PRAVARA INSTITUTE OF MEDICAL SCIENCES

(DEEMED TO BE UNIVERSITY)

Loni, Tal. Rahata, Dist. Ahmednagar 413736

NAAC Re-accrediated with 'A' Grade

SYLLABUS

UG Programme- Bachelor of Physiotherapy (BPT)

(Programme Outcomes (PO's) & Course Outcomes (CO's) Post Graduate Revised Curriculum will be implemented from batch admitted for 2022-23)

BACHELOR OF PHYSIOTHERAPY

CONTENTS

1. **Preamble:** Physiotherapy is an emerging Allied health care profession. Physiotherapy has been traditionally recognized as the branch of Physical Medicine that deals with the treatment of various diseases and disorders with the Physical Medicine modalities. Physical Medicine modalities include exercises, heat, cold, therapeutic currents, joint mobilizations, joint manipulations, soft tissue mobilizations, traction, compression, massage, radiations, sound etc. Physiotherapy is a profession with a holistic approach to the prevention, diagnosis and therapeutic management of conditions affecting human movements. With the advanced research, evidence based practice concepts and the increase in first contact practice, the practice of Physiotherapy is based on contemporary scientific evidence. Physiotherapy includes a range of specialties to meet the health needs of people of all ages. Physiotherapy involves a partnership with clients to achieve better health outcomes. Physiotherapy offers health care in many different settings including private practice, hospitals, community health centers, aged care facilities, industry and clients' own homes.

   The disability profile has been increasing as indicated in the recent surveys by Government of India. New fields like community health centers, industrial health centers, homes for elderly, hospices, rehabilitation centers, schools for disabled, research centers, sports medicine and training centers, non-governmental organizations show an inadequate participation from qualified Physiotherapists. Hence, there is a growing need for the qualified Physiotherapists in our country. Physiotherapy is an allied health care profession characterized by the treatment of various diseases and disorders with the help of skilled use of physiologically-based movement techniques, supplemented when necessary by electrotherapy and other physical means for the prevention and treatment of injury and disease. It is used to assist the process of rehabilitation and restoration of function, including the achievement of personal independence. The work of the Physiotherapist is therefore essential to ensure a good quality of life of individuals ranging from children to the elderly with various disabilities like physical, neurological, psychosocial, sensory and rehabilitation needs and their integration in the community. The specific objective of the therapist is to function as an integral part of a multidisciplinary team to enable those whose abilities in productivity, self-maintenance and leisure are threatened, restricted or lost due to impairment, developmental delay, ageing or lack of opportunity, to become full and productive members of the community. Physiotherapists are therefore of paramount importance in the effective operation of the health care, social welfare and education systems. Physiotherapists play an important role in preventive medicine which includes all pathologies of musculo-skeletal, neuromuscular and cardiovascular system at all ages.

The first three years of study have been designed to equip students with all the basic training needs of a Physiotherapist for general practice, including implementation of treatment after effective Physiotherapy assessment, good communication and interpersonal skills and commitment to ethical and social responsibility. The fourth year of study leads to the award of a Bachelor of Physiotherapy and is designed to meet the research aptitude requirements of the profession. The practical and clinical education training will provide the opportunity for translation of theoretical knowledge into hands-on practice of immediate relevance and will further help students in acquiring professional competence. Graduates with this degree can either pursue higher studies like Doctor of Physiotherapy, Master of Physiotherapy and post graduate diploma or seek employment locally and internationally. Physiotherapists are employable in a wide range of areas like clinics, hospitals, hospices, homes for elderly, schools, industries, sports medicine centers etc and can also choose private practice after they are awarded the Bachelor of Physiotherapy degree.

2. **Objectives:** Various objectives of education and training Physiotherapy graduates at PIMS are as follows;
    - To teach common health problems which are referred for Physiotherapy.
    - To train an individual into value based Physiotherapist capable of treating common ailments referred for Physiotherapy.
    - To use active, integrated and student centered methods of teaching and learning that encourage clarity of expression, independence of judgment, scientific habits, problem solving abilities, self initiated and self directed learning.
3. **Career opportunities:** Currently there is shortage of qualified specialist Physiotherapists. Hence, there is a demand for this specialty and employment opportunities are excellent. Graduates with this qualification are recognized throughout India and abroad. Shortage of highly qualified Physiotherapists commands an increasing employment and remuneration. They can be employed in super specialty hospitals, general hospitals, teaching institutes, rehabilitation centers for children, schools and can also practice in private setups independently.
4. **Professional recognitions:** The award of Bachelor of Physiotherapy qualifies the graduates for membership of Maharashtra State Council for Physiotherapy and

Occupational Therapy, Indian Association of Physiotherapists. They can also apply to different councils or associations in India and abroad.

5. **Eligibility:** A candidate seeking admission to first year BPT course should have passed 10+2 examination with English as one of the subjects and Physics, Chemistry and Biology as other subjects and must appear for PIMS AICET ASUG competitive entrance examination and must have come in the merit list by securing not less than 40% marks in Physics, Chemistry and Biology taken together.
6. **Age:** A candidate seeking admission to Bachelor of Physiotherapy course should have completed 17years of age, before the commencement of the academic year. Every candidate before admission to the course shall furnish to the Principal of the Institution a certificate of Medical Fitness from an authorized Government Medical Officer to the effect, that the candidate is physically and mentally fit to undergo Physiotherapy course.
7. **Duration of the Course:** Every student shall undergo a period of certified study extending over 4 academic years from the date of commencement of his/her study for the subject comprising the Physiotherapy curriculum to the date of completion of the examination followed by six months compulsory rotatory internship.
8. **Medium of instructions:** The medium of instructions for this course shall only be English. This includes theory lectures, practicals, laboratory works and assignments and clinical training.
9. **Learning Outcomes:** On completion of this course the student will be expected to

9.1 Describe:

- Physiotherapy principles and practice
- Physiotherapy practice guidelines and performance
- The importance of health promotion and wellness
- Professional accountability

9.2 Understand:

- Specific perspectives of the PT in patient care, including inter-professional
- Practice, client and family-centered care
- Common ethical, personal, and professional issues that arise in physical therapy practice
- The role of the PT in motivating and educating patients for self- management

9.3 Demonstrate adequate competency in:

- Collaborative effective communication
- Observational skills
- Interviewing skills
- Teaching and learning principles (Identifying, summarizing and communicating new knowledge)
- Understanding and respecting others' values and beliefs
- Cultural diversity and discrimination issues

9.4 Compare and contrast the role of Physiotherapy in various settings using evidence to support findi

10. POs (Program Outcomes):

1. **Physiotherapy Knowledge**: Coursework entitles independent physiotherapy assessment and treatment in any healthcare delivery centers in India by the graduates
2. **Problem analysis**: Evaluate patients for impairments and functional limitations and able to execute all routine physiotherapeutic procedures as per the evaluation.
3. **Design/development of solutions**: The graduate will utilize critical inquiry and evidence based practice to make clinical decisions essential for autonomous practice
4. **Leadership skills**: the graduate will demonstrate the leadership skills in performing societal and professional upliftment.
5. **Professional Identity**: Graduates can find employment opportunities in hospitals/nursing homes/sports teams/fitness centers/Community Rehabilitation /Health planning boards/health promotions services in both private and public sectors as well as in independent physiotherapy clinics
6. **Physiotherapy and society**: The graduate will function as an active member of professional and community organizations. The graduate will be a service-oriented advocate dedicated to the promotion and improvement of community health.
7. **Basic medical Knowledge**: the graduates will execute their basic medical knowledge in prevention, evaluation, treatment and rehabilitation of patient.
8. **Ethics**: The graduate will be a competent and reflective physiotherapy practitioner who can function safely and effectively while adhering to legal, ethical and professional standards of practice in a multitude of physiotherapy settings for patients and clients across the lifespan and along the continuum of care from wellness and prevention to rehabilitation of dysfunction
9. **Individual or team work**: The coursework is designed to train students to work as independent physiotherapists or in conjunction with a multidisciplinary team to diagnose and treat disorders as per the standard healthcare guidelines.

10. **Communication**: Communicates and educates the individual's family, community, and other professionals about positive health, prevention, wellness, and rehabilitation.
11. **Physiotherapy Patient evaluation & management**: Coursework will skill the graduate's physical/functional diagnosis, treatment planning, management, administration of physiotherapy treatment and for patient support
12. **Life-long Learning**: The graduate will demonstrate lifelong commitment to learning and professional development.

11. Dress code: Professionalism with respect to dressing is encouraged throughout the course. It is each student's responsibility to have appropriate attire during all class assignments and learning activities.

12. Course location: This course is offered at College of Physiotherapy, Pravara Institute of Medical Sciences, Loni, Taluka: Rahata, District: Ahmednagar 413 736, Maharashtra, India.

13. **Total intake of students:** The total intake of students will be hundred per academic year in Pravara Institute of Medical Sciences, Deemed University, Loni.

14. Course fee structure: The tuition fee and other fee structure will be as per the notifications by Pravara Institute of Medical Sciences, Deemed University given from time to time. The fee structure is different for resident Indians, non-resident Indian and foreign students

15. Framework of the curriculum

COURSE DURATION: Four years and Six months of Internship.

I B.P.T.

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

II B.P.T.

a. Deals with understanding of altered physiology by studying pathology and 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 and behavior by studying Psychology and 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 and kinematics of Joints, Movements and 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 and uses of various electrotherapeutic modalities on models.

III B.P.T.

a. Students acquire knowledge of all the clinical subjects like Orthopaedics, General Surgery, Medicine, Neurology, Paediatrics, Dermatology and Gynecology and Obstetrics, Community Medicine and Sociology, ***Radio-Diagnosis and Oncology***
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 and 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.T.

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 and cardiovascular- respiratory dysfunctions in hospital and community settings.
b. Students also acquire knowledge pertaining to health promotion and 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 and application of variety of aids and appliances used for ambulation, protection and 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 and ***Bioethics***, as well as its moraland legal aspects. The principles of Hospital Administration, Management and Marketing, ***Environmental Sciences*** 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 and Respiratory including ICU, Neurology and 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.

SUBJECTS SCHEDULE

I B. P.T.

TRANSCRIPT HOURS - 1400

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

II B. P.T.

TRANSCRIPT HOURS- 1400

Sr. No.	SUBJECTS	Teaching Hrs
	PROFESSIONAL PRACTICE	
1	Professional practice and Ethics	015
	MEDICAL SCIENCES	
2	Pathology	050
3	Microbiology	035
4	Pharmacology	050
5	Psychiatry including Psychology	050
	PHYSIOTHERAPY	
6	Kinesiology	080
7	Kinesiotherapy	240
8	Electrotherapy	300
9	Seminar	090
10	Supervised clinical practice	490
	ELECTIVE SUBJECTS	
11	Medical Physics	20
12	Health Promotion and Fitness	20
	TOTAL	**1440**

III B. P.T.

TRANSCRIPT HOURS- 1420

Sr. No.	SUBJECTS	Teaching Hrs
	PROFESSIONAL PRACTICE	
1	Professional practice and Ethics	015
	MEDICAL SCIENCES	
2	Surgery	055
3	Orthopaedics	060
4	Medicine-I	055
5	Medicine-II	065
6	Community Medicine and Sociology	060
7	Obstetrics and Gynaecology and **Oncology**	040
8	Dermatology and **Radio-Diagnosis**	020
	PHYSIOTHERAPY	
9	Functional Diagnosis and Physiotherapeutic Skills	460
10	**Seminar (including I.C.F.)**	090
11	Supervised clinical practice	500
	TOTAL	**1420**

IV B.P.T.

TRANSCRIPT HOURS -1465

Sr. No.	SUBJECTS	Teaching Hrs
	PROFESSIONAL PRACTICE	
1	Professional practice and **Bio** Ethics	015
2	Administration, Management and Marketing	020
	PHYSIOTHERAPY	
3	**Orthopaedic** Physiotherapy	200
4	Neuro Physiotherapy	200
5	Cardiovascular Respiratory Physiotherapy	200
	(Including Critical Care)	
6	Community Physiotherapy	200
7	Principles of Bio-engineering	030
8	Research Methodology and Biostatistics	040
9	**Environmental Sciences**	**050**
10	**Seminar (including I.C.F.)**	**060**
11	Supervised clinical practice	500
	ELECTIVE SIUBJECTS	
12	Basics of Intellectual Property rights	20
13	Administration, Management and Marketing	20
	TOTAL	**1505**

16.Clinical Education Training: Clinical training is distributed throughout every year of the curriculum in the form of supervised clinical practice where the students are encouraged to participate in clinical reasoning through patient simulated training, mock demonstrations, group discussions, physical diagnosis, investigations and their interpretations, case presentations, observing different investigatory procedures and Physiotherapy interventions. Students will be required to attend clinical sessions on a rotation basis to maintain public service and provide continuity of patient care. To ensure a depth of learning, clinical education will be guided and workplace skills will be supervised and assessed by practicing and qualified physiotherapists.

17. Attendance: Every candidate should have attendance not less than 75% of total classes conducted in theory and practical in each academic year calculated from the date of commencement of the term to the last working day as notified by the University, in each of the subjects prescribed to be eligible to appear for the University examination. A candidate lacking in the prescribed attendance and progress in any subjects in theory or practical/clinical shall not be permitted to appear for the University examination in those subjects.

18. Internal assessment: It shall be based on regular evaluation of periodic tests of assignments, clinical presentations, theory and practical test. There should be a minimum of at least 3 internal examinations and the average of best of two marks should be sent to the University before the commencement of University examination as notified by the examination section from time to time. Internal assessment paper records should be maintained for all students and should be available for scrutiny. The marks of internal assessment tests should be displayed on notice board for the students.

19. Monitoring process: A candidate pursuing B.P.T course shall study in the concerned department of the college of Physiotherapy, Pravara Institute of Medical Sciences,Loni for the entire period as full time student. No candidate is permitted to work in any other hospital, clinic, college etc., while studying this course. No candidate should join another course of study or appear for any other examination conducted by this university or any other university in India or abroad during the period of registration. Each year shall be taken as a unit for the purpose of calculating attendance. Every student shall attend lectures, practicals, laboratory works, seminars, weekly case discussions, review meeting, tele-Physiotherapy sessions and state level conferences, national level conferences or occasionally international conferences during each year as prescribed by the Pravara Institute of medical Sciences, Deemed University, Loni. Every candidate shall maintain a log book and record of his/her participation in the training programs conducted by the department. The log book shall be scrutinized and certified by the Head of the Department and the Principal, College of Physiotherapy, and presented in the university practical

examination if called for. Every clinical case discussion, case presentation, seminars, will be monitored by faculty members, guides and peers using relevant checklists.

20. Schedule of Examination: There will be two examinations in a year: an annual Examination and a supplementary examination to be conducted as per notification issued by the University from time to time. The particulars of subjects for various examinations and distribution of marks are shown separately in tables.

21. Eligibility for Examination: To be eligible to appear for University examination a candidate: a) should have undergone satisfactorily the approved course of study in the subject or subjects for the prescribed duration. b) Should have attended at least 75% of the total number of classes in theory and practical jointly to become eligible to appear for examination in those subject/subjects. c) Should secure at least 35% of total marks assigned for internal assessment in particular subject in order to be eligible to appear in the University examination of that subject. d) Who fails in any other subject/subjects of first year BPT, has to put one academic term before he/she becomes eligible to appear for the next examination. e) Shall fulfill any other requirement that may be prescribed by the University from time to time.

22. SCHEME OF UNIVERSITY EXAMINATIONS AT A GLANCE

I B.P.T.

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

SCHEME OF UNIVERSITY EXAMINATIONS AT A GLANCE - II B.P.T.

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

SCHEME OF EXAMINATIONS AT A GLANCE – III B.P.T.

SUBJECTS	UNIVERSITY EXAMINATIONS						COLLEGE LEVEL EXAMS (Theory only)
	Theory			Clinical / Practical			
	University	I.A.	Total	University	I.A.	Total	
Surgery (General Surgery + Cardio vascular and Thoracic Surgery + Plastic / Reconstructive Surgery)	40	10	50	---	---	---	---
Orthopaedics	40	10	50	---	---	---	---
Medicine-I (Cardiovascular Respiratory Medicine + General Medicine + Gerontology)	40	10	50	---	---	---	---
Medicine-II (Neurology and Paediatrics)	40	10	50	---	---	---	---
Community Health and Sociology	80	20	100	---	---	---	---

Functional Diagnosis and Physiotherapeutic Skills	80	20	100	80	20	100	---
Gynaecology and Obstetrics (College Examination)	---	---	---	---	---	---	50
Dermatology (College Examination) **Radiodiagnosis (College Exmaintaion)** **Oncology (College Examination)**	---	---	---	---	---	---	25 **10** **15**
Total	**320**	**80**	**400**	**80**	**20**	**100**	**95**

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**	
Orthopedic Physiotherapy	80	20	100	80	20	100	---
Neuro Physiotherapy	80	20	100	80	20	100	---
Cardio-Vascular and Respiratory Physiotherapy	80	20	100	80	20	100	---
Community Physiotherapy	80	20	100	80	20	100	---
Professional Practice and Ethics (College Exmaintaion)	---	---	---	---	---	---	50
Administration , Management and Marketing(College Exmaintaion)	---	---	---	---	---	---	50

Principles of Bioengineering(College Exmaintaion)	---	---	---	---	---	---	50
Research Methodology and Biostatistics(College Exmaintaion)	---	---	---	---	---	---	50
Total	**320**	**80**	**400**	**320**	**80**	**400**	**200**

23. Criteria for Pass: For declaration of pass in any subject in the university examination, a candidate should pass both in Theory and Practical examinations components separately as stipulated below:

a) For a pass in theory a candidate shall secure not less than 50% marks in aggregate i.e., marks obtained in written examination and internal assessment (theory) added together. b) For a pass in practical examination, a candidate shall secure not less than 50% marks in aggregate, i.e., marks obtained in university practical examination and internal assessment (practical) added together.

c) A candidate not securing 50% marks in theory and practical examination in a subject shall be declared to have failed in that subject and is required to appear for both theory and practical, again in the subsequent examination in the subject.

24. Declaration of class:

A candidate having appeared in the entire subject in the same examination and passed that examination in the first attempt and secure 75% of marks or more of grand total marks prescribed will be declared to have passed the examination with distinction.

- A candidate having appeared in the entire subject in the same examination and passed that examination in the first attempt and secure 60% of marks or more but less than 75% of grand total marks prescribed will be declared to have passed the examination in First class.
- A candidate having appeared in the entire subject in the same examination and passed that examination in the first attempt and secure 50% of marks or more but less than 60% of grand total marks prescribed will be declared to have passed the examination in Second class.

- A candidate passing the University examination in more than one attempt shall be placed in pass class irrespective of the percentage of marks secured by him/her in the examination.

25. Grading Structure: This will be as shown below taking into account that the pass mark for all modules is 50% GRADE POINT AVERAGE (GPA) under the GPA, the following letter grades and their grade point equivalent are used:

Letter Grade	Grade Point Average	Percentage Mark
A+		90 to 100
A	4.00	80 to 90
A-		70 to 80
B+	3.00	65 to 70
B		60 to 65
C	2.00	50 to 60
F	0	<50

26. Classification of Award: The degree classification will be based on the percentage at the end of the Program as follows;

Percentage of marks	CLASSIFICATION
>75	Distinction
60 to 75	First class
50 to 60	Second Class
< 50	No Award

27. Examiners: There shall be two examiners, one of them shall be an external, outside the university and the other shall be an internal preferably from the same college or as decided by the University.

