b) Chemical agents- inhalation, local action and ingestion. c) Mechanical hazards-overuse/fatigue injuries due to ergonomic alternation and ergonomic evaluation of work place.	3		
	iv. Mechanical stresses: a) Sedentary table work-executive's clerk. b) Inappropriate seating arrangement-vehicle drivers. c) Constant standing- watchman, defense forces, surgeons. d) Over execution in labourer's-stress management. e) Psychological hazards e.g. monotonicity and dissatisfaction in job, anxiety of work completion with quality, Role of PT. in industrial set up and stress management relaxation modes.	3		

PROJECT SYNOPSIS

Students have to select a study to be done under the guidance of a teacher of any subject related to physiotherapy. After the finalization of the topic, he/ she has to decide the methodology of the study to be done (which has to be undertaken during the internship) Student will present defend the synopsis of this study to be done during the University Practical examination of Community Physiotherapy.

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

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **100**
Section A-M.C.Qs.	Q-1 -MCQs – based on MUST KNOW area [1 x 20] [Rehab - 4, Women's Health- 4, Health Promotion - 4, Geriatrics - 4, Industrial - 4.]	**20**
Section B- S.A.Q.	Q-2 - Answer any FIVE out of SIX [5x 3 = 15] Q-3- Answer any THREE out of FOUR [3 x 5 =15]	**30**
Section C-L.A.Q.	* Based on topics - Health Promotion / Women's Health /Geriatrics /Industrial Health. 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	Rehabilitation/ Women's Health / Geriatric/ Industrial Health / Health Promotion.	**50**
PROJECT SYNOPSIS	(Synopsis can be on any topic to be done during Internship project/ monogram (Musculoskeletal, Neurosciences, Cardio Respiratory or Community). [Introduction, Aims & Objectives, Methods & Methodology & Review of Literature Expected]	**25**
JOURNAL	1. 1 cases each of Rehabilitation, Health Promotion, Industrial Health, Women's Health & Geriatrics (Total 5 cases only) 2. Documentation of visits (Minimum One) to either Industry, Geriatric Home, Community assessment	**5**
Total Marks		**80**

INTERNAL ASSESSMENT:

1. **Two exams – Terminal and preliminary examination (**Theory & Practical**) of 80 marks each TOTAL - 160 marks**
2. **Internal Assessment (**Theory**) as per University pattern.**
3. **A. Practical examination for Terminal examination to be taken with 2 Long Cases of 40 marks each.**

   B. Practical examination for Preliminary examination to be taken with 1 Long Case of 50 marks & Project Synopsis for 30 marks.
4. **Internal Assessment to be calculated out of 20 marks.**

PRINCIPLES OF BIOENGINEERING

(COLLEGE EXAMINATION)

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

COURSE DESCRIPTION:

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

OBJECTIVES:

At the end of the course, the candidate shall

Cognitive:

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

Psychomotor:

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

SYLLABUS

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

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

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

RECOMMENDED REFERENCE BOOKS

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

SCHEME OF COLLEGE EXAMINATION

THEORY ONLY: 50 MARKS [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 [20 x1]	**20**
Section-B-Q-2 & Q3	SAQ-to answer any FIVE out of SIX [5 x 3]	**15**
	SAQ – to answer any THREE out of FOUR [3 x 5]	**15**
Total Marks		**50**
Passing in the exam is Mandatory Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%.		

RESEARCH METHODOLOGY AND BIOSTATISTICS

(COLLEGE EXAMINATION)

[DIDACTIC: 30 HRS]

COURSE DESCRIPTION:

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

OBJECTIVES:

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

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

SYLLABUS

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

3	**WRITING A RESEARCH PROPOSAL**	**3**
	a. Defining a problem b. Review of Literature c. Formulating a question, Operational Definition d. Inclusion & Exclusion criteria e. Methodology- Forming groups Data collection & method for analysis f. Informed Consent Steps of documentation – Title to Scope of study	
4	**RESEARCH ETHICS**	**2**
	a. Importance of Ethics in Research b. Main ethical issues in human subjects' research c. Main ethical principles that govern research with human subjects d. Components of an ethically valid informed consent for research.	
5	**OVERVIEW OF STUDY DESIGNS**	**3**
	a. Observational- i. Descriptive-Case study/ series, Cross sectional, Normative, Correlational ii. Analytical; case control, cohort b. Experimental- True & quasi experimental	
6	**SAMPLING**	**3**
	a. Random and non-random sampling. b. Various methods of sampling – simple random, stratified, systematic, cluster and multistage. Sampling and non-sampling errors and methods of minimizing these errors.	
7	**BASIC PROBABILITY DISTRIBUTIONS AND SAMPLING DISTRIBUTIONS**	**2**
	a. Concept of probability and probability distribution. b. Normal, Poisson and Binomial distributions, parameters and application. c. Concept of sampling distributions. d. Standard error and confidence intervals. e. Skewness and Kurtosis	

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

.

RECOMMENDED TEXT BOOK

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

SCHEME OF COLLEGE EXAMINATION

THEORY : 50 Marks [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 [20 x1]	**20**
Section-B-Q-2 & Q3	SAQ-to answer any FIVE out of SIX [5 x3]	**15**
	SAQ – to answer any THREE out of FOUR [3 x5]	**15**
Total Marks		**50**
Passing in the examination is Mandatory Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%.		

SCHEME OF EXAMINATIONS AT A GLANCE – IV B.P.Th.

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

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