28. Carry over or allowed to keep term: A candidate who has failed in their respective academic year university examination can carry over a maximum of two subjects to their next academic year, but will have to pass the subjects in the subsidiary examination before writing the examination of the next academic year.

29. Internship: There shall be six months of compulsory rotatory internship after the final year bachelor of Physiotherapy (BPT) examination. This internship should commence after the candidate is declared to have passed the examination in all the subjects. Internship should be done in a multispecialty teaching hospital recognized by the University/MCI/IAP. The internship should cover all clinical branches concerned with Physiotherapy. No candidate shall be awarded degree certificate without successfully completing six months internship. The clinical duties of the student will be recorded in 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 clinical work done. On completion of all the postings, the duly completed logbook will be submitted to the Principal/Head of department to be considered as having successfully completed the internship program.

The various departments covered during the six month rotatory posting are: Pediatric Physiotherapy,CardiorespiratoryPhysiotherapy,CommunityPhysiotherapy,Neuro Physiotherapy, Musculoskeletal Physiotherapy, Geriatric Physiotherapy and Sports Physiotherapy.

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I B.P.T.
SYLLABUS
Transcript Hrs-1400

Sr. No.	Subjects	Didactic Hours	Practical/Demonstration / Clinical Hours	Total Hours
	PROFESSIONAL PRACTICE			
1	Professional practice and Ethics *(College Examination in final year)*	015	-	015
	BASIC MEDICAL SCIENCES			
3	Human Anatomy	150	60	210
4	Human Physiology	150	50	200
5	Biochemistry	048	02	050
	PHYSIOTHERAPY			
6	Fundamentals of Kinesiology and Kinesiotherapy	100	150	250
7	Fundamentals of Electrotherapy	095	105	200
8	Seminar (including introduction to **terms** of I.C.F. definition of Structural and Functional impairments as applied to Anatomical structures and Physiological functions) (***not for examination***)	-	60	060
9	**Observational Clinical Practice** He /She shall observe and note technical aspects of fixation of electrotherapeutic modalities, basic movements and starting positions used, learn bedside manners and communication skills with the seniors, peers and patients	-	415	415

PROFESSIONAL PRACTICE AND ETHICS

(COLLEGE EXAMINATION IN FINAL YEAR)

TOTAL -15 HRS

COURSE DESCRIPTION:

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

OBJECTIVES:

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

Cognitive: The student will

a) Be able to understand the moral values and meaning of ethics.

b) Acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.

Psychomotor: The student will be able to:

Develop psychomotor skills for physiotherapist-patient relationship.

SYLLABUS

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

HUMAN ANATOMY

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

COURSE DESCRIPTION:

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

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

Course Outcome

At the completion of the course. Students will be able to:

CO1- Develop an understanding of the normal anatomical structures of human body with respect to structure, location and function essential for clinical studies.

CO2- Develop understanding of regional anatomy

CO3- Develop an understanding of the common terminology used for describing human structures and movements, histological features of various organs and its application in medical sciences.

CO4- Understand the structure and function of various systems of the body with emphasis on musculoskeletal, CNS, cardiac and respiratory systems

CO5- Develop an understanding of the applied aspects of human anatomy

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

OBJECTIVES:

1] MUSCULOSKELETAL ANATOMY

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

2] NEURO ANATOMY

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

3] CARDIOVASCULAR and RESPIRATORY ANATOMY

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

4] To Obtain Knowledge of **OTHER SYSTEMS and SENSORY ORGANS**

SYLLABUS

Sr. No.	Regions	Didactic Hours	Practical Hours	Total Hours
1	**GENERAL ANATOMY AND HISTOLOGY**	**17**	**03**	**20**
	a. General Anatomy:	10		10
	i. Fascia	1		
	ii. Muscles	2		
	iii. Bones	2		
	iv. Joints	2		
	v. Nerve	2		
	vi. Vessels	1		
	a. General Histology:	7	3	10
	i. Epithelial	1		
	ii. Connective tissue	1		
	iii. Muscle	1		
	iv. Bone and cartilage	1		
	v. Nerve and vessels	1		
	vi. Embryology -	2		
2	**MUSCULOSKELETAL SYSTEM**	**57**	**33**	**90**
	a. Superior extremity	15	10	25
	b. Inferior extremity	15	10	25
	c. Back and Thoracic Cage	10	05	15
	d. Head Neck andFace	13	06	19
	i. Skull and Mandible	2	1	
	ii. Facial Muscles, blood supply, nerve supply	3	1	
	iii. Triangles of neck, Glands, Tongue and Palate	3	1	
	iv. Larynx and Pharynx	1	1	
	v. Muscles of mastication and T.M. joint	2	1	
	vi. Extra ocular muscles with nerve supply	1	1	
	vii. Nose and Para nasal sinuses	1	-	
	e. Living Anatomy:	4	2	6
	i. Upper extremity	1	-	
	ii. Lower extremity	1	-	
	iii. Head Neck and Face	1	-	
	iv. Trunk	1	-	
3	**NEURO ANATOMY**	**32**	**12**	**44**
	a. General organization of Nervous System	5		5
	b. Central Nervous System	15	8	23
	c. Cranial nerves	10	4	14
	d. Peripheral Nerves (should be done with respective parts)	2		2
	i. Autonomic Nervous System:			
	ii. Sympathetic			
	iii. Parasympathetic			

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

RECOMMEMDED TEXT BOOKS

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

RECOMMEMDED REFERENCE BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate Weigtage to all the topics in the Syllabus.		**Marks** **100**
Section A-MCQs	Q-1 -MCQs – based on MUST KNOW area [1 x 20]	**20**
Section B- S.A.Q.	Q-2 - Answer any FIVE out of SIX [5 x 3 = 15] This question should include: Digestive/ Uro-genital / Reproductive system / Special senses – Eye / Ear/ Skin / Circulatory system / General Anatomy/ General Histology	**30**
	Q-3- answer any THREE out of FOUR [3 x 5 =15] Should be based on: Thorax / Soft parts Upper Limb / Soft part Lower Limb/ Soft parts Thorax / Spine / Neck.	
Section C -L.A.Q.	Q-4] L.A.Q (should be based on Musculoskeletal anatomy) - 15 marks	**30**
	Q-5] A -15 marks OR Q-5] B -15 marks (Should be based on Neuro-Anatomy -including cranial nerves with emphasis to III to XII nerves) LAQ should give break up of 15 marks e.g.[3 +5+7]	
Total Marks		**80**
PRACTICAL 80 MARKS + I.A. – 20 MARKS		**Marks** **100**

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

INTERNAL ASSESSMENT:

1. **Two exams – Terminal and prelims of 80 marks each (Theory and Practical) TOTAL - 160 marks**
2. **I.A. to be calculated out of 20 marks** (Theory and Practical)
3. **Internal assessment as per University pattern.**
4. **Betterment exam will not be conducted**

HUMAN PHYSIOLOGY

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

COURSE DESCRIPTION:

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

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

This course will serve as a pre-requisite/foundation for the further courses i.e. Exercise physiology or Pathology

Course Outcome

At the completion of the course, students will be able to:

CO1- Develop an understanding of the normal physiological functions of various systems of body.

CO2- Develop an understanding of functioning and responses of various systems such as Cardiac, respiratory, musculoskeletal and CNS in response to exercises

CO3- Demonstrate skill of basic clinical examination related to assessment of normal functioning of body systems with special emphasis to peripheral and CNS, musculoskeletal, Cardiovascular and respiratory system

CO4- Develop an understanding of the applied physiology of various systems of the body and clinical applications of various physiological functions in relation to physiotherapy.

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

OBJECTIVES:

At the end of the course, the candidate will

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

SYLLABUS

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

Sr. No.	Topics	Didactic Hours
2	**NERVOUS SYSTEM:**	**35**
	a. Introduction of nervous system, classification – C.N.S., P.N.S. and A.N.S. b.Synapse-structure, properties, and transmission; c. Reflexes-classification and properties; d. Receptor physiology: classification, properties. e. Physiology of Touch, Pain, Temperature and Proprioception; f. Sensory and motor tracts: effect of transaction (complete and incomplete) at various levels g. Physiology of Muscle Tone (muscle spindle); Stretch reflex h. Connection and function of Basal ganglia, Thalamus, Hypothalamus, Sensory and Motor cortex, Cerebellum, Limbic system, Vestibular Apparatus i. Autonomic nervous system: Structure and functions of the sympathetic and the parasympathetic nervous system. j. Learning, memory and conditioned reflex k. Physiology of Voluntary movement	
3	**EXCRETORY SYSTEM:**	6
	a. Kidneys-structure and function; b. Urine formation;(to exclude concentration and dilution) c. Juxtaglomerular apparatus d. Fluid and electrolyte balance – Na, K, H_2O e. Neural control of Micturation f. Applied physiology: Types of bladder	
4	**TEMPERATURE REGULATION**	**2**
5	**ENDOCRINE SYSTEM:**	**6**
	a. Secretion- regulation and function of Pituitary-Thyroid-Adrenal-Parathyroid-Pancreas b. Applied physiology (abnormalities) of the above mentioned glands	
6	**REPRODUCTIVE SYSTEM:**	**8**
	a. Physiology of ovary and testis b. Physiology of menstrual cycle and spermatogenesis c. Functions of progesterone, estrogen and testosterone d. Puberty and menopause e. Physiological changes during pregnancy	
7	**SPECIAL SENSES:**	**5**
	a. Structure and function of the eye b. Applied physiology: errors of refraction, accommodation, reflexes – dark and light adaptation, photosensitivity. c. Structure and function of the ear d. Applied physiology- types of deafness	
8	**RESPIRATORY SYSTEM:**	**20**
	a. Introduction, structure and function of the RS b. Mechanics of respiration;	

	c. Pulmonary Volumes and capacities; d. Anatomical and Physiological Dead space-ventilation/perfusion ratio, alveolar ventilation e. Transport of respiratory gases f. Nervous and Chemical control of respiration g. Pulmonary function tests-Direct and indirect method of measurement h. Physiological changes with altitude and acclimatization	
9	**CARDIOVASCULAR SYSTEM:**	**20**
	a. Structure and properties of cardiac muscle b. Cardiac impulse- initiation and conduction c. Cardiac cycle d. Heart rate regulation e. Blood pressure- definition-regulation- Cardiac output-regulation and function affecting; Peripheral resistance, venous return f. Regional circulation-coronary-muscular, cerebral g. Normal ECG.	
10	**GASTRO INTESTINAL SYSTEM:**	**3**
	a. Absorption and digestion in brief b. Liver function	
11	**EXERCISE PHYSIOLOGY**	**15**
	a. Basal Metabolic Rate and Respiratory Quotient b. Energy metabolism c. Fatigue d. Oxygen debt e. Acute cardio vascular changes during exercise, difference between mild, moderate and severe exercise, concept of endurance f. Acute respiratory changes during exercise g. Concept of training/conditioning, effects of chronic exercise/effect of training on the cardiovascular and respiratory system h. Body temperature regulation during exercise i. Hormonal and metabolic effects during exercise j. Effects of exercise on muscle strength,power,endurance k. Physical fitness and its components	
12	**PHYSIOLOGY OF AGEING** (With respect to all systems)	**05**

PRACTICALS

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

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **100**
Section A-MCQs	Q-1 -MCQs – based on MUST KNOW area [1 x 20]	**20**
Section B- S.A.Q.	Q-2 - Answer any FIVE out of SIX [5 x 3 = 15] Based on: Blood/G.I. tract / Electrolyte balance / Endocrine / Uro-genital System / General physiology /Special Senses (Eye/Ear/Skin)	**30**
	Q-3- Answer any THREE out of FOUR [3 x 5 =15] Based on: Cardio-vascular system / Respiratory system / Exercise Physiology/ Nerve	
Section C -L.A.Q.	Q-4] L.A.Q (Compulsory from Musculoskeletal) -15 marks Q-5] A - 15 marks OR Q-5] B -15 marks Based on: C.N.S./ Spinal Cord/ Electro-Neuro-Physiology /C.V.S. /R.S. 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**
Spots	Based on: Topic 1,2,3,6,7,8,9,11and12 (10 X 2 Marks)	**20**
Viva	Based on theory	**20**
Demonstration	On Clinical Physiology C.V.S. 10 Marks R.S. 10 Marks C.N.S. Cranial Nerves and Special Senses 15 Marks	**35**
Journal	Year work on practicals performed	**05**
Total Marks		**80**

INTERNAL ASSESSMENT:

1. **Two exams – Terminal and prelims of 80 marks each (**Theory and Practical**)**
   TOTAL - 160 marks
2. **I.A. to be calculated out of 20 marks** (Theory and Practical)
3. **Internal assessment as per University pattern.**
4. **Betterment exam will not be conducted**

BIOCHEMISTRY

(Didactic 48 hrs+ Demonstrations 2 hrs) **TOTAL 50 HRS**

COURSE DESCRIPTION:

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

Course Outcome-

At the completion of the course. Students will be able to:

CO1- Develop an understanding of various biomolecules which are present in the body and functions and their normal levels on body fluids required for functioning and their abnormal levels to understand disease process

CO2- Develop an understanding of the applied aspect of bio-chemical processes of various systems of the human body.

CO3- Develop an understanding of the nutrients i.e. carbohydrates, fats and amino acids

CO4- Acquire knowledge in brief about the clinical biochemistry, with special reference to Liver and Renal function test, blood study for Lipid profile, metabolism of fat, carbohydrates, proteins, bone minerals, and electrolyte balance, Role of vitamins and Enzymes.

Sr. No.	Topics	Didactic Hours	Demonstrations Hours	Total Hours
1	**CELL STRUCTURE AND FUNCTIONS OF CELL COMPONENTS**	1		**1**
2	**CARBOHYDRATES**	9		**9**
3	**PROTEINS**	6		**6**
4	**ENZYMES**	5		**5**
5	**VITAMINS**	6		**6**
6	**MINERALS**	5		**5**
7	**HORMONES**	2		**2**
8	**NUTRITION**	4		**4**
9	**CLINICAL BIOCHEMISTRY**	4	2	**6**
10	**LIPIDS**	6		**6**
	TOTAL	**48**	**2**	**50**

OBJECTIVES:

The student would know:

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

SYLLABUS

Sr. No.	Topics	Didactic Hours	Demonstrations Hours	Total Hours
1	**CELL STRUCTURE AND FUNCTIONS OF CELL COMPONENTS**	**1**		**1**
2	**CARBOHYDRATES**	**9**		**9**
	• Definition, Classification with Examples and their functions • Digestion and Absorption, • Glycolysis and its energetics and • HMP pathway, • TCA cycle and its importance. • Hormonal regulation of blood • Diabetes mellitus, Glycosuria, • Changes in carbohydrate , protein and lipid metabolism All the metabolisms should be taught based on the following points such as starting and ending products, tissues of occurrence and the conditions when the pathway is activated, deactivated and significance of the pathway.			
2	**PROTEINS**	**6**		**6**
	• Definition of amino acids and proteinsm • Importance, Functional Classification of proteins • Digestion, Absorption of protiens • decarboxylation, deamination, transamination, • Fate of ammonia • Urea cycle, clinical significance of serum urea • Function of glycine, Phenylalanine, Tryptophan. There should be an emphasis on understanding the structure of protein, the essential and non-essential amino acids.			
3	**LIPID**	**6**		**6**
	• Definition, classification with examples, biomedical importance, • Phospholipids and functions. • Lipoproteins • essential fatty acids, • Digestion and absorption of lipids • Ketone bodies and their metabolism, • ß oxidation of fatty acid with			

	energetics • Function of Cholesterol: biomedical importance and factors affecting serum cholesterol level, • Fatty liver, lipotropic factors and obesity			
4	**ENZYMES**	**5**		**5**
	• Definition, • Modern Classification, • Factors affecting enzymes Action • Enzymes, Isoenzymes, • Competitive and Non competitive inhibition. (kinetics is not required) • Diagnostic significance of enzymes • Co enzymes			
5	**VITAMINS**	**6**		**6**
	• Definition, Classification, • Fat and water soluble vitamins, functions • Deficiency manifestations sources and RDA			
6	**MINERALS**	**5**		**5**
	Ca, P, Fe, I, Zinc, Selenium, Fluorine, Na and K. Function sources, Deficiency manifestations			
7	**HORMONES**	**2**		**2**
	• Definition with mechanism of action, • Classification.			
8	**NUTRITION**	**4**		**4**
	• Composition of food • Major dietary constituents and their importance.			
	• Kwashiorkor, Marasmus, • Balanced diet for adults			
9	**CLINICAL BIOCHEMISTRY**	**4**	**2**	**6**
	• Liver Function Test, • Renal Function Test, • Lipid profile in serum b. **Demonstrations:** Urine Analysis			
	TOTAL	**48**	**2**	**50**

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOK

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY ONLY 40 marks + **I.A.** – 10 Marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		Marks 50
Section -A-Q-1	MCQs [1x10]	10
Section-B- Q-2 and Q-3	SAQ-to answer any FIVE out of SIX [5x3]	15
	SN – to answer any THREE out of FOUR [3x5]	15
Total Marks		**40**

INTERNAL ASSESEMENT

1. **Two exams – Terminal and prelims of 40 marks each TOTAL - 80 marks**
2. **.A. to be calculated out of 10 marks** (Theory only)
3. **Internal assessment as per University pattern.**
4. **Betterment exam will not be conducted**

FUNDAMENTALS OF KINESIOLOGY and KINESIOTHERAPY

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

COURSE DESCRIPTION:

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

COURSE OUTCOME

CO1- To define the various terms used in mechanics, biomechanics & kinesiology.

CO2- Recall the basic principles of physics related to mechanics of movement / motion & will be able to understand the application of such principles to the simple equipment designs, & their efficacy in therapeutic gymnasium, & various starting position used in therapeutics.

CO3- Acquire the skill of application of various massage manipulations & describe the physiological effects, therapeutic use, merits / demerits of the same.

CO4- To describe the skill & usefulness of group & recreational activities & will be able to demonstrate general fitness exercises used in physical training.

CO5- Be able to define yoga & its types, its physiological & psycho-somatic effects & will be able to demonstrate standard yoga postures used by the beginners.

CO6- Be able to describe physiological principles of aerobic exercise conditioning related to general fitness & demonstrate skill of general fitness exercises.

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

OBJECTIVE:

Cognitive:

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

a) Define the various terms used in relation to Mechanics, Biomechanics and Kinesiology

b) Recall the basic principles of Biophysics related to mechanics of movement / motion and understand the application of these principles to the simple equipment designs along with their efficacy in Therapeutic Gymnasium and various starting positions used in therapeutics.

Psychomotor:

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

a) Describe and also acquire the skills of use of various tools of the Therapeutic Gymnasium

b) Demonstrate the movements in terms of various anatomical planes and axes.

c) Demonstrate various starting and derived positions used in therapeutics.

d) Describe physiological principles and acquire the skills of application of therapeutic massage

e) Acquire the skills of assessment of basic evaluation like sensations, reflexes andvital parameters

f) Acquire the skill of objective assessment of Range of Motion of the joints by Goniometry

g) Describe physiological basis and principle of relaxation and acquire the skills of relaxation methods

h) Describe physiological responses and principles of aerobic exercises for general fitness and demonstrate fitness skills on self and group.

i) Describe physiological principles and acquire the skill of performing Pranayama and Yogasanas

SYLLABUS

Sr. No.	Topic	Didactic Hours	Practical/ Laboratory Hours	Total Hours
1.	**MECHANICS and BASIC BIOMECHANICS**	**25**	**--**	**25**
	a. Mechanics and Application to human body i. Definition and terminologies: Mechanics (Statics and Dynamics), Biomechanics, Kinetics, Kinematics (Osteokinematics, Arthrokinematics, Open Chain and Closed Chain kinematics) ii. Axes / planes, iii. Laws of inertia and motion, iv. Gravity, C.O.G., L.O.G. and B.O.S. v. Equilibrium – Types and affecting factors vi. Mechanics of Forces Work, Energy, Power, Friction, Momentum, Parallelogram of Forces vii. Torque viii. Pendulum ix. Mechanical and Anatomical pulleys x. Levers xi. Fluid mechanics related to Hydrotherapy (physics, statics and dynamics)	20		20
	b. Muscle Mechanics i. Types of Muscles- Anatomical and Physiological ii. Types of muscle work / Contraction iii.Muscle Action: Roles as Agonist, Antagonist, Fixators, Synergist iv. Active and Passive insufficiency v. Range of muscle work ,Angle of pull – with importance to efficiency of muscle work and stability of joint	5	--	5
2	**BIO-PHYSICS RELATED TO KINESIOTHERAPY**	**20**	**25**	**45**
	a. Starting Positions and Derived Positions i. Application of stability ii. BOS, Gravity and muscle work in relation to various positions	10	5	15
	b. Therapeutic Gymnasium i. Use of accessories such as Pulleys Springs, Shoulder wheel, Walking aids, ii. Finger ladder, Therapeutic balls, Weights, Resistance bands, tubes, and wands iii.Applied mechanics of all above accessories	5	5	10

	c. Suspension Therapy i. Principles ii. Suspension Apparatus iii. Types of Suspension iv. Effects and uses v. Techniques for individual joints	5	15	20
3	**CLASSIFICATION OF MOVEMENTS**	**10**	**15**	**25**
	a. Definition and classification b. Principles of movements c. Effects, uses and Techniques (active: assisted, free, assisted- resisted, resisted and passive)		**Hours**	
4	**BASIC EVALUATION**	**15**	**35**	**50**
	a. Assessment of Vital Parameters i. Temperature ii. Blood Pressure iii. Heart Rate/ Pulse rate iv. Respiratory Rate v. Chest expansion	5	5	10
	b. Assessment of Sensations and Reflex testing	5	5	10
	c. Goniometry i. Definition and Types of Goniometers ii. Principles iii. Techniques for individual joints with biomechanical principles iv. Uses	5	25	30
5	**MASSAGE**	**05**	**20**	**25**
	a. Definition b. Classification c. Principles d. Effects and uses e. Indications and contra indications f. Techniques- Upper limb, Lower Limb, Neck, Back, Abdomen, Face and Scalp			
6	**RELAXATION**	**05**	**10**	**15**
	a. Principles, b. Techniques along with their effects and uses i. General - Jacobson‟s, Shavasana and Reciprocal (Laura Mitchell) ii. Local - Heat, Massage, Gentle/Rhythmic passive movements			

7	**AEROBIC CONDITIONING AND BASIC PRINCIPLES OF GENERAL FITNESS** (as applied to self and group)	**5**	**5**	**10**
	a. Physiology of aerobic and anaerobic exercise. b. Components of fitness (definition of terms only) c. Warm up d. Cool down exercises e. Group and Recreational activities			
	YOGA	**15**	**40**	**55**

a. Definition

b. Principles of Yoga

c. Yogasana- Technique, Benefits, Contraindications & cautions for each Asanas:

i. **Asanas in supine**

a) Pawanamuktasana

b) Ardha Halasana

c) Halasana

d) Setubandhasana

e) Naukasana

f) Matsyasana

g) Shavasana

h) Sarvangasana

ii. **Asanas in prone**

a) Bhujangasana

b) Ardha-Shalabhasana

c) Dhanurasana

d) Makarasana

iii. **Asanas in sitting**

a) Padmasana, Siddhasana, Sukhasana

b) Yogamudrasana

c) Virasana

d) Vajrasana

e) Gomukhasana

f) Pashchimottanasana

iv. **Asanas in standing**

a) Padhastasana, Padangusthasana, Uttanasana
b) Utkatasana
c) Tadasana
d) Trikonasana

v. **Pranayama**

a) Anulom-vilom
b) Kapalbhati

PRACTICAL: Practical demonstrations of:

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

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **100**
Section A- **M.C.Qs.**	Q-1 -MCQs – based on MUST KNOW area [1 x 20]	**20**
Section B- S.A.Q.	Q-2 - Answer any FIVE out of SIX [3x 5 =15] Q-3- Answer any THREE out of FOUR [5x 3 =15]	**30**
Section C-L.A.Q.	Q-4] - 15 marks Q-5] - 15 marks OR Q-5] -15 marks Based on Mechanics and application/ Starting positions and Derived positions/ Classification of Movements/ Goniometry/ Massage 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	Based on Massage / Goniometry / Movements (passive) • Cognitive – Bio-physics, Biomechanical principles, indications, contraindication • *Documentation of findings etc - 20 Marks* • *Psychomotor + Affective skills - 15 Marks*	**35**
SHORT CASE	Two Short case based on • Basic evaluation (**any one**): Sensation / Reflex testing / B.P./ and Pulse Rate/ Chest Expansion / Respiratory Rate /Aerobic fitness for self • Skill performance (**any one**): Relaxation / Yoga posture / Starting / Derived position and Suspension Therapy (2 x 20 = 40 marks) • *Cognitive – 05 Marks* • *Psychomotor -15 Marks*	**40**
JOURNAL	Year work on practicals performed.	**5**
Total Marks		**80**

INTERNAL ASSESSMENT:

1. **Two exams – Terminal and preliminary examination (**Theory and Practical**) of 80 marks each TOTAL - 160 marks**
2. **Internal Assessment to be calculated out of 20 marks.**
3. **Internal assessment as per University pattern.**
4. **Betterment exam will not be conducted**

FUNDAMENTALS OF ELECTROTHERAPY

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

COURSE DESCRIPTION:

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

Course Outcome

At the completion of the course. Students will be able to:

CO1- Understand the various physics Principles and laws governing the working of electrotherapeutic modalities and Physical agents and their effect on various systems.
CO2- Describe mains, electrical supply, electric shock, precautions.
CO3- Demonstrate the methodology of application of Physical agents and electro therapeutics.
CO4- Describe types and production of various therapeutic electrical currents and describe the panel diagrams of machines.
CO5- Acquire knowledge of various superficial thermal agents such as paraffin wax bath, cryotherapy, homemade remedies, etc, their physiological and therapeutic effects, merits/demerits and also acquire the skill of application.

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

OBJECTIVES:

Cognitive:

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

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

Psychomotor:

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

a) Test the working of the various electrotherapeutic equipments
b) Describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc and the simple instruments used to test / calibrate these components [such as potentiometer, oscilloscope , multimeter] of the circuit ; and will be able to identify such components.
d) Describe and identify various types of electrodes used in therapeutics, describe electrical skin resistance and significance of various media used to reduce skin resistance. Acquire knowledge of various superficial thermal agents such as Paraffin wax bath, Cryotherapy, Hydrocollator packs, Home remedies, their physiological and therapeutic effects, Merits / demerits and acquire the skill of application.

SYLLABUS

Sr. No.	Topic	Didactic Hours	Practical /Lab Hrs	Total Hours
1.	**MEDICAL ELECTRONICS AND ELECTRICITY**	**55**	**15**	**70**
	a. **Fundamentals of Low frequency currents**	32	09	41
	i. Basic Physics: Structure of atom, Isotopes, States of matter; Compound formation-(covalent formation), Properties of Electric lines of forces, Conductors, Non-conductors, Latent heat, Transmission of heat	3	-	3
	ii. Condenser a) Principles b) Capacity c) Types and construction d) Electric field e) Charging and discharging of the condenser f) Duration of Discharge g) Discharge through inductance h) Capacitive reactance and uses of condenser	3	-	3

	iii. Main supply: a) Production of Electricity b) Types: A.C./ D.C. c) Distribution/ Grid system wiring of the house, colour coding of electrical supply to the apparatus d) Earthing and its importance e) Types of Plugs and Switches	3	3	6
	iv. Shock a) Definition b) Types (Electric Shock and Earth shock) c) Severity Causes, Effects and Precaution	2	-	2
	v. Static Electricity: a) Theory of Electricity b) Production of Electric Charge c) Characteristics of charged electrical body and capacitor and inductance: types and uses d) Potential difference	3	-	3
	vi. Current electricity a) EMF b) Resistance: Combination of resistance in series and parallel c) Ohms Law d) D.C., A.C. e) Devices for regulating current: Identification, functioning and Uses- Rheostat, Potentiometer, Ammeters, Oscilloscopes, Voltmeter f) Voltage and Power g) Thermal effects of electric current- Joule‟s Law.	6	6	12
	vii. Electrical Skin Resistance: a) Skin Resistance b) Factors affecting Skin resistance: types of electrodes used, electrode gels, skin threshold, skin type, skin temperature, exercises c) Methods to reduce skin resistance	2	-	2
	viii. Faradic currents: Duration, frequency, wave forms and graphical representation, surging, faradic type current, pulse width modulation,	5	-	5
	ix. Galvanic currents/ Direct current**:** and interrupted galvanic current, duration, frequency, waveforms and graphical Representation	5	-	5

	b. Fundamentals of High frequency currents	**13**	**06**	**19**
	i. Electro Magnetic Induction: a) Production b) Direction of induced EMF c) Strength of induced EMF d) Type – Self and Mutual induction e) Inductive Reactance f) Eddy currents g. Principles and Laws – Faraday‟s , Lenz‟s h. Dynamo	3	-	3
	ii. Apparatus for Modification of Currents: Interruption of current – Switch and a) Valve b) C- R timing circuit c) Multivibrator Circuit, Pulse Generator d) Current supplied to patient – Impulse type	2	-	2
	iii. Magnetism: a) Nature and Types b) Molecular theory of Magnetism c) Property of Magnet d) Magnetic effect of electric current – Electro Magnets e) Meters for measuring A.C.	2	-	2
	iv. Sound: a) Wave motion in sound b) Infrasonics c) Normal hearing band d) Characteristics of sound waves and their velocities e) Ultrasonics f) Reflection, Refraction and Attenuation of Sound waves g) Interference of sound waves	2	-	2
	v. D.C. and A.C.: a) Source – Cell and rectified AC b) Rectification of AC c) Thermionic valves – Diode and Triode d) Metal Rectifier e) Types of Rectification f) Transformers-Types and Functions g) Smoothing circuit h) Semiconductor and its types i) Diodes and Transistors j) Choke coil	4	6	10

	c. Electro Magnetic Spectrum	5	-	5
	i. Laws of transmission Reflection – Refraction – Absorption – Attenuation ii. Electro Magnetic Radiation iii. Laws Governing E.M.R. iv. Laws of Reflection, Refraction, Absorption, Attenuation, Cosine Law, Inverse Square Law, Grothus Law			
	d. Cellular Bio-physics	3	-	3
	i. Action potential, ii. Resting membrane potential iii. Transmission of impulses: Saltatory conduction iv. Reception and emission of E.M.F. signals			
	e. Environmental currents	2	-	2
	Environmental currents and fields risk factors on prolonged exposure to E.M. field.			
2	**ELECTRICAL MODALITIES** **Production, Physical principles, Panel diagrams, Testing of apparatus of the following:**	**25**	**40**	**065**
	a. S.W.D. b. Ultrasound c. U.V.R. d. I.F.T. e. I.R. f. LASER (no panel diagram) g. Diagnostic Electrical Muscle Stimulator, h. T.E.N.S.			
3	**SUPERFICIAL THERMAL AGENTS**	**15**	**50**	**65**
	Construction/Design of the Modalities, Scales of temperature, Specific heat and modes of energy transfer, Physiological effects, Therapeutic effects/ Uses, Merits/demerits, Indications/contra-indications, Skills of application: a. Home remedies b. Paraffin wax bath c. whirl pool d. contrast bath e. Hydro-collator hot packs f. Cryotherapy			

PRACTICAL

Practical demonstrations of:

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

v. Cryotherapy

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOK

1. Clinical Electrotherapy -- Nelson and Currier

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **100**
Section A –M.C.Qs.	Q-1 **MCQs** – based on MUST KNOW area [1 x 20]	**20**
Section B- S.A.Q.	Q-2 - Answer any FIVE out of SIX [5 x 3 =15] Q-3- Answer any THREE out of FOUR[3 x 5 =15]	**30**
Section C -L.A.Q.	Q-4] L.A.Q -15 marks * Based on superficial Thermal agents Q-5] (Based on Production /Panel Diagram of high frequency current) -15 marks OR Q-5] (Based on Production / Panel Diagram of low/ Medium frequency current) -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	Based on Superficial thermal agent: *Cognitive – Medical Electronic, Physiological, Biophysical principles, Therapeutic effects, indications-contraindications - 20 Marks* *Psychomotor + Affective skills - 15 Marks*	**35**
SHORT CASE	Two Short case on Testing of equipments: 1. Low and Medium frequency 2. High frequency/Actinotherapy (2 x 20=40 marks) *Cognitive – 05 Marks* *Psychomotor -15 Marks*	**40**
JOURNAL	Year work on practical's performed.	**5**
Total Marks		**80**

INTERNAL ASSESSMENT:

1. **Two exams – Terminal and preliminary examination (**Theory and Practical**)** **of 80 marks each TOTAL - 160 marks**
2. **Internal Assessment to be calculated out of 20 marks.**
3. **Internal assessment as per University pattern.**
4. **Betterment exam will not be conducted**

SCHEME OF UNIVERSITY EXAMINATIONS AT A GLANCE I B.P.T.

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

II **B.P.T.**
SYLLABUS
Transcript Hours- 1400

Sr. No.	Subject	Theory Hours	Practical / Clinical Hours	Total Hours
	PROFESSIONAL PRACTICE			
1	Professional practice and Ethics *(College Examination in final year)*	005	010	015
	MEDICAL SCIENCES			
1	Pathology	050	-	050
2	Microbiology	031	004	035
3	Pharmacology	050	-	050
4	Psychiatry (Including Psychology)	030	020	050
	PHYSIOTHERAPY			
1	Kinesiology	080	-	080
2	Kinesiotherapy	080	160	240
3	Electrotherapy	100	200	300
	ELECTIVE SUBJECTS			
1	Medical Physics	20	-	20
2	Health Promotion and Fitness	20	-	20
4	Seminar (including introduction to **terms** of I.C.F. definition of terms Activity Limitation and Participation Restriction) (***not for examination***)		090	090
5	Supervised clinical practice (To practice clinical skills under the supervision, at the O.P.D./ I.P.D. set up) Clinical assignments should include Observation, Clinical History taking and technical assistance to the clinicians Therapeutic Gymnasium Fundamentals of Exercise therapy and Electro Therapy To maintain a Register / Log book-in which the prescribed Case Histories and written assignments are documented and to obtain the signature from the respective section In-charge at the end of the assignment.		490	490

PROFESSIONAL PRACTICE AND ETHICS

(COLLEGE EXAMINATION IN FINAL YEAR)

Total -15 HRS

COURSE DESCRIPTION:

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

OBJECTIVES:

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

Cognitive:

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

Psychomotor:

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

Affective:

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

SYLLABUS

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

PATHOLOGY

[DIDACTIC –50 HRS]

COURSE DESCRIPTION:

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

COURSE OUTCOME

At the end of one year, the student shall be able to-

1. Describe the mechanisms and patterns of tissue response to injury to appreciate the Pathophysiology of disease processes and their clinical manifestations.

2. Develop an understanding of neoplastic change in the body in order to appreciate need for early diagnosis and further management of neoplasia.

3. a. Understand mechanisms of common haematological disorders and a logical approach in their diagnosis.

b. Normal values and interpretation of common haematological tests like Hb, TLC, DLC, and ESR.

4. Correlate normal and altered morphology of different organ systems in different diseases needed for understanding disease process and their clinical significance (with special emphasis to neuromusculoskeletal and cardio respiratory systems).

5. Understand Etiopathogenesis and laboratory diagnosis of Diabetes Mellitus.

Sr. No.	Topics	Didactic Hours
1	**GENERAL PATHOLOGY**	04
2	**INFLAMMATION and REPAIR**	06
3	**IMMUNO –PATHOLOGY**	04
4	**CIRCULATORY DISTURBANCES**	04
5	**PATHOLOGIC CHANGES IN VITAMIN DEFICIENCIES**	01
6	**GROWTH DISTURBANCES**	04
7	**MEDICAL GENETICS**	01
8	**CARDIOVASCULAR SYSTEM**	06
9	**RESPIRATORY SYSTEM**	04
10	**NERVOUS SYSTEM**	03
11	**MUSCULAR DISORDERS**	01

12	**NEURO-MUSCULAR JUNCTION**	01
13	**BONE and JOINTS**	04
14	**G.I. SYSTEM**	01
15	**ENDOCRINE**	01
16	**HEPATIC DISEASES**	01
18	**HEMATOLOGY**	02
17	**CLINICAL PATHOLOGY**	02
TOTAL		**50**

EDUCATIONAL OBJECTIVES:

a. Knowledge

At the end of one year, the student shall be able to

1. Describe the structure and ultra structure of a sick cell, the mechanisms of cell degradation, cell death and repair.
2. Correlate structural and functional alterations in the sick cell.
3. Explain the pathophysiological processes which govern the maintenance of homeostasis, mechanism of their disturbances and the morphological and clinical manifestations associated with it.
4. Describe the mechanisms and patterns of tissue response to injury to appreciate the Pathophysiology of disease processes and their clinical manifestations.
5. Correlate the gross and microscopic alterations of different organ systems in common diseases to t he extent needed to understand disease processes and their clinical significance.
6. Develop an understanding of neoplastic change in the body in order to appreciate need for early diagnosis and further management of neoplasia.
7. a. Understand mechanisms of common hematological disorders and a logical approach in their diagnosis.

   b. Normal values and interpretation of common hemoatological tests like Hb, TLC, DLC, ESR
8. Correlate normal and altered morphology of different organ systems in different diseases needed for understanding disease process and their clinical significance (with special emphasis to neuromusculoskeletal and cardiorespiratory systems).
9. Understand Etiopathogenesis and laboratory diagnosis of Diabetes Mellitus.

SYLLABUS

Sr. No.	Topics	Didactic Hours
1	**GENERAL PATHOLOGY**	**4**
	a. Cell injury-Causes, Mechanism and Toxic injuries with special reference to Physical including ionizing radiation, Chemical and Biological b. Reversible injury (degeneration)- types- morphology-cloudy swelling, hyaline, fatty changes c. Intra-cellular Accumulation- Mucin, Protein d. Irreversible cell injury-types of necrosis- Apoptosis –Calcification- Dystrophic and Metastasis e. Extra-cellular accumulation-Amylidosis	
2	**INFLAMMATION and REPAIR**	**6**
	a. Acute inflammation – features, causes, vascular and cellular events b. Morphologic variations-Ulcers c. Inflammatory cells and Mediators d. Chronic inflammation: Causes, Types, Non-specific and Granulomatous – with examples e. Wound healing by primary and secondary union, factors promoting and delaying healing process f. Healing at various sites- bone, nerve and muscle g. Regeneration and Repair	
3	**IMMUNO –PATHOLOGY**	**4**
	a. Immune system: organization-cells-antibodies- regulation of immune responses b. Hyper-sensitivity (types and examples including graft rejection) c. Secondary Immuno-deficiency including H.I.V. d. Basic concepts of autoimmune disease (emphasis on S.L.E. and R.A.)	
4	**CIRCULATORY DISTURBANCES**	**4**
	a. Oedema - pathogenesis - types - transudates / exudates b. Chronic venous congestion- lung, liver c. Thrombosis – formation – fate – effects d. Embolism – types- clinical effects e. Infarction – types – common sites f. Gangrene – types – etiopathogenesis g. Shock – Pathogenesis, types	

5	**PATHOLOGIC CHANGES IN VITAMIN DEFICIENCIES**	**1**
6	**GROWTH DISTURBANCES**	**4**
	a. Atrophy, Hypertrophy, Hypoplasia, Metaplasia,	
	behaviors, difference between Benign and Malignant tumour c. Malignant neoplasms- grades-stages-local and distal Spread d. Carcinogenesis: Physical, Chemical, Occupational, Heredity, Viral, Nutritional e. Precancerous lesions and Carcinoma in situ f. Tumour and host interactions–local and systemic effects-metastatic (special reference to bones and C.N.S.)	
7	**MEDICAL GENETICS (in brief):** a. Classifications with examples of Genetic disorders	**1**
	SYSTEMIC PATHOLOGY	
8	**CARDIOVASCULAR SYSTEM**	**6**
	i. Atherosclerosis - Ischemic Heart Diseases – Myocardial Infarction– Pathogenesis /Pathology ii. Hypertension iii. C.C.F. Rheumatic Heart Diseases iv. Peripheral Vascular Diseases	
9	**RESPIRATORY SYSTEM**	**4**
	i. C.O.P.D. ii. Pneumonia (lobar, bronchial, viral), Lung Abscess iii. T. B.: Primary, Secondary – morphologic types iv. Pleuritis and its complications v. Lung collapse – Atelectasis vi. Occupational Lung diseases (with special emphasis on Silicosis, Asbestosis, Anthracosis) vii. A.R.D.S.	
10	**NEUROPATHOLOGY:**	**3**
	i. Reaction of nervous tissue to injury, infection and Ischemia ii. Meningitis: Pyogenic, T.B.M., Viral iii. Cerebro-Vascular Diseases – Atherosclerosis – Thrombosis, Embolism, Aneurysm, Hypoxia,	
	Infarction and Hemorrhage, Hydrocephalous, Increased Intracranial Pressure iv. Leprosy vi. Parkinsonism	

11	**MUSCULAR DISORDERS**	**1**
	a. Classification of Muscular disorders with emphasis on Muscular Dystrophies	
12	**NEURO-MUSCULAR JUNCTION**	**1**
	a. Myasthenia gravis b. Myasthenic syndrome	
13	**BONE and JOINTS**	**4**
	a. Osteomyelitis – Rickets – Osteomalacia – Osteoporosis b. Arthritis- degenerative (Osteoarthritis, Calcaneal spur, Periarthritis, Spondylosis) - inflammatory (R.A., Ankylosing Spondylitis, Gout) c. Miscellaneous-P.I.D., Haemarthosis d. Infective-T.B.	
14	**G.I. SYSTEM**	**1**
	a. Gastric / Duodenal ulcer, Enteric fever, T.B., Enteritis, Gastritis (related to consumption of NSAID)	
15	**ENDOCRINE**	**1**
	b. Diabetes	
16	**HEPATIC DISEASES** a. Cirrhosis – emphasis to systemic effects of portal Hypertension	**1**
17	*HEMA**TOLOGY***	2
	a.ANEMIAS: Definition, Classification and common causes ***b.LEUKOCYTIC DISORDERS and LEUKAEMIAS:*** ***Acute and chronic leukemias,Definiion and causes of Leukocytosis,Leukopenia and Leukemoid reactions.Classification,definition,features,etiology,laboratory investigations*** ***c.HAEMORRHAGIC DISORDERS:*** ***Classification,Clinical distinction between Purpuras and coagulation disorders and laboratory screening tests.Normal coagulation and fibrinolytic mechanism.Etiopathogenesis,clinical significance and lab diagnosis of Hemofilia and DIC***	
18	**CLINICAL PATHOLOGY**	**2**
	b. Muscle / Skin / Nerve biopsy c. Microscopic appearance of muscle necrosis – fatty I nfiltration d. Common hematological tests: Hb, TLC, DLC, ESR	

Recommended Textbooks:

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

RECOMMENDED REFERENCE BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION

EVALUATION SYSTEM:

A. Methods:

Type of exam	Maximum Marks	Minimum Marks
Theory	40	20
Internal Assessment	10	3.5
Total	50	25

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

One paper **Total duration: 2 hours**

There will be 2 sections Section A : MCQs time given will be 15 minutes

Section B: time given will be 105 minutes

Paper will have following pattern:

THEORY 40 marks + I.A.:10 marks = 50 marks [There shall be no LAQ in this paper] *Emphasis to be given to topics related to Musculo Skeletal / Neurological / Cardiovascular / Respiratory conditions and Wound / Ulcers.		**Marks** 50
Section A	MCQs – based on **MUST KNOW** area -single best response [1 x 10]	10
Section B-Q-1 and Q- 2	SAQ Q-1 -to answer any FIVE out of SIX (Short answer Questions based on definition,enlist,enumerate,draw,classify) [5X2= 10] Short notes Q-2-to answer any FOUR out of FIVE [4X5=20]	10 20
Total Marks		**40**

INTERNAL ASSESSMENT:

Internal assessment as per University pattern

- Total marks : 10
- Minimum marks: 3.5

Term	**Examination Head Theory**
Terminal	40
Preliminary	40
Total marks	**80**
To be converted into	**10**

MICROBIOLOGY

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

COURSE DESCRIPTION:

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

COURSE OUTCOME

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

1. Have sound knowledge of prevalent communicable diseases and the agents responsible for causing clinical infections, pertaining to C.N.S, C.V.S, Musculoskeletal system, Respiratory system, Genitourinary system, wound infections and of newer emerging pathogens.

2. Know the importance and practices of best methods to prevent the development of infections in self and patients (universal safety precautions)

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

OBJECTIVES:

At the end of the course, the candidate will

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

SYLLABUS

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

Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours
	c. Clostridium d. Enterobacteriaceae (E.Coli, Klebsiella) and Pseudomonas e. Salmonella and Vibrio f. Mycobacterial infection: i. Tuberculosis-Leprosy ii. Atypical Mycobacterium g. Syphilis and Leptospirosis- Morphology and pathogenesis			
5	**MYCOLOGY**	**2**	**1**	**3**
	a. Introduction and Superficial mycosis b. Mycetoma and opportunistic fungal infection c. Mycology and Virology demonstration			
6	**VIROLOGY**	**5**		**5**
	a. Introduction and general properties, b. DNA virus c. Measles, Mumps, Rubella, polio and congenital viral infections d. Hepatitis and Rabies e. H.I.V.			
7	**PARASITOLOGY**	**3**	**1**	**4**
	a. Introduction- Entamoeba histolytica b. Malaria, Filaria c. Toxoplasma – Cystisarcosis and Echinococcus			
8	**APPLIED MICROBIOLOGY**	**3**		**3**
	a. Hospital acquired infections, Universal safety precautions and Waste disposal b. Diseases involving Bones, Joints- Nerves-Muscles-Skin-Brain- Cardiopulmonary system, Burn and wound infections			

RECOMMENDED REFERENCE BOOK

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

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

II/I Term end Examination

THEORY 40 MARKS

Q.No.		No. Questions	MARKS
1	MCQ	10	10
2	Short note	4 out of 5	20
3	Short Answer Questions	5 out of 6	10

PRELIMINARY

THEORY 40 MARKS

Q.No.		No. Questions	MARKS
1	MCQ	10	10
2	Short note	4 out of 5	20
3	Short Answer Questions	5 out of 6	10

TOTAL THEORY MARKS: 80 MARKS CONVERTED TO 10

CHEME OF EXAMINATION

Q.No.		No. Questions	MARKS
1	MCQ	10	10
2	Short note	4 out of 5	20
3	Short Answer Questions	5 out of 6	10
4	Internal Assessment		10

INTERNAL ASSESSMENT:

1. **Two exams – Terminal and preliminary examination of 40 marks each TOTAL - 80 marks**
2. **Internal Assessment to be calculated out of 10 marks**
3. **Internal assessment as per University pattern**
4. **Betterment exam will not be conducted**

PHARMACOLOGY

[DIDACTIC – 50 hrs]

COURSE DESCRIPTION:

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

COURSE OUTCOME:

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

Cognitive:

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

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

c. Indicate the use of analgesics and anti-inflammatory agents with movement disorders with consideration of cost, efficiency, and safety for individual needs.

Psychomotor:

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

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

OBJECTIVES:

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

Cognitive:

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

Psychomotor:

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

SYLLABUS

Sr. No.	Topics	Didactic Hrs
1	**GENERAL PHARMACOLOGY**	**4**
	i. Pharmacokinetics	1
	ii. Routes of administration	1
	iii. Adverse drug reaction and reporting	1
	iv. Factors modifying drug effect	1
2	**DRUGS ACTING ON C.N.S.**	**11**
	i. Introduction	1
	ii. Alcohols + Sedatives and Hypnotics	2
	iii. Anti-convulsants	1
	iv. Drug therapy in Parkinsonism	2
	v. Analgesics and antipyretics –especially Gout and R.A.	3
	vi. Psycho Therapeutics	1
	vii. Local anesthetics, counter irritants	1
3	**DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM**	**7**
	i. Adrenergic	2
	ii. Cholinergic	2
	iii. Skeletal muscle relaxants	3
4	**DRUGS ACTING ON C.V.S.**	**7**
	i. Antihypertensives	2
	ii. Antianginal- Antiplatelets, Myocardial Infarction	2
	iii. C.C.F.	1

	iv. Shock	1
	v. Coagulants and Anticoagulants	1
5	**DRUGS ACTING ON RESPIRATORY SYSTEM**	**3**
	i. Cough	1
	ii. Bronchial asthma	1
	iii. C.O.P.D.	1
6	**CHEMOTHERAPY**	**3**
	i. General principles	1
	ii. Anti Tuberculosis	1
	iii. Anti –Leprosy	1
7	**OTHER CHEMO THERAPEUTIC DRUGS**	**3**
	i. Drugs used in Urinary Tract Infection	
	ii. Tetra / chlora	1
	iii. Penicillin	
	iv. Cephalosporin	1
	v. Aminoglycocides	
	vi. Macrolides	1
8	**ENDOCRINE**	**8**
	i. Insulin and oral Anti diabetic drugs	2
	ii. Steroids-Anabolic steroids	2
	iii. Drugs for osteoporosis, Vitamin D, Calcium, Phosphorus	2
	iv. Thyroid and Antithyroid	1
	v. Estrogen + Progesterone	1
9	**DRUGS IN G.I. TRACT**	**2**
	i. Peptic ulcer	
	ii. Diarrhoea, Constipation and Antiemetics	
10	**HEAMATINICS**	**1**
	i. Vitamin B, Iron	
11	**DERMATOLOGICAL DRUGS**	**1**
	i. Scabies, Psoriasis, Local antifungal	

RECOMMENDED TEXT BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY 40 marks + **I.A.** 10 Marks [There shall be no LAQ in this paper] * Emphasis should be given to the drugs related to Musculo-skeletal / Neurological, Cardio-Vascular (excluding anti arrhythmic and shock) / Respiratory conditions, analgesics and anti-inflammatory conditions		Marks 50
Section A-Q-1	MCQs – based on **MUST KNOW** area	10
Section-B-Q-2 and Q-3	SAQ Q-2 to answer any FIVE out of SIX [5x3]	15
	SAQ Q- 3 to answer any THREE out of FOUR[3x5]	15
Total Marks		**40**

INTERNAL ASSESSMENT

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

PSYCHIATRY (INCLUDING PSYCHOLOGY)

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

COURSE DESCRIPTION:

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

COURSE OUTCOME

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

Cognitive:

a. Define the term Psychology and its importance in the Health delivery system, and will gain knowledge of Psychological maturation during human development and growth and alterations during aging process.

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

Psychomotor:

a. Enumerate various Psychiatric disorders with special emphasis to movement / Pain and ADLs b. Acquire the knowledge in brief, about the pathological and etiological factors, signs / symptoms and management of various Psychiatric conditions.

c. Understand the patient more empathetically.

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1	**PSYCHOLOGY**	20	--	**20**
2	**PSYCHIATRY**	20	20	**40**
	TOTAL	40	20	**60**

OBJECTIVES:

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

Cognitive:

a. Define the term Psychology and its importance in the Health delivery system, and will gain knowledge of Psychological maturation during human development and growth and alterations during aging process.

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

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

Psychomotor:

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

b. Acquire the knowledge in brief, about the pathological and etiological factors, signs / symptoms and management of various Psychiatric conditions. c. Understand the patient more empathetically.

SYLLABUS

Sr. No.	Topics	Didactic Hours
1.	**PSYCHOLOGY**	**20**
	a. Introduction to Psychology: • Historical background • Definition, • Schools of Psychology • Fields and subfields of psychology • Recent advances	2
	b. .Attention: • Overview, • Types and features, • Factors influencing attention, • Attention deficit hyperactivity disorder	1
	c. Perception: • Overview, • Types and features, • Factors influencing perception, • Errors of perception(Illusion, Hallucination), • Disorders of perception (Spatial relationship disorder, Agnosia, Apraxia)	2
	d.Learning: • Definition • Types of Learning • Process of learning • Factors influencing learning • Theories of learning	2
	e. Memory types – • Definition • Types of memory • Stages of memory processing • Forgetting: Definition, causes, improving memory	2
	f. Emotion: • Nature and characteristics • Definition • Physiology of emotion • Theories of emotion	1
	g. Motivation: • Nature • Definition • Types • Frustration and conflict(Sources and resolution of frustration, types of conflict, avoidance of conflict)	2

	h.Personality • Nature and definition • Factors influencing personality • Types of personality • Theories of personality • Defense mechanism	2
	i.Developmental psychology: • Infancy • Early childhood • Later childhood • Adolescence • Early and middle adulthood • Old age	3
	k. Psychotherapy and counseling: • Definition • Goals • Types of psychotherapy- psycho-analysis • Behaviour therapy • Cognitive Behaviour therapy • Behaviour modification	3
2.	**PSYCHIATRY**	**20**
	a. Psychiatric History and Mental Status Examination	1
	b. Classification of Mental disorders c. Schizophrenia and its types	1 1
	d. Other psychotic disorders (Psychotic disorder, Delusional disorder, Schizo-affective disorders, Post partum psychosis	1
	e. Mood disorder	2
	f. Organic brain disorders (delirium, dementia, Amnestic syndromes, Organic personality disorder,) g. Anxiety disorders: Phobia, Obsessive Compulsive Disorder, Post Traumatic Disorders and Conversion disorder	2 2
	h. Somatoform disorder, (Hypochondriasis, Dissociative disorder, Conversion disorder, and Pain disorder)	1
	i. Somatization disorder	1

	j. Personality disorder	1
	k. Substance related disorder (alcohol) l. Disorders of infancy – childhood and adolescence i. Attention Deficit Hyperactivity Disorder, ii. Mental Retardation iii. Conduct disorder, iv. Pervasive developmental disorder v. Enuresis vi. Speech disorder	1 2
.	m. Geriatric Psychiatry	1
	n. Eating disorder	1
	o. Management: ECT, Pharmacotherapy, Group therapy, Psycho therapy, Cognitive Behavioral Therapy and Rational Emotive Therapy.	2

CLINICAL **HOURS: 20hrs**

A. History, Mental Status Examination and evaluation of:

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

B. Seminar/ Workshop on Communication skills

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

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY 40 marks + **I.A.** – 10 Marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		Marks 50
Section A-Q-1	MCQs – based on **MUST KNOW** area on **PSYCHIATRY** (1x10)	10
Section-B-Q-2	SAQ- Questions based on **PSYCHOLOGY** to answer any FIVE out of SIX (5x 3)	15
Section C- Q-3	SAQ – Questions based on **PSYCHIATRY** to answer any THREE out of FOUR (3x 5)	15
Total Marks		**40**

CLINICAL EXAMINATION: (College Examination only)

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

   Total: 40 marks

INTERNAL ASSESMENT:

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

   of 40 marks each TOTAL - 80 marks
2. **Internal Assessment to be calculated out of 10 marks (**Theory only**)**
3. **Internal assessment as per University pattern.**

KINESIOLOGY

DIDACTIC- 80 HRS

COURSE DESCRIPTION:

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

COURSE OUTCOME

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

1. Understand the principles of Biomechanics.
2. Acquire the knowledge of kinetics and kinematics of Spine, Extremities, Temporo-Mandibular joint, Thoracic cage.
3. Acquire the knowledge of musculoskeletal movements during normal Gait and Activities of Daily Living.

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

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

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

SYLLABUS

Sr. No.	TOPICS	DIDACTIC HOURS
1	**INTRODUCTION TO BIOMECHANICS**	**20**
	a. Muscle Biomechanics	10
	i. Elements of muscle structure – fiber, size, motor unit, length tension, arrangement and number relationship ii. Classification of muscles iii. Mobility and Stability of muscles iv. Types of muscle contraction and factors affecting muscle function.	
	b. Joint Biomechanics	10
	i. Basic principles of joint design ii. Classification of joints iii. Osteokinematics and Arthrokinematics iv. Concave Convex Rule v. Joint function, kinetics and kinematics	

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

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

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

INTERNAL ASSESSMENT – (THEORY)

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

KINESIOTHERAPY

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

COURSE DESCRIPTION:

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

COURSE OUTCOME

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

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

Psychomotor:

1. Apply the biomechanical principles for the efficacy in the assessment methods for mobility, muscle strength
2. Acquire the skill of subjective and objective assessment of individual and group muscle strength and methods of muscle strengthening
3. Describe the physiological effects, therapeutic uses, merits / demerits of various exercise modes including Hydrotherapy
4. Demonstrate various therapeutic exercises on self; and acquire the skill of application on models with Home Programs
5. Analyse normal Human Posture [static and dynamic].
6. Acquire the skill of-

a) Functional re-education techniques on models

b) Balance and Coordination Exercises

c) Various walking aids for Gait Training

d) Demonstration of breathing exercises and retraining on self and others

e) Demonstration of Postural Drainage on models

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

OBJECTIVES:

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

Cognitive:

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

Psychomotor:

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

SYLLABUS

Sr. No.	TOPICS	Didactic Hours	Practical/ Laboratory Hours	Total Hours
1.	**BIOPHYSICS**	**40**	**115**	**155**
	a. Biophysical Principles: i. Structures and Properties of connective and non connective tissues	2	-	02
	b. Stretching : i. Definition ii. Types iii. Assessment of muscle length and fascia around the joint iv. Principles of stretching v. Techniques for all joints vi. Individual muscle stretching	3	12	15
	c. Joint Mobility : i. Definition ii. Causes of limitation iii. Indication and contra indications iv. Principles v. Techniques vi. Assessment methods vii. Individual joints mobility Exercises– Upper Limb, Lower Limb viii. and Spine (Using active, assisted, passive movements)	10	17	27
	d. Manual Muscle Testing and assessment (subjective and objective) : i.Principle ii.Trick movements iii.Group Muscle Testing iv.Individual Muscle testing – Upper and Lower Limbs, Trunk and Face	6	35	41

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

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

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

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

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION

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

PRACTICAL 80 MARKS + I.A. – 20 MARKS		**Marks** **100**
LONG CASE	Muscle Strengthening / Mobility /Bronchial hygiene (On models)	**35**
SHORT CASE	Two Short cases on M.M.T. /Coordination/Posture/Gait (Measurable parameters only as mentioned in chapter 6-a) / Walking aids/ Functional Reeducation / Breathing Exercises 2 x 20 = 40 marks	**40**
JOURNAL	Documentation- Principles and applications for various Kinesiotherapeutics.	**5**
Total Marks		**80**

INTERNAL ASSESSMENT:

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

ELECTROTHERAPY

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

COURSE DESCRIPTION:

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

COURSE OUTCOME

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

Cognitive:

1. Acquire the knowledge about the physiology of pain, Pain pathways and Methods of pain modulation, selection of appropriate modality for Pain modulations.
2. Describe the Physiological effects, Therapeutic uses, indication and contraindications of various Low/ Medium and High Frequency modes / Actinotherapy

3. Describe the Physiological Effects and therapeutic uses of various therapeutic ions and topical pharmaco -therapeutic agents to be used for the application of Iontophorosis and sono/ phonophoresis

Psychomotor:

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

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

OBJECTIVES:

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

Cognitive:

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

Psychomotor:

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

SYLLABUS

Sr. No.	Topic	Didactic Hours	Practical Hours	Total Hours
1	**PAIN**	**3**	**-**	**3**
	a. Pain pathway b. Pain gate theory			
	c. Descending pain suppressing system d. Physiological block			
2	**LOW FREQUENCY CURRENTS**	**37**	**85**	**122**
	a. Faradic currents : Physiological and Therapeutic effects, indications, contraindications: i. Faradic type ii. Strong Surged Faradic iii. Sinusoidal currents iv. Application of Faradic current a) Faradism Under pressure – Indications, Principle of application, Technique of application b) Faradic re-education: Indications, Principle of application, Technique of application v. Short/Long pulse currents Motor Points: Definition., Identification	12	20	32
	b. Galvanic / Direct currents (Continuous DC and Interrupted DC) : Physiological and Therapeutic effects, Indications, Contraindications	12	20	32

i. Definition: Galvanic and Interrupted Galvanic Currents
ii. Property of Accommodation
iii. Technique and Methods of Application of Galvanic currents
iv. Types – Anodal and Cathodal, Therapeutic effects and uses, Technique and Methods of application, Dangers and precautions
v. Ionization /Iontophoresis: Theory of Medical Ionisation, Effects and Uses of various Ions, Indications and contraindications, Dangers and precautions

		1	-	1
c.	High Voltage Currents	1	-	1
d.	Micro Currents	1	-	1
e.	Didynamic Currents			
	f. Transcutaneous Electrical Nerve Stimulation (T.E.N.S.) i. Definition ,Types ii. Physiological and Therapeutic effects iii. Technique and Methods of Application iv. Indications and contraindications	5	20	25
	g. Strength Duration Curves on model i. Principle of S-D curves ii. Technique of plotting iii. Interpretation of normal curves iv. Chronaxie and Rheobase	5	25	30
3	**MEDIUM FREQUENCY CURRENTS**	**8**	**22**	**30**
	a. Interferential Therapy i. Definition , Types, ii. Physiological and Therapeutic effects iii. Technique and Methods of Application			

	iv. Electrodes types (including vacuum), Effects and Uses v. Advantages of I.F.T. over Low frequency currents vi. Indications and contraindications b. Russian Currents			
4	**BIOFEEDBACK**	**5**	**-**	**5**
	i. Principle ii. Methods: Electro biofeedback. iii. Uses of Biofeedback			
5	**HIGH FREQUENCY CURRENTS**	**12**	**28**	**40**
	S.W.D i. Types: continuous / Pulsed ii. Definition and types iii. Physiological and Therapeutic effects iv. Technique and Methods of Application v. Electrodes types, Effects and Uses vi. Indications and contraindications vii. Dangers and Precautions			
6	**SOUND**	**10**	**25**	**35**
	Therapeutic Ultra Sound: Pulsed / Continuous i. Physiological and Therapeutic effects ii. Technique and Methods of Application iii. Phonophoresis iv. Indications and Contraindications v. Dangers and Precautions			
7	**ACTINOTHERAPY**	**15**	**25**	**40**
	a. Radiant heat [I.R.]			
	i. Physiological and Therapeutic effects ii. Technique and Methods of Application	5	5	10

iii. Effects and Uses
iv. Indications and contraindications
v. Dangers and Precautions

b. U.V.R.	6	20	26

i. Types : a, b, c
ii. Physiological and Therapeutic effects
iii. Technique and Methods of Application
iv. Effects and Uses
v. Indications and contraindications
vi. Dangers and Precautions
vii. Test Dose

c. Laser – He/ Ne, and I.R. combination	4	-	4

i. Physiological and Therapeutic effects
ii. Technique and Methods of Application
iii. Effects and Uses
iv. Indications and Contraindications
v. Dangers and Precautions
vi. Dosage

8ELECTROTHERAPY: WOUNDCARE	**10**	**15**	**25**

i. Types of wound
ii. Application of Therapeutic currents, Ultrasound, U.V.R. and LASER

PRACTICAL:

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

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOK

1. Clinical Electro Therapy – Nelson and Currier

SCHEME OF UNIVERSITY EXAMINATION

THEORY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **100**
Section A- **M.C.Qs.**	Q-1-MCQs – based on MUST KNOW area [1 x 20]	**20**
Section B- S.A.Q.	Q-2 - Answer any FIVE out of SIX [5 x 3 =15] [MUST KNOW area] Q-3- Answer any THREE out of FOUR [3 x 5 =15] based on Actinotherapy (I.R./U.V.R./LASER)	**30**
Section C-L.A.Q.	Q-4] Based on High frequency modalities -15 marks Q-5] Based on Low/Medium freq. modalities -15 marks OR Q-5] Based on Low /Medium freq. modalities -15 marks LAQ should give break up of 15 marks – e.g. [3 +5+7]	**30**
Total Marks		**80**
PRACTICAL 80 MARKS + I.A. – 20 MARKS		**Marks** **100**
LONG CASE	Motor points /Strength Duration Curve / Faradism under pressure (On models)	**35**
SHORT CASES	1. Based on Low or Medium Frequency modalities / High Frequency modalities 2. Actinotherapy (I.R./U.V.R./LASER) 2 x 20 = 40 marks (Skill of application on models and rationale for selection of modality)	**40**
JOURNAL	Documentation- Principles and applications for various Electrotherapy Modalities.	**5**
Total Marks		**80**

INTERNAL ASSESSMENT:

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

Elective-I

MEDICAL PHYSICS

Course Learning Outcomes
At the end of the course, the candidate will be able to:
1.Describe the different laws and its applications to identify the lever and use and advantage of it. 2.Basic concept of different waves and sound 3.The use of thermodynamics laws in electrotherapy modalities 4.Describe the physical agents and their use in electrotherapy modalities 5.Understand the basic concepts of electronics and applications onto physiotherapy

Outline of The Course

Sr. No	Unit wise Topic Name	Hours
1	GENERAL PHYSICS AND PROPERTIES OF MATTER	**5**
2	WAVES AND RESONANCE AND SOUND	**5**
3	TEMPERATURE AND HEAT	**5**
4	ELECTRICITY AND MAGNETISM	**3**
5	MODERN OPTICS	**2**
	Total Hours	**20**

Detailed Syllabus:

Unit 1	GENERAL PHYSICS AND PROPERTIES OF MATTER	**5**
	Newton's Laws of motion and its applications: motion in a Viscous Fluid, Hooke's Lawand Oscillations, Forces on Solids and Their Elastic Response; viscoelasticity, laws ofgravitation Momentum, Centre of Mass, elastic and inelastic collisions, Newton's Second Law and Conservation of Momentum, Rotational Kinematics, Rotational Energy, Torque and Rotational Dynamics of a Rigid Body, Angular Momentum, Atomic Force Microscopy,. **Ideal Fluids:** Introduction, Pressure, Archimedes' principle, buoyancy floatation, Pressure of fluid, Pascal's law, Types of flow, Dynamics of Non-viscous Fluids: Types of Flow, Conservation Laws of Fluid Dynamics, Hydrostatics: Effects of Gravity, The Measurementof Pressure, Viscous Fluids: Viscosity of Simple Fluids, Blood and Other Complex Fluids, The HumanCirculatory System, Surface Tension and Capillarity	

Unit 2	WAVES AND RESONANCE AND SOUND	**5**
	Simple Harmonic Motion Revisited: Damping and Resonance, Wave Concepts, TravelingWaves, Waves at a Boundary: Interference, Standing Waves and Resonance, Determinationof velocity of sound in air, vibration of string. Sound: Basics, Intensity of Sound, loudness, pitch and frequency, noise, echo,Superposition of Sound Waves, Producing Sound, The Human Ear: Physiology andFunction, The Doppler Effect in Sound, Ultrasound, Ultrasonic – production and itsapplication, Piezo-electricity.	
Unit 3	TEMPERATURE AND HEAT	**5**
	Temperature and Thermal Equilibrium, Thermal Expansion and Stress, Internal Energyand the Ideal Gas, The First Law of Thermodynamics, Thermal Properties of Matter, Heat TransferMechanisms, emissive and absorptive power-properties of thermal radiation of a perfectly black body, Kirchoff's law, Grothus' law, Specific heat, thermal capacity, water equivalent, Newton's law of cooling and specific heat by cooling specific heat of gases, Joule's law ofheat production. Enthalpy, entropy, Physical effects of heat- expansion, evaporation,thermionic emission etc., concept of heat and temperature, measurement of heat thermometry.	
Unit 4	ELECTRICITY AND MAGNETISM	**3**
	Conductors and insulators, fundamentals of electricity. Ohm's law, Potential dividertheorem: rheostat and potentiometer. Capacitors: types, energy storage, combination,charging & discharging, biological cell as a capacitor, Bio-electricity, Bio-electricpotentials. Effects of electric current: Thermal, Chemical and Magnetic. Electromagnetic induction –Lenz's law, Faraday's law, Fleming's righthand rule, self and mutual induction, induction coil, Eddy currents.	
Unit 5	MODERN OPTICS	**2**
	Electromagnetic spectrum, Laws of transmission, reflection, refraction, diffraction,scattering, absorption, dispersion of light, Interference of light, Absorption and emissionspectra, classification of spectra, solar spectrum and Fraunhofer lines, polarization, double refraction, Nicole prism, optical activity.	

RECOMMENDED TEXT BOOKS

1. Physics - Foundation & frontiers by George Cramow& John M. Cleveland
2. Fundamentals of Biomedical Physics by AkilSaiyed&BabitaSaiyed

RECOMMENDED REFERENCE BOO

1. Physics of the life sciences by Jay Newman 2008
2. University physics for the physical and life sciences by Philip R. Kesten and David Tauck. First Edition, W. H. Freeman and Company. 2012
3. Physics for the biological sciences by Fredrick Ross Halett, Harcourt Canada. 2001
4. Text book of Sound – Brijlal and Subramanian

Elective – II

HEALTH PROMOTION & FITNESS

Course Outcomes (COs):

1. Identify areas of health promotion in community.

2. Determine environmental, cultural and social determinants of health and its influence on our lifestyle.

3. Interpret the components related to fitness and factors along with areas for screening.

A. Outline Of the Course:

Sr. No	Title of the unit	Minimum number of hours
1	BASIC CONCEPT OF HEALTH PROMOTION	5
2	EPIDEMIOLOGY AND HEALTH PROMOTION IN DIFFERENT SETTING	5
3	BASIC CONCEPT OF FITNESS	5
4	FITNESS ASSESSMENT	5

B. Detailed Syllabus:

Unit 1	**BASIC CONCEPT OF HEALTH PROMOTION**	
1.1 1.2 1.3 1.4 1.5	Meaning of health and Wellness Cultural & Social determinants of Health Physical, Environmental, Emotional & Psychological health Promotion of Healthy Lifestyles through Physical Activity, Diet, Stress Management, Avoiding Tobacco – Alcohol Promotion of Personal Hygiene, Treatment Seeking Behavior, Treatment Compliance and Reducing Stigma Need of health promotion in India	5
Unit 2	**EPIDEMIOLOGY AND HEALTH PROMOTION IN DIFFERENT SETTING**	
2.1 2.2 2.3 2.4	Health Statistics: Analysis and Interpretation of Data Related to Health Promotion Use of Health Management Information System and Information Technologies in Health Promotion Health promotion in different settings - emergency and disaster Different areas of health promotion in India as compared to developed countries	5
Unit 3	**BASIC CONCEPT OF FITNESS**	
3.1 3.2 3.3 3.4	Introduction definition of term: Fitness Basic Concepts Of Fitness Mental and physical fitness Health benefits of activity and Fitness	5
Unit 4	**FITNESS ASSESSMENT**	

4.1 4.2 4.3 4.4	Multifactorial fitness assessment and screening : Physical activity screening :Identify risk factors, height, weight, BMI, Physically active hours Aerobic fitness, Muscular Fitness, Activity and Weight control Vitality and Longevity Clinical preventive screening for infants, Nutritional screening	5

Textbooks:

1.Textbook of Preventive & Social Medicine- Dr. K. Park

2.Textbook of community medicine: V. K. Mahajan

3.Chiropractic, Health,Promotion and Wellness –MeridelI.Gatterman MA, DC, Med

4.Health ,Promotion and Wellness :evidence based guide to clinical preventive services—Cheryl Hawk & Will Evas

5.Fitness and Health – 6th edition – Brian J Sharkey,PhD

Reference Books:

1.Principles Of Health Education And Health Promotion, (2nd edition), J. Thomas Butler, Morton Publishing Company, Englewood, Colorado

2.Foundations Of Health Education, R. M. Eberst, Editor, Coyote Press, San Bernardino: 1998-99

3.Evaluation in health promotion – principles and perspective- WHO Regional Publications, European Series, No. 92

4.Principles and foundation of health promotion and education(5th edition) by Randall R. Cottrell, James T. Girvan, James F. McKenzie

SCHEME OF UNIVERSITY EXAMINATIONS AT A GLANCE

- II B.P.T.

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

III B. P.Th.
SYLLABUS
Transcript Hours- 1400

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

PROFESSIONAL PRACTICE AND ETHICS

(COLLEGE EXAMINATION IN FINAL YEAR)

TOTAL -15 HRS

COURSE DESCRIPTION:

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

OBJECTIVES:

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

Cognitive:

a) Be able to understand the moral values and meaning of ethics.

b) Will acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.

Psychomotor:

a) Be able to develop psychomotor skills for physiotherapist-patient relationship.

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

Affective:

a) Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals

b) Be able to develop bed side behavior, respect and maintain patients‟ confidentiality

SYLLABUS

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

SURGERY

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

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

COURSE DESCRIPTION:

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

COURSE OUTCOME:

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

1. Describe the effects of surgical trauma and Anaesthesia in general
2. Clinically evaluate and describe the surgical management in brief of :

a) General Surgery b) Neuro Surgery

c) Cardiovascular and Thoracic Surgery d) ENT andOphthalmic Surgery

e) Plastic and Reconstructive Surgery

3. Describe pre-operative evaluation, surgical indications in various surgical approaches, management and post operative care in above mentioned areas with possible complications.

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1.	**GENERAL SURGERY INCLUDING CARDIO VASCULAR AND THORACIC SURGERY , PLASTIC SURGERY / RECONSTRUCTIVE SURGERY**	**35**	**20**	**55**

OBJECTIVES:

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

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

SYLLABUS

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1	**GENERAL SURGERY CARDIO VASCULAR AND THORACIC SURGERY , PLASTIC SURGERY /ENT/NEURO/CUTS**	**35**	**20**	**55**
	a. Anaesthesia types, Effect, indications and contraindications and common postoperative complications b. Haemorrhage and Shock, classification, description and treatment c. Water and Electrolyte imbalance d. Inflammation – acute and chronic-signs, symptoms, complications and management e. Wounds and Ulcers, Cellulitis – classification, healing process, management, bandaging, Dressing solutions and its uses and debridement Procedure, hand washing and universal precautions. f. Enumerate Common abdominal surgical incisions – classification, indications, opening – closure, advantages and disadvantages, complications (including burst abdomen and feacal fistula), minimally invasive surgery. g. Mastectomy and oncosurgery– approach, complications and management h. Amputation – types, sites, complications and management i. Burns – causes, complications, classification and management j. Varicose veins and PVD k. Hernias-surgery, precautions and complications l. Transplantation approach, risk			
	m. Head Injury management . n.Post operative Neurosurgical care			

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
	o.. Tracheostomy – indications, surgical approach and management p. Introduction, Cardiorespiratory resuscitation, cardiopulmonary bypass, Special investigation procedures in cardiac surgery, Basic techniques in cardiac surgery approach, incisions, Types of operation, Complications of cardiac surgery, Lines, drains and tubes. q. Peripheral arterial disorder, Burger‟s disease, Raeynaud‟s disease and Aneurysm r. Gangrene, Amputation, DVT			
	s. Skin grafts and flaps – Types, indications with special emphasis to burns, wounds t. Ulcers, complications and postoperative care u. Keloid and Hypertrophied scar management v. Reconstructive surgery of peripheral nerves w. Micro vascular surgery-reimplantation and revascularization			

1. Evaluation / presentation and recording of one case each in: (15 Hrs)
    a) Burns
    b) Wound and ulcer
    c) Head injury
    d) Peripheral vascular condition
    e) Post radical mastectomy
    f) Post thoracic surgery
    g) Post abdominal surgery
    h) Plastic surgery
2. Auscultation and its interpretation with special emphasis to Reading and interpretation of the X-ray chest.

RECOMMENDED TEXT BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY 40 MARKS + I.A. – 10 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **50**
Section A –M.C.Qs.	Q-1 MCQs – based on **MUST KNOW** area [1 x 10]	**10**
Section B- S.A.Q.	Q-2 - Answer any FIVE out of SIX [5 x 3 = 15] * Based on topics – **GENERAL SURGERY and PLASTIC SURGERY**	**15**
	Q-3 - Answer any FIVE out of SIX [5 x 3 = 15] * Based on topics – **CARDIOVASCULAR and THORACIC SURGERY**	**15**
Total Marks		**40**

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

INTERNAL ASSESSMENT:

1. **One examination of Total 40 marks (**Theory only**)**
2. **Internal Assessment to be calculated out of 10 marks**
3. **Internal assessment as per University pattern.**
4. **Betterment exam will not be conducted**

ORTHOPAEDICS

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

COURSE DESCRIPTION:

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

COURSE OUTCOME:

At the end of the course, the candidate will –

a) Be able to discuss the, etiology, Pathophysiology, clinical manifestations and conservative / surgical management of various traumatic and cold cases of the Musculoskeletal Conditions.

b) Gain the skill of clinical examination; apply special tests and interpretation of the preoperative old cases and all the post-operative cases.

c) Be able to read and interpret salient features of the X-ray of the Spine and Extremities and correlate the radiological findings with the clinical findings.

d) Be able to interpret Pathological / Biochemical studies pertaining to Orthopedic conditions.

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
1	**Fractures**	6	3	9
2	**Dislocations and Subluxations**	4	2	6
3	**Soft Tissue And Traumatic Injuries**	4	2	6
4	**Deformities And Anomalies**	11	3	14
5	**Degenerative And Inflammatory Conditions**	6	3	9
6	**Management Of Metabolic Disorders**	2	2	4
7	**General Orthopaedic Disorders**	5	3	8
8	**Tumors**	2	2	4
	Total	**40**	**20**	**60**

OBJECTIVES:

At the end of the course, the candidate will –

a) Be able to discuss the, aetiology, Pathophysiology, clinical manifestations and conservative / surgical management of various traumatic and cold cases of the Musculoskeletal Conditions.

b) Gain the skill of clinical examination; apply special tests and interpretation of the preoperative old cases and all the post-operative cases.

c) Be able to read and interpret salient features of the X-ray of the Spine and Extremities and correlate the radiological findings with the clinical findings.
d) Be able to interpret Pathological / Biochemical studies pertaining to Orthopaedic conditions.

SYLLABUS

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

Sr.	Topics	Didactic Hours	Clinical Hours	Total Hours
	c. General description of following deformities : i. Deformities of the spine: a) Scoliosis b) Kyphosis c) Lordosis d) Flat back e) Torticollis ii. Deformities of the lower limb: a) C.D.H., coxa vara , coxa valga , anteversion, Retroversion b) Genu valgum, Genu varum, Genu recurvatum, C.D.K. c) Talipes calcaneous equinus, varus and valgus d) Pes cavus, Pes planus e) Hallux valgus and varus, Hallux rigidus and hammer toe iii. Deformities of Shoulder and Upper limb a) Sprengel‟s shoulder, Cubitus varus, Cubitus valgus b) Dupuytren‟s contracture			
5	**DEGENERATIVE AND INFLAMMATORY CONDITIONS**	**6**	**3**	**9**
	a. Osteo-orthosis/Arthritis b. Spondylosis c. Spondylolysis and listhesis d. Pyogenic arthritis e. Rheumatoid arthritis f. Juvenile arthritis g. Tuberculous arthritis h. Gouty arthritis i. Haemophilic arthritis j. Neuropathic arthritis k. Ankylosing spondylitis l. Psoriatic arthritis			
6	**MANAGEMENT OF METABOLIC DISORDERS**	**2**	**2**	**4**
	a. Osteoporosis b. Osteomalacia and Rickets			
7	**GENERAL ORTHOPAEDIC DISORDERS**	**5**	**3**	**8**
	a. Carpel tunnel syndrome /Entrapment nerve injuries b. Compartment syndrome, Ischemic contracture			

	c. Avascular necrosis of bone in adult and children i. Gangrene ii. Backache /P.I.D.			
8	**TUMORS**	**2**	**2**	**4**
	i. Classification, Principles of general management ii. General description of benign and malignant tumours of musculoskeletal system			

CLINICAL (20 HRS)

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

RECOMMENDED TEXT BOOKS

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY 40 MARKS + I.A. – 10 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **50**
Section A .MCQs	Q-1 - MCQs – based on **MUST KNOW** area [1 x 10]	**10**
Section B- S.A.Q	Q-2 - Answer any FIVE out of SIX [5 x 3 = 15]	**15**
	Q-3 - Answer any FIVE out of SIX [5 x 3 = 15]	**15**
Total Marks		**40**

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

INTERNAL ASSESSMENT:

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

MEDICINE-I

(Cardiovascular Respiratory Medicine, General Medicine and Gerontology)

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

COURSE DESCRIPTION:

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

COURSE OUTCOME:

At the end of the course, the candidate will:

1. Be able to describe Etiology, Pathophysiology, Signs and Symptoms and Management of the various Endocrinal, Metabolic, Geriatric and Nutrition Deficiency conditions,Rheumatologic Cardiovascular and Respiratory Conditions
2. Acquire skill of history taking and clinical examination of Musculoskeletal, Respiratory, Cardiovascular and Neurological System as a part of clinical teaching.
3. Be able to interpret auscultation findings with special emphasis to pulmonary system.Study Chest X-ray, Blood gas analysis, P.F.T. findings and Haematological studies, for Cardiovascular, Respiratory, Neurological and Rheumatological conditions.
4. Be able to describe the principles of Management at the Intensive Care Unit.
5. Be able to acquire the skills of Basic Life Support.

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

OBJECTIVES:

At the end of the course, the candidate will:

1. Be able to describe Etiology, Pathophysiology, Signs and Symptoms and Management of the various Endocrinal, Metabolic, Geriatric and Nutrition Deficiency conditions.
2. Be able to describe Etiology, Pathophysiology, Signs and Symptoms, Clinical Evaluation and Management of the various Rheumatologic Cardiovascular and Respiratory Conditions.
3. Acquire skill of history taking and clinical examination of Musculoskeletal, Respiratory, Cardio-vascular and Neurological System as a part of clinical teaching.
4. Be able to interpret auscultation findings with special emphasis to pulmonary system.
5. Study Chest X-ray, Blood gas analysis, P.F.T. findings and Haematological studies, for Cardiovascular, Respiratory, Neurological and Rheumatological conditions.
6. Be able to describe the principles of Management at the Intensive Care Unit.
7. Be able to acquire the skills of Basic Life Support.
8. Acquire knowledge of various drugs used for each medical condi99tion to understand its effects and its use during therapy.

SYLLABUS

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

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
	vi. Basic Life Support :Introduction and Demonstration	2		
	vii. Investigation: Normal and Abnormal 1. Chest X-ray 2. Blood Gas Analysis 3. PFT(Observation of conduction on patient)	2		
2	**GENERAL MEDICINE, RHEUMATOLOGY and GERENTOLOGY:**	**15**	**05**	**20**
	a. General Medicine i. Disorders of Endocrine system (Diabetes) Introduction, pathophysiology, types, role of physical activity, complications of diabetes (autonomic neuropathy, myopathy, weakness) and medications. ii. Thyroid, Pituitary and Adrenal conditions Cushing"s syndrome iii. Obesity iv. Nutrition Deficiency Disease (Rickets, Vit. E, Vit. D, Vit. B , micro nutrients,(Zn, Se) v. Intoxication (Drug abuse; Alcohol, smoking, cocaine dependence)	7	2	
	b. Rheumatological Conditions (Connective tissue disorders) i. Rheumatoid Arthritis ii. S L E iii. S S A iv. Gout v. Polymyositis vi. Fibro myalgia Ankylosing spondylitis vii. Auto-immune disorders	5	2	
	c. Geriatric Conditions i. Osteoarthritis ii. Cervical spondylosis iii.Pathological fractures iv. Stem cell therapy and Gene therapy	3	1	

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOK

1. Principles and Practice of Medicine -- Davidson

CLINICAL - 10 HRS

History taking, Evaluation –General Examination and Systemic examination (Inspection, Palpation, Percussion and Auscultation)

1. Presentation and recording of Two cases Each in:
    a. Muscular disorders
    b. Respiratory Conditions
    c. Cardio Vascular Conditions
    d. Degenerative / Rheumatological Condition
    e. Obesity
    f. Nutritional disorders
    g. Diabetes Mellitus and Metabolic bone disorders.

SCHEME OF UNIVERSITY EXAMINATION

THEORY 40 MARKS + I.A. – 10 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **50**
Section A .MCQs	Q-1 -MCQs – based on MUST KNOW area [1 x 10]	**10**
Section B- S.A.Q	Q-2 - Answer any FIVE out of SIX [5 x 3 = 15] * Based on topics – **GENERAL MEDICINE, RHEUMATOLOGY and GERONTOLOGY**	**15**
Section B- S.A.Q	Q-3 - Answer any FIVE out of SIX [5 x 3 = 15] * Based on topics – **CARDIOVASCULAR and RESPIRATORY MEDICINE**	**15**
Total Marks		**40**

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

INTERNAL ASSESSMENT:

1. **One examination of Total 40 marks (**Theory only**)**
2. **Internal Assessment to be calculated out of 10 marks**
3. **Internal assessment as per University pattern.**
4. **Betterment exam will not be conducted.**

MEDICINE-II

(Neurology and Paediatrics)

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

COURSE DESCRIPTION:

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

COURSE OUTCOME:

At the end of the course, the candidate will:

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

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

OBJECTIVES:

At the end of the course, the candidate will:

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

SYLLABUS

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

Sr. No.	Topics	Didactic Hours	Clinical Hours	Total Hours
2	**PAEDIATRICS**	**20**	**10**	**30**
	a. Normal intra-uterine development of foetus with special reference to Central Nervous System, Neuromuscular System, Cardiovascular Respiratory System	1		
	b. Normal development and growth	2		
	c. Immunization and breast-feeding	1	1	
	d. Sepsis, Prematurity, Asphyxia Hyperbilirubinemia and birth injuries	1		
	e. Cerebral Palsy- Medical Management including early intervention	2	2	
	f. Developmental disorders associated with spinal cord: Spinal Dysraphism, Spina Bifida, Meningocele, Myelomeningocele, hydrocephalus	1	2	
	g. Common infections C.N.S.and Peripheral Nervous a) System b) Typhoid, Rubella, Mumps, Measles, Diphtheria, Chicken gunia, Malaria	2	1	
	h. Epilepsy	1		
	i. Mental Retardation and Down‟s Syndrome	1	1	
	j. Genetically transmitted neuro-muscular conditions	2		
	k. Malnutrition and Vitamin deficiency conditions	1		
	l. Juvenile R. A. and other Rheumatologic conditions of Musculoskeletal system	1	1	
	m. Common diseases of the Respiratory system: Asthma, Bronchitis, Bronchiectasis, T.B., Pneumonia, Lung collapse, Pleural effusion.	2	2	
	n. Respiratory distress in neonate	1		
	o. Rheumatic and Congenital Heart disease	1		

CLINICAL (10 HRS)

History taking and general examination in neonate and child

1. Examination of neonate and neonatal reflexes.
2. Examination of the central nervous system
3. Examination of respiratory system
4. Examination of cardiovascular system
5. Examination of musculoskeletal system
6. Ventilatory care in neonate and child.

RECOMMONDED TEXT BOOKS:

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

SCHEME OF UNIVERSITY EXAMINATION

THEORY 40 MARKS + I.A. – 10 MARKS ** The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **50**
Section A .MCQs	Q-1 -MCQs – based on MUST KNOW area [1 x 10]	**10**
Section B- S.A.Q	Q-2 - Answer any FIVE out of SIX [5 x 3 = 15] * Based on topics – **PAEDIATRICS**	**15**
Section B- S.A.Q	Q-3 - Answer any FIVE out of SIX [5 x 3 = 15] * Based on topics – **NEUROLOGY**	**15**
Total Marks		**40**

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

INTERNAL ASSESSMENT:

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

COMMUNITY HEALTH and SOCIOLOGY

TOTAL 60 HRS

A-C COMMUNITY HEALTH

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

COURSE DESCRIPTION:

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

COURSE OUTCOME:

1. Appreciate Natural history of Disease and level of prevention including modes of intervention for each level.
2. Identify community behaviors associated with common health problems and know the principles of Communicable and Non-communicable diseases control and assist in the implementation of National Health programmes at a peripheral level.
3. Know the principles of nutrition, maternal health, and family welfare and put the same into practice and implement various national health programmes, and study various occupationalhazards & their prevention.
4. Identify the socio-cultural dimension in Health and disease and apply this knowledge in the design and implementation of an integrated Health and development program.
5. Know the structure and functioning of the health system at the National and International levels and its historical perspectives

OBJECTIVES:

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

SYLLABUS

Sr. No.	Topics	Didactic Hours
1	**GENERAL CONCEPTS and DETERMINANTS OF HEALTH and DISEASES:**	**04**
	a. National and International Definition of Health, Role of Socio-Economic and Cultural Environment in Health and Disease. b. Epidemiology – Definition and scope, uses with relevance to physiotherapy c. Environmental Hygiene including man and his surrounding, Occupational and Industrial hygiene, Village and Town Sanitation, Bacteriology of Water, Milk, and Food Hygiene.	1 1 2
2	**NATIONAL PUBLIC HEALTH ADMINISTRATION**	**1**
3	**HEALTHCARE DELIVERY SYSTEM:**	**2**
	a. Healthcare Delivery System of India b. National Health Programmes c. Role of W.H.O. d. Millennium Development Goals for All	
4	**PRIMARY HEALTHCARE:**	**1**
	a. Definition b. Principles, c. Elements and its application	
5	**EPIDEMIOLOGY OF SOCIO-ECONOMICAL and CULTURAL ISSUES** - related to morbidity in relation to the following vulnerable groups. a. Women: i. Pregnant and lactating women, maternal health (ANC,PNC,INC) ii. Perimenopausal women"s" health: physical and psychological	**4** 1
	b. Infants: (Low Birth Weight, Breast feeding, Complimentary feeding, IYCN,IMNCI Vaccine preventable diseases, Immunization programmes, Infant and childhood mortality)	2
	c. Children: Child health, Growth monitoring under five clinic, ICDS, PEM	1
	d. School aged population health: Early detection and prevention of disabilities, behavioral problems	1
6	**DEMOGRAPHY AND OBJECTIVES OF NATIONAL FAMILY WELFARE PROGRAMMES AND NATIONAL POPULATION POLICY**	**2**
7	**COMMUNICABLE DISEASES**	**3**
	An over-view [including prevention and control] T.B., H.I.V., Leprosy, Vector borne diseases- Malaria / Filariasis / Dengue/ Chikungunya/ Japanese encephalitis.	
8	**NON COMMUNICABLE DISEASES:**	**2**
	Diabetes Mellitus, Hypertension, Coronary Heart Disease / Obesity / Blindness/ Accidents /Stroke/ Cancer.	

9	**NUTRITIONAL DISEASES:**	**4**
	Malnutrition, Nutrional disorders and National nutrition programmes, Osteomalacia, Rickets, Neuropathies due to Vitamin - deficiency, Skeletal Deformities.	
10	**MENTAL HEALTH:**	**2**
	a. Socio-economical and cultural aspects b. Substance abuse and addiction –tobacco, alcohol and others	
11	**OCCUPATIONAL HEALTH:**	**1**
	Occupational diseases and hazards - definition, scope, prevention and legislations, Occupational lung diseases and Physical injuries/pains.	
12	**GERIATRIC HEALTH:**	**1**
	a. Physical, social, economical aspects b. Osteoporosis, Malnutrition, Alzheimer‟s disease, Parkinson‟s disease	
13	**HOSPITAL WASTE MANAGEMENT:**	**1**
	Universal Safety Precautions, Immunization of health care providers including their vaccination.	
14	**COMMUNITY REHABILITATION**	2

COMMUNITY VISITS:

Community health centers: Urban and Rural 5 visits of 2 hours each– 10 Hours

1. Rural health care centre, Rahata.
2. Old age home, Shirdi
3. School for mentally challenged
4. School for the Deaf and dumb
5. School for blind

RECOMMONDED TEXT BOOKS

1. Park‟s Textbook of Preventive and Social Medicine - K. Park
2. Textbook of Preventive and Social Medicine - P.K. Mahajan and M.C. Gupta
3. Essential of Community Medicine - Baride and Kulkarni
4. Sociology by Dr. Rao

B- SOCIOLOGY

Total 20 hrs

COURSE DESCRIPTION:

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

OBJECTIVES:

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

SYLLABUS

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

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

RECOMMENDED TEXT BOOKS

1. An Introduction to Sociology – Sachdeva and Bhushan
2. Indian Social Problems - Madan, Vol-I-Madras
3. Sociology- Dr.Rao

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** 100
Section A- Q-1 andQ-2	MCQs – based on **MUST KNOW** area Q-1 1 based on **COMMUNITY MEDICINE** [1x20] Q-2 2 based on **SOCIOLOGY** [1 x10]	30
Section B-Q-3 and Q-4	Questions based on **COMMUNITY MEDICINE** SAQ Q-3 -to answer any FIVE out of SIX [5x3=15] SAQ Q-4-to answer any THREE out of FOUR [3x5=15]	30
Section C-Q-5	Questions based on **SOCIOLOGY** SAQ – to answer any FOUR out of FIVE [4 x 5=20]	20
Total Marks		**80**

INTERNAL ASSESSMENT:

1. **Two exams – Terminal and preliminary examination of 80 marks each TOTAL - 160 marks**
2. **Internal Assessment to be calculated out of 20 marks.**
3. **Internal assessment as per University pattern.**
4. **Betterment exam will not be conducted.**

GYNAECOLOGY and OBSTETRICS

(COLLEGE EXAMINATION)

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

COURSE DESCRIPTION:

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

COURSE OUTCOME:

1.Provide quality maternal care in the diagnosis and management of Antenatal, Intranatal & Post natal period of normal and abnormal pregnancy.
2.Provide effective & adequate care to the obstetrical and early neonatal phase
3.Have knowledge of interpretation of various laboratory investigations & other diagnostic modalities in Obstetrics &Gynecology.
4. Have knowledge of essentials of Adolescent Gynecology, reproductive & child Health, family welfare & reproductive tract infections.

Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours
1	**PHYSIOLOGY OF PUBERTY and MENSTRUATION**	2		2
2	**PHYSIOLOGY OF PREGNANCY**	2	1	3
3	**PHYSIOLOGY OF LABOUR**	2		2
4	**POST NATAL PERIOD**	2	5	7
5	**COMMON MEDICAL PROBLEMS IN PREGNANCY**	1		1
6	**URO-GENITAL DYSFUNCTION**	2	2	4
7	**GYNAECOLOGICAL SURGERIES**	2	1	3
8	**PRE, PERI and POST MENOPAUSE**	2	1	3
9	**COMMON GYNAECOLOGICAL CANCERS**	2	1	3
	TOTAL	**17**	**13**	**30**

OBJECTIVES:

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

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

SYLLABUS

Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours
1	**PHYSIOLOGY OF PUBERTY and MENSTRUATION**: Abnormalities and common problems of Menstruation	**2**		**2**
2	**PHYSIOLOGY OF PREGNANCY :**	**2**	**1**	**3**
	a. Development of the foetus, Normal/ Abnormal / multiple gestations, b. Common Complications during pregnancy: i. Anaemia, ii. P I H iii. Eclampsia iv. Diabetes, v. Hepatitis, vi. TORCH infection or HIV			
3	**PHYSIOLOGY OF LABOUR**	**2**	**2**	**4**
	a. Normal – Events of Ist, IInd and IIIrd Stages of labour b. Complications during labour and management c. Caesarean section- elective/ emergency and post operative care			

4	**POST NATAL PERIOD**	**2**	**5**	**7**
	a. Puerperium and Lactation b. Complications of repeated child bearing with small gaps c. Methods of contraception			
5	**COMMON MEDICAL PROBLEMS IN PREGNANCY**	**1**		**1**
	a. Management with emphasis on PCOS/PCOD			
6	**URO-GENITAL DYSFUNCTION**	**2**	**2**	**4**
	a. Uterine prolapse – Classification and Management (Conservative / Surgical) b. ii) Cystocoele, Rectocoele, Enterocoele, Urethrocoele			
7	**GYNAECOLOGICAL SURGERIES** (Pre and post surgical management)	**2**	**1**	**3**
8	**PRE, PERI and POST MENOPAUSE**	**2**	**1**	**3**
	a. Physiology b. Complications and c. Management			
9	**COMMON GYNAECOLOGICAL CANCERS**	**2**	**1**	**3**

CLINICAL (10 hrs)

Evaluation and presentation of One case Each in:

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

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

RECOMMENDED TEXT BOOKS

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

SCHEME OF COLLEGE EXAMINATION (THEORY ONLY)

THEORY ONLY 50 marks [There shall be no LAQ in this paper] *Emphasis to be given to the Urogenital dysfunction / Obstetrical conditions / age related Gynaecological problems		Marks **50**
Section -A-Q-1	MCQs – based on **MUST KNOW** area [20X1]	**20**
Section-B-Q-2	SAQ-to answer any FIVE out of SIX [5x3]	**15**
Section-C-Q-3	SAQ-to answer any THREE out of FOUR [3x5]	**15**
Total Marks		**50**

Passing in the exam is Mandatory

Grades: A+ = 75% and above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%.

DERMATOLOGY

(COLLEGE EXAMINATION)

TOTAL - 10 HRS

COURSE OUTCOME:

1.Describe the etiology, pathogenesis and diagnostic features of common skin conditions like pediculosis, dermatophytes, viral infections of the skin, fixed drug eruptions , Leprosy, HIV, nonsyphilitic sexually transmitted diseases (chancroid, donovanosis and LGV) and Steven Johnson syndrome
2. Describe the pharmacology and action of Drugs.

OBJECTIVES:

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

SYLLABUS

Sr. No.	Topics	Didactic Hours
1	Introduction to Dermatology, basic skin lesions and History taking	1
2	a. Skin infections (Part I) – Scabies / Pediculosis / Bacterial infections b. Skin infection (Part II) Viral / Fungal / Cutaneous T.B.	2
3	Connective tissue disorder-Scleroderma, S.L.E., Dermatomyositis, Morphia	1
4	a. Hand eczema, Psoriasis, Psoriatic arthritis, Reiter‟s Syndrome b. Cutaneous hyperplasia-Keloid, Hypertrophic scar, Corn, Callosity	1
5	Leprosy and Deformity	2
6	a. Cutaneous Manifestation of HIV b. Hyperhydrosis	1
7	a. Drug reaction b. Urticaria Genodermatosis -Epidermolysis bullosa c. Sexually Transmitted skin lesions PUVA Treatment	2
	TOTAL	**10**

RECOMMENDED TEXT BOOK

1. Textbook of dermatology – Dr. Khopkar

SCHEME OF COLLEGE EXAMINATION (THEORY ONLY)

THEORY		Marks
25 marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		**25**
Section A- Q-1	MCQs – based on MUST KNOW area [10X1]	**10**
Section-B- Q-2	SAQ - Answer any FIVE out of SIX [5x3]	**15**
Total Marks		**25**

Passing in the exam is Mandatory

Grades: A+ = 75% and above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%.

RADIO-DIAGNOSIS

(COLLEGE EXAMINATION)

TOTAL - 10 HRS

COURSE OUTCOME:

At end of the course, the candidate will :

a) Be able to identify views of the X ray, normal structures and also able to identify abnormal findings.
b) Candidate should gain skill of reading and interpreting Computed tomography (Chest, HRCT, Brain, Spine)
c) Be able to read and interpret Magnetic Resonance Imaging of Brain and Spine

OBJECTIVES:

Radio-diagnosis is a useful resource for musculoskeletal conditions and is an invaluable tool for physiotherapists when used appropriately. Imaging such as MRI, X-ray, CT scans, and bone scans are prime examples of practical diagnostic imaging that facilitates accurate diagnosis, prognosis, intervention, and assessment of injuries and dysfunctions that physiotherapist address on a daily basis.

SYLLABUS

Sr. No.	Topics	Didactic Hours	Practical
1	Overview of X-ray techniques and interpretation	1	1
2	Overview of Sonography techniques and interpretation	1	1
3	Overview of Colour dopper techniques and interpretation	1	1
4	Overview of Computerised Tomography techniques a interpretation	1	1
5	Overview of MRI techniques and interpretation	1	1
	TOTAL	**5**	**5**

RECOMMENDED TEXT BOOK

1. A Textbook of Radiology – Dr. Edward Reginald Morton

SCHEME OF COLLEGE EXAMINATION (THEORY ONLY)

THEORY		Marks
10 marks [There shall be no LAQ in this paper]		
* The question paper will give appropriate weightage to all the topics in		**10**
the syllabus.		
Q-1	SAQ - Answer any FIVE out of SIX [5x2]	**10**
	Total Marks	**10**

Passing in the exam is Mandatory

Grades: A+ = 75% and above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%.

ONCOLOLOGY

(COLLEGE EXAMINATION)

TOTAL - 10 HRS

COURSE OUTCOME:

1. Candidate should gain the basic knowledge of various cancer and cancer treatment modalities.
2. Candidate should be able to identify the need for the physiotherapy support in various malignancies.
3. Candidate should able to assess the cancer patient from Physiotherapy point of view for Rehabilitation purpose.
4. Be able to assess the patient's functional capacity in order to set Rehabilitation program for cancer patients.
5. Be able to assess patients Quality of life.

OBJECTIVES:

This course will teach application of principles of management of patients with cancer through all care and rehabilitation programmes from diagnosis to the end of life. The objective of this course is to teach Physiotherapy students to conduct ongoing assessment of the needs of this patient group and their carers, in order to apply skilled interventions, which are vital for patients' independence, functional capacity and quality of life**.**

SYLLABUS

Sr. No.	Topics	Didactic Hours	Practical
1	Introduction to Cancer	1	1
2	Introduction to Radiation therapy and Chemotherapy	1	1
3	Head and neck Cancer and Physiotherapy	1	
4	Breast Cancer and Physiotherapy	1	1
5	Various malignancies and Physiotherapy	1	1
	TOTAL	**5**	**5**

RECOMMENDED TEXT BOOK

1. Cancer Rehabilitation: Principles and Practice- Michael Stubblefield

SCHEME OF COLLEGE EXAMINATION (THEORY ONLY)

THEORY		Marks
10 marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		**10**
Q-1	SAQ - Answer any FIVE out of SIX [5x2]	**10**
Total Marks		**10**

FUNCTIONAL DIAGNOSIS and PHYSIOTHERAPEUTIC SKILLS

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

COURSE DESCRIPTION:

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

COURSE OUTCOME:

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

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

a) Perform assessment of measures of body structures and functions related to tissue mechanicsmotor control affecting activity and participation, quality of life and independence.

b) Perform the skill of electro-diagnosis (SD Curve) and observe skills of EMG and NCV studies, to understand the documentation of finding of these studies.

c) Interpretation and analysis of assessment and findings.

d)Demonstrate skills of manual therapy musculoskeletal, neurotherapeutics and cardiovascular and respiratory skills on models (Laboratory work).

7. Select appropriate assessment techniques to facilitate safety, sensitive practices in patient comfort and effectiveness.
8. Demonstrate safe, respectful and effective performance of physical therapy handling techniques taking into account patient's clinical condition, need for privacy, resources available and the environment.
9. Follow the principles of appropriate handling technique that is draping, hand placement, body part positioning, manual techniques, lifting and transfer techniques.

10. Communicate with patients and their families/caregivers regarding the need and uses of various assessment techniques.

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

OBJECTIVES:

Cognitive:

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

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

Psychomotor:

Student will be able to:

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

Affective:

Student will be able to:

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

SYLLABUS

Sr. No.	Topic	Didactic Hours	Practical/ Clinical Hours	Total Hours
1	**SECTION I:** **Functional Diagnosis using International Classification of Function, Disability and Health (I.C.F.) (Applicable for all the Sections mentioned below)**	**5**	**-**	**5**
2	**SECTION II:** **MUSCULOSKELETAL EVALUATION AND MANIPULATIVE SKILLS** **(**Didactic-40 + Practical 140= **180 Hours)**			
	a. Assessment of Musculoskeletal System:	**03**	**02**	**05**
	i. Soft tissue flexibility ii. Joint mobility iii. Muscle strength and Endurance iv. Trick movements v. Sensations vi. Limb length vii. Abnormal posture viii. Gait deviations due to musculoskeletal dysfunction			
	b. Assessment of Joints with special tests:	**10**	**08**	**18**
	i. **Cervical Spine**: Foraminal compression, Distraction, Shoulder depression, vertebral artery, Dizziness tests. ii. **Shoulder**: Yergason's, Speed's, Drop-Arm, Supraspinatus, Impingement, Anterior and Posterior Apprehension, Allen, Adson. iii. **Elbow**: Cozen's, Miller's, Tinel's sign iv. **Forearm, Wrist andHand**: Phalen's, Bunnel-Littler, Froment's sign v. **Lumbar Spine**:-Schober's, SLR, Prone Knee Bending, Slump. vi. **Sacro Iliac joint**: Faber- Patrick's, Gaenslen, Gillet, March			

vii. **Hip:** Nelaton's line, Bryant's triangle, Thomas, Ober's, Tripod sign, Trendlenburg sign,

viii. **Knee:** Tests for collateral and cruciate ligaments (valgus, varus, Lachman, Sag, Drawer's, McMurray's, Fluctuation, Patellar tap, Q- angle, Clarke)

ix. **Ankle and Foot**: Anterior Drawer, Talar Tilt, Homan's and Moses (for D.V.T.)

c. Response of soft tissues to trauma :	**02**		**02**
i. Trigger points ii. Spasm iii. Ligament Sprains iv. Muscle Strains			
d. Basics in Manual Therapy and Applications with Clinical Reasoning:	**05**	**05**	**10**
i.Assessment of Articular and extra-articular soft tissue status a) Contractile tissues b) Non contractile tissues ii. Examination of joint integrity a) Accessory movement b) End feel			
e. Examination of musculoskeletal Dysfunction :	**06**	**10**	**16**
i. Subjective examination ii. Objective examination iii. Special tests iv. Functional Diagnosis using ICF			

Sr. No.	Topic	Didactic Hours	Practical/ Clinical Hours	Total Hours
	f. Assessment of Pain:	**04**	**05**	**09**
	i. Types of pain: Somatic, Somatic referred, Neurogenic, Visceral ii. Subjective Assessment: a) Location, duration, progression, distribution, quality, diurnal variations, modifying factors. b) Severity, nature of pain, tissue irritability iii. Objective Measurement and Documentation- a) Visual Analogue Scale (V.A.S). b) Numerical Rating Scale(N.R.S.) c) McGill‟s modified questionnaire(including Body charts)	Assessment By V.A.S. and N.R.S.		
	g. Basic principles, indications, contra indications of mobilization skills for joints and Soft tissues:	**10**	**110**	**120**
	i. Maitland ii. Mulligan iii. Kaltenborn iv. Mckenzie v. Cyriax vi. Myofascial Release Technique vii. Muscle Energy Technique viii. Neural Tissue Mobilization (Neuro Dynamic Testing)	Practice of Manual Therapy in Kaltenborn, Maitland‟s, M.E.T. and Neural Mobilisation on extremities on Models only		
3	**SECTION III:** **CARDIO VASCULAR RESPIRATORY EVALUATION and RELATED SKILLS** **(**Didactic-40 + Practical 55= **95 Hours)**			
	a. Assessment of Cardio Vascular and Pulmonary System:	**25**	**25**	**50**
	i. Vital parameters ii. Chest expansion iii. Symmetry of chest movement iv. Breath Holding Test v. Breath Sounds vi. Rate of Perceived Exertion (R.P.E.) vii. Energy Systems and Exercise Physiology –	Identification of abnormal breath sounds, measurement of chest expansion, pattern of breathing, Vital parameters, Grades of Dyspnoea, Rate of Perceived Exertion,		

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

Sr. No.	Topic	Didactic Hours	Practical/ Clinical Hours	Total Hours
4	**SECTION IV:** **NEUROTHERAPEUTIC EVALUATION and ELECTRO DIAGNOSIS** **(**Didactic-50 + Practical 130= **180 Hours)**			
	a. General principles of Human development and maturation	**07**	**05**	**12**
	i. Aspects a) Physical b) motor c) Sensory d) Cognitive and Perceptive e) Emotional f) Social ii. Factors influencing human development and growth: a) Biological b) Environmental inherited . iii. Principles of maturation in general and anatomical directional pattern – a) Cephelo – caudal b) Proximo – distal c) Centero – lateral d) Mass to specific pattern e) Gross to fine motor development f) Reflex maturation tests iv. Development in specific fields - Oromotor development, sensory development, neurodevelopment of hand function.			
	b. Basics in Neuro Therapeutics Skills and Applications with Clinical reasoning.	**20**	**55**	**75**
	i. Principles, Technique and Indications for Application of a) Bobath b) Neuro Developmental Technique c) Rood‟s Technique d) P.N.F. e) Brunnstrom, f) Techniques of Motor Relearning Program (M.R.P.)	Therapeutic Skills of N.D.T., P.N.F., Bobath, Rood‟s Technique and Brunnstrom, M.R.P. on models only		

Sr. No.	Topic	Didactic Hours	Pract/Clinic Hours	Total Hours
	c. Assessment of Movement Dysfunction	**10**	**25**	**35**
	i. Higher functions ii. Cranial nerves iii. Sensations , sensory organization and body image iv. Joint mobility v. Tone vi. Reflexes-Superficial and Deep vii. Voluntary control viii. Muscle Strength ix. Co-ordination x. Balance xi. Endurance xii. Trick movements xiii. Limb Length xiv. Posture deviations xv. Gait deviations due to neurological dysfunction xvi. Functional Diagnosis using I.C.F. xvii. Interpretation of Electro diagnostic findings, routine Biochemical investigations			
	d. Electro diagnosis	**10**	**30**	**40**
	i. Physiology of resting membrane potential, action potential, Propagation of Action Potential ii. Physiology of muscle contraction iii. Motor unit and Recruitment pattern of motor unit – Size principle iv. Therapeutic current –as a tool for electro diagnosis. a) Electrophysiology of muscle and nerve b) Faradic Galvanic Test, Strength Duration Curve-tests should be carried out on relevant patients, c) Test for Sensory and Pain Threshold/ Pain Tolerance – technique only v. Electro-Myography a) Definition Instrumentation – Basic components like C.R.O., Filter, Amplifier and Preamplifier, and Types of Electrodes	Test for S.D.C. and Faradic/ Galvanic Test		

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

DOCUMENTATION:

A	Documentation and Interpretation of following investigations:
	i. Electro diagnosis : 2 each a) S.D.C. b) Faradic Galvanic Test c) E.M.G. and N.C. Studies ii. Cardio Vascular and Pulmonary: (1 each) – A.B.G., P.F.T., E.C.G., X-ray Chest, Exercise Tolerance Test. iii. Neurological Scales (1 each)– Modified Ashworth, Berg‟s Balance, D.G.I., Glasgow iv. Coma, Barthel Index, F.I.M.
B	Case presentation with Functional diagnosis :
	i. Total 12 cases ii. Three cases each in – a) Musculoskeletal b) Neurological c) Cardiovascular and Respiratory (Including General Medical and Surgical Cases) d) General and Community Health (Including Fitness and Health, Women and Child Health, Occupation Health)
	To maintain the Record/ Journal of the term work and to get each assignment duly signed by respective Head of the Dept.

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOKS

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

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**
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- Simulated case on all of the sections on ICF pattern **(Section II,III and IV)** 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	[Time maximum 30 minutes for students for evaluation] 1. Psychomotor and affective: Skill of History taking [05 marks] Skill of clinical examination [15 marks] Skill of objective diagnostic procedure [10 marks] 2. Cognitive : Ability to justify bases for functional diagnosis by I.C.F. [15 marks] [To be evaluated in cognitive, psychomotor and affective domains.]	**45**
SHORT CASE	Two Short cases on 1. Mobilization Technique: Kaltenborn, Maitland, M.E.T. or Neural Mobilisation (On Models) [10marks] 2. Neuro Therapeutic Skills: N.D.T. / P.N.F. / Rood's / Brunnstrom (On Models) [10 marks] **OR**	**20**

	Electro Diagnosis: S.D. Curve / Faradic Galvanic Test (On Patient) [10 marks]	
	OR Exercise Tolerance Test: Six Minutes Walk Test (On Model) [10 marks]	
SPOTS	5 spots - (5 x2 Marks= 10 Marks) 3minutes for each spot a) X ray (on section 2/3/4) b) Pulmonary Function Test c) Blood gas analysis d) E.C.G. e) E.M.G. / N.C. studies	**10**
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis with I.C.F.	**5**
Total Marks		**80**

INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination (Theory and Practical) of 80 marks each TOTAL - 160 marks
2. Internal Assessment to be calculated out of 20 marks
3. In Practicals of Terminal and 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 and Preliminary examinations
4. Internal assessment as per University pattern
5. Betterment exam will not be conducted.

SCHEME OF EXAMINATIONS AT A GLANCE – III B.P.T.

SUBJECTS	UNIVERSITY EXAMINATIONS						COLLEGE LEVEL EXAMS (Theory only)
	Theory			Clinical / Practical			
	University	I.A.	Total	University	I.A.	Total	
Surgery-I (General Surgery + Cardio vascular and Thoracic Surgery + Plastic / Reconstructive Surgery)	40	10	50	---	---	---	---
Orthopaedics	40	10	50	---	---	---	---
Medicine-I (Cardiovascular Respiratory Medicine + General Medicine + Gerontology)	40	10	50	---	---	---	---
Medicine-II (Neurology and Paediatrics)	40	10	50	---	---	---	---
Community Health and Sociology	80	20	100	---	---	---	---
Functional Diagnosis and Physiotherapeutic Skills	80	20	100	80	20	100	---
Gynaecology and Obstetrics	---	---	---	---	---	---	50
Dermatology **Radiodiagnosis** **Oncology**	---	---	---	---	---	---	25 **10** **10**
Total	**320**	**80**	**400**	**80**	**20**	**100**	**95**

IV B.P.T.

SYLLABUS

Transcript Hrs-1465

Sr. No.	Subjects	Theory Hours	Practical / Clinical Hours	Total Hours
	PROFESSIONAL PRACTICE			
1	Professional Practice and Ethics *(College Examination)*	015	--	015
2	Administration, Management and Marketing *(College Examination)*	020	--	020
	PHYSIOTHERAPY			
3	Orthopaedic 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 and Biostatistics *(College Examination)*	040	-	040
	ELECTIVE SIUBJECTS			
9	Basics of Intellectual Property rights	20	-	20
10	Administration, Management and Marketing	20	-	20
11	Seminar (including I.C.F.)	-	060	060
12	Supervised clinical practice -During each clinical assignment, the student shall evaluate, functionally diagnose, plan and practice clinical skills on patients in consultation with the qualified physiotherapist staff	-	500	500
TOTAL		**415**	**1090**	**1505**

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 and 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 and Management skills, and use of information technology in professional Practice
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
1. Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society and co-professionals
2. Develop bedside behavior, respect and 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. and Council	01		
TOTAL		**40**	**20**	**60**

RECOMMENDED REFERENCE LITERATURE

1. Rules and Regulation of Indian Association of Physiotherapists

2. W.C.P.T. ethics (from their website)

3. Gazette of Maharashtra Council for Occupational therapists and Physiotherapists

SCHEME OF COLLEGE EXAMINATION

THEORY ONLY [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 and 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 examination is Mandatory Grades: A+ = 75% and above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%.		

ADMINISTRATION, MANAGEMENT and 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 and the community.

c. Acquire the knowledge of the basics in Managerial and Management skills, and 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.

SYLLABUS

Sr. No.	Topics	Didactic Hours
1.	Management studies related to –local health care organization Management and structure, planning delivery with quality assurance and funding of service delivery information technology career development in Physiotherapy.	05
2.	Administration-principles-based on the Goal and 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 and quality of services/turn over-cost benefit revenue contribution	03
6.	Setting up Therapeutic gymnasium, Fitness clinics, Cardiac and Pulmonary Rehab centers etc.	02
7.	Time management	02
TOTAL		**20**

RECOMMENDED REFERENCE BOOK

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

SCHEME OF COLLEGE EXAMINATION

THEORY 50 MARKS			**Marks**
[There shall be no LAQ in this paper]			
* The question paper will give appropriate weightage to all the topics in the syllabus.			50
Section A-Q-1	MCQs – based on MUST KNOW area	[20 x1]	20
	SAQ-to answer any FIVE out of SIX	[5 x 3]	15
Section-B-Q-2 and Q3	SAQ – to answer any THREE out of FOUR [3 x 5]		15
	Total Marks		**50**

Passing in the exam is Mandatory

Grades: A+ = 75% and 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.

BPT IV YEAR COURSE OUTCOMES

COURSE 2018 BATCH

MUSCULOSKELETAL PHYSIOTHERAPY

CO1: Know about the primary and secondary musculoskeletal dysfunction based on biomechanical kinesiological and pathophysiological principles

CO2: Understand the physiotherapy diagnosis with skillful clinical assessment of structure and function with clinical reasoning

CO3: Able to integrate theoretical knowledge in management of orthopedic conditions.

CO4: Demonstrate clinical decision-making ability and treat different musculoskeletal conditions.

CO5: Identify disability and plan treatment for these disabilities due to pathology in musculoskeletal system, as well as evaluate and document them.

CO6: Acquire ethical skill by demonstrating effective treatment and safe performance of physical handling techniques taking into account the patient's clinical condition, the need for privacy, the resource available and the treatment set up.

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 and joints	02	05
	Metabolic and Hormonal Disorders	02	05
	Congenital and Acquired Deformities	06	10
	Peripheral Nerve Injuries and 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 and discuss primary and secondary musculo-skeletal dysfunction, based on biomechanical, kinesiological and patho-physiological principles.

b) Correlate the same with radiological, electrophysiological, biochemical/ haematological investigations as applicable and 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 and 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 and 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:**			

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 and implementation of short term and long term goals of Physiotherapy with appropriate documentation of the same.
3. Application of appropriate electro therapeutic modes for relief of acute and 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 and 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 and endurance, and functional maintenance and/ or restoration including posture correction and gait training including preventive measures.
7. Prescription of appropriate orthotic and prosthetic devices.
8. Various taping techniques for support and pain relief; principles, indications, contra-indications, types of tapes used and relevant terminology.
9. Appropriate Home Program and Ergonomic advise for preventive measures and functional efficiency at home, work place and during recreation. Advice to Parents and 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 and fracture-dislocations of extremities and spine and their complications and management	08	20	
	b. Soft tissues injuries of extremities and spine and their complications and 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 and joints of extremities and spine** a. Tuberculosis b. Osteomyelitis	**02**	**05**	**07**
	5. **Metabolic and Hormonal Disorders** a. Osteoporosis b. Osteomalacia	**02**	**05**	**07**
	6. **Congenital and Acquired Deformities of extremities and 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 and Plexus Injuries-** complications and 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 and 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 and 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.C **OMPETENCY 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 and 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

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 and 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;

Life style modification for diseases and for prevention

3. Skill of application of physical and electrical agents for relief of acute and chronic pain and swelling.

4. Facilitation, re-education and training of muscle strength, endurance and motor control, posture and gait through skillful use of various therapeutic exercise techniques with appropriate therapeutic gymnasium equipment.

5. 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.

6. Functional training in self care, home, work (job, school and play), community and leisure activities

DOCUMENTATION

Presentation and 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 and Foot
8. Amputation

RECOMMENDED TEXT BOOKS

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

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 and 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	Two Short cases on Demonstrations of physiotherapy intervention skills for effective patient management (one traumatic and one cold case) 2 x 10 marks	**20**
SPOTS	5 spots - (5 x2 Marks= 10 Marks) 3 minutes for each spot X– ray of extremities and spine, Orthoses, Prostheses, Metal Implant	**10**
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	**5**
Total Marks		**80**

INTERNAL ASSESSMENT:

1. Two examinations – Terminal and preliminary examination (Theory and Practical) of 80 marks each TOTAL - 160 marks
2. Internal Assessment to be calculated out of 20 marks.
3. In Practicals of Terminal and 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 and 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 and functional impairments and activity limitations of individuals and population (both adults and 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.

NEUROPHYSIOTHERAPY

CO1: Understand relevant investigations technique which will help to diagnosed various Neurological condition conditions.

CO2: Able to integrate theoretical knowledge with clinical assessment.

CO3: Developed clinical decision-making ability and treat different neurological conditions.

CO 4: Know about the identification and analyze movement dysfunction due to neuromuscular skeletal disorders.

CO 5: Understand the routine electro physiological, radiological and biochemical investigation and arrive at appropriate physical therapy diagnosis using ICF with clinical reasoning.

CO6: Able to plan realistic goal based on the knowledge of prognosis of the diseases of the nervous system and prescribe appropriate, safe evidence-based physiotherapy intervention.

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 02 -- **02** 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			
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 and 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 and implementation of short term and 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.

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 and non traumatic - upper limb and lower limb - brachial plexus - nerve root lesions - metabolic and 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 and 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 and 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 and 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. and 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 and 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 and 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 and chronic pain and swelling.
5. Facilitation, re-education and training of muscle strength, endurance and 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 and postural correction
- Transfer training
- Functional re-education
- Gait assessment- gait training
- Co-ordination testing and training
- Strategies for balance training

Fitness training for patients having neurological problems.

Use of outcome measures and quality of life questionnaire.

Presentation and 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	Two Short cases on Demonstrations of physiotherapy intervention skills for effective patient management 2 x 10 marks	**20**
SPOTS	5 spots - (5 x2 Marks= 10 Marks) 3 minutes for each spot E.M.G./N.C. Studies / Orthoses/ Prostheses and 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 and Practical**) of 80 marks each TOTAL - 160 marks**
2. **Internal Assessment to be calculated out of 20 marks.**
3. **In Practicals of Terminal and 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 and Preliminary examinations**
4. **Internal assessment (**Theory**) as per University pattern.**

CARDIO-VASCULAR and 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.

CO1: Understand relevant investigations technique which will help to diagnosed various cardiovascular and respiratory conditions.

CO2: Assessment and planning of treatment for disabilities due to pathology in cardio respiratory system and evaluate and document them

CO3: Demonstrate clinical decision-making ability and treat different respiratory and cardiac condition.

CO4: Demonstrate skill in providing the treatment for the disabilities identified according to the clinical picture and rehabilitation need of the patient

CO5: Physiotherapy in Cardio Respiratory Conditions and Intensive Care Unit

CO6: Undertake physiotherapeutic measures as preventive/restorative rehabilitative purposes for pulmonary/cardiac patient.

Sr. No.	Topics	Didactic Hours	Practical/Lab Hours	Total Hours
1	**REVIEW OF BASIC APPLIED ANATOMY and 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 and 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 and 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 and pulmonary dysfunction in acute care settings, at home , work place, in society and in leisure activities.

Psychomotor:

a. Utilise skills such as executing exercise tests, PFT, Ankle brachial index, arterial and 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 and energy conservation advice for patients with cardio-vascular and 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 and 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 and maintain patients‟ confidentiality

SYLLABUS

Sr. No.	Topics	Didactic Hours	Practical/ Lab Hours	Total Hours
1	**REVIEW OF BASIC APPLIED ANATOMY and PHYSIOLOGY**	**3**		**3**
	a. Pulmonary Anatomy and Physiology b. Cardiac anatomy and Physiology c. Cardiac and Respiratory Pharmacology d. Biomechanics of Thorax (Revision)			
2	**INVESTIGATION AND EXERCISE TESTING**	**4**	**10**	**14**
	a. Investigation and Clinical Implication - X-ray, PFT,ABG,ECG, ABI, claudication time, pulses, auscultation, postural hypotension b. Stress testing i. 6 Minute Walk test and Harward Step test Skill and Interpretation ii. Shuttle Walk Test and 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 and prevention e. Aerobic and 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 and PEP Therapy
c. Therapeutic positioning to improve ventilation and perfusion matching,
d. Therapeutic positioning to alleviate dyspnoea
e. Nebulisation and Humidification,
f. Lung Expansion Therapy
g. Neurophysiologic facilitation of respiration
h. Electrotherapeutic modalities for pain, swelling, andwound healing.
i. Therapeutic exercise program to alleviate pain, to achieve mobility, to correct posture and improve peripheral circulation.
j. Therapeutic exercise program to trengthen respiratory muscles
k. Deliver Ergonomic advice, energy conservation advice, Home exercise Program, and modifications of contextual factors.
l. Applied Yoga in Cardio-respiratory conditions

5 **APPLICATION OF ICF MODEL**	**2**	**-**	**2**

To plan effective Short term and long term goals to enhance functioning of Cardiovascular and Respiratory Dysfunction

a. Set patient specific goals and expected outcome within time frame with clinical reasoning
b. Documentation

6	**PHYSIOTHERAPY MANAGEMENT** in :	**20**	**53**	**73**
	a. Medical and 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 and 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 and other Pleural Disorders	2	10	12
	d. Neonatal and Paediatric Respiratory Infection ARDS i. Meconium aspiration ii. Pneumonitis iii. Pneumonia iv. Childhood Asthma	2	4	6

v. Cystic fibrosis and chronic lung disease

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 and Oncological Surgeries i. Pre and Post Operative care ii. Complication and Management.	2	5	7
	g. Burns (Head Face neck and thoracic, inhalation burns) Acute care Management Only	1	5	6
	h. **Diabetic and Vascular Ulcers/** Amputations (Stump care only)	2	4	6
	i. Metabolic Syndrome i. Diabetes (Mellitus and 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,and 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 and MANAGEMENT**	**8**	**12**	**20**
	a. Basic evaluation b. Principles of ICU Monitoring c. Mechanical Ventilator modes d. Suctioning and 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 and 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 and identifying comorbid and 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 and Yellow flags).
2. Assessment of Cardiovascular andRespiratory 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 and 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 and chronic pain and swelling.
5. Facilitation, re-education and training of muscle strength, endurance and 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 and respiratory performance. Functional training in self care, home, work (job, school and play), community and leisure activities

Documentation:

Presentation and 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 and Face (Acute phase only)
8. Abdominal surgical condition

RECOMMENDED TEXT BOOKS

1. Cash‟s Textbook for Physiotherapists in Chest, Heart and Vascular diseases
2. Cash‟s text book in General Medicine and Surgical conditions for Physiotherapists
3. Chest Physical therapy and 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 and 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	Two Short cases on Demonstrations of 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 and Practical) of 80 marks each TOTAL - 160 marks
2. Internal Assessment to be calculated out of 20 marks.
3. In Practicals of Terminal and 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 and 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 and responsibilities of the Physiotherapist as an efficient member of the society. This component introduces the Physiotherapist to a proactive preventive oriented philosophy for optimization and 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 and Cardio Vascular and Respiratory to the entire society. This is done by understanding the sections and sub sections of the societies, the national and international health policies, role of Government and Non Government Organizations.

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

CO1: Understand the general concepts about health, disease and physical fitness

CO2: Explain role of physiotherapy in health promotion in community and women's health.

CO3: Perform pre- and post-natal training and education of overall women's health.

CO4: Demonstrate evaluation and training of geriatric population.

CO5: Articulate the need of physiotherapy in an industrial set up and explain ergonomic assessment.

CO6: Conduct basic research in physiotherapy.

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 and 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 and 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 and 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 and 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 and Physiological variations associated with pregnancy and 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 and Community dwelling elders	1		
	d. Theories of Aging	3		
	e. Physiology of ageing: Musculoskeletal, neurological, Cardio respiratory, metabolic changes	12		
	f. Scheme of evaluation and 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.andO., Clinical psychologist, and vocational counselors and social workers.	2		
	e. CBR – Role of Physiotherapy and 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	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 and 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. 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 and 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 and 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 and 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 andPruthvish

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 and 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 andSocial Medicine – Park
10. Training in the Community for the people with disability – Hallender Padmini Mendes
11. Disabled Village Children-- David Werner
12. Chorin Cand M Desai, C Gonsalves, 1999, Women and the Law, Vol. I and 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 (Musculoskeletal, Neurosciences, Cardio Respiratory or Community). [Introduction, Aims and Objectives, Methods and Methodology and Review of Literature Expected]	**25**
JOURNAL	1. 1 cases each of Rehabilitation, Health Promotion, Industrial Health, Women‟s Health and 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 and 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 and 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 and application of biomechanical principles related to Orthotics and Prosthetics. Students will also learn the principles of the prescription and the checkout procedures of aids and 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 and appliances used for ambulation, protection and prevention.
b) Acquire in brief knowledge about various material used for splints/ Orthoses and 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 and appliances (Splints/ Orthoses for spine, upper and lower limb; Prostheses for Lower limbs and Upper limbs)	**1**
2.	**Biomechanical principles in designing of appliances and assessment; Procedures for static and dynamic alignment of the Orthoses and 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 and Osteoporosis	1
	i. Orthoses for LBP, Introduction to Upper limb Orthotics and	

	Shoulder orthoses (SO)	1
	j. Shoulder (SO),Elbow Orthoses (EO) and 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 and 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 and 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% and 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 and 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 and Validity g. Drawing Tables, Graphs, Master chart	

3	**WRITING A RESEARCH PROPOSAL**	**3**
	a. Defining a problem b. Review of Literature c. Formulating a question, Operational Definition d. Inclusion and Exclusion criteria e. Methodology- Forming groups Data collection and 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 and 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 and Graphic form	
11	**RESEARCH REPORT**	**1**
	Overview, Types and Publication	

RECOMMENDED TEXT BOOK

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

SCHEME OF COLLEGE EXAMINATION

THEORY : 50 Marks		**Marks**
[There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		**50**
Section A-Q-1	MCQs – based on MUST KNOW area [20 x1]	**20**
Section-B-Q-2 and 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% and above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%.

Elective Subject 1

Basics of Intellectual Property rights: 20 hours

Course Objectives:

- To introduce fundamental aspects of Intellectual property Rights to students who are going to play a major role in development and management of innovative projects in industries.
- To disseminate knowledge on patents, patent regime in India and abroad and registration aspects
- To disseminate knowledge on copyrights and its related rights and registration aspects
- To disseminate knowledge on trademarks and registration aspects
- To disseminate knowledge on Design, Geographical Indication (GI), Plant Variety and Layout Design Protection and their registration aspects
- To aware about current trends in IPR and Govt. steps in fostering IPR

Course Outcomes

- The students shall gain adequate knowledge on patent and copyright for their innovative research works
- During their research career, information in patent documents will provide a useful insight on novelty of their idea from state-of-the art search. This provide further way for developing their idea or innovations
- Pave the way for the students to catch up Intellectual Property(IP) as an career option
- Facilitate students to become successful entrepreneurs

Overview of Intellectual Property rights: 3 hours

1. Introduction and the need for intellectual property right (IPR) - Kinds of Intellectual Property Rights: Patent, Copyright, Trade Mark, Design, Geographical Indication, Plant Varieties and Layout Design – Genetic Resources and Traditional Knowledge – Trade Secret
2. IPR in India : Genesis and development , IPR in other countries
3. Major International Instruments concerning Intellectual Property Rights: Paris Convention, 1883, the Berne Convention, 1886, the Universal Copyright Convention, 1952, the WIPO Convention, 1967,the Patent Co-operation Treaty, 1970, the TRIPS Agreement, 1994

Patents: 4 hours

1. Elements of Patentability: Novelty , Non Obviousness (Inventive Steps),
2. Industrial Application - Non - Patentable Subject Matter - Registration Procedure, Rights and Duties of Patentee, Assignment and license ,
3. Restoration of lapsed Patents, Surrender and Revocation of Patents,
4. Infringement, Remedies & Penalties - Patent office and Appellate Board

Copyrights: 3 hours

1. Nature of Copyright - Subject matter of copyright: original literary, dramatic, musical, artistic works; cinematograph films and sound recordings
2. Registration Procedure, Term of protection, Ownership of copyright, Assignment and licence of copyright

3. Infringement, Remedies & Penalties – Related Rights - Distinction between related rights and copyrights

Trademarks: 3 hours

1. Concept of Trademarks - Different kinds of marks (brand names, logos, signatures, symbols, well known marks, certification marks and service marks)
2. Registration of Trademarks - Rights of holder and assignment and licensing of marks, Non Registrable Trademarks
3. Infringement, Remedies & Penalties
4. Trademarks registry and appellate board

Other forms of Intellectual Property: 4 hours

1. **Design**: meaning and concept of novel and original - Procedure for registration, effect of registration and term of protection
2. **Geographical Indication (GI):** Geographical indication: meaning, and difference between GI and trademarks - Procedure for registration, effect of registration and term of protection
3. Plant variety protection: meaning and benefit sharing and farmers' rights – Procedure for registration, effect of registration and term of protection
4. Layout Design protection: meaning – Procedure for registration, effect of registration and term of protection

Current policies regarding IPR: 3 hours

India`s New National IP Policy, 2016 – Govt. of India step towards promoting IPR – Govt. Schemes in IPR – Career Opportunities in IP - IPR in current scenario with case studies

References:

Text book:

1. Nithyananda, K V. (2019). *Intellectual Property Rights: Protection and Management*. India, IN: Cengage Learning India Private Limited.

2. Neeraj, P., & Khusdeep, D. (2014). *Intellectual Property Rights*. India, IN: PHI learning Private Limited.

Reference book:

1. Ahuja, V K. (2017). *Law relating to Intellectual Property Rights*. India, IN: Lexis Nexis.

E-resources:

2. Subramanian, N., & Sundararaman, M. (2018). *Intellectual Property Rights – An Overview*. Retrieved from http://www.bdu.ac.in/cells/ipr/docs/ipr-eng-ebook.pdf

3. World Intellectual Property Organisation. (2004). *WIPO Intellectual property Handbook.* Retrieved from https://www.wipo.int/edocs/pubdocs/en/intproperty/489/wipo_pub_489.pdf

Reference Journal:

1. Journal of Intellectual Property Rights (JIPR): NISCAIR

Useful Websites:

1. Cell for IPR Promotion and Management (http://cipam.gov.in/)
2. World Intellectual Property Organisation (https://www.wipo.int/about-ip/en/)
3. Office of the Controller General of Patents, Designs & Trademarks (http://www.ipindia.nic.in/)

Elective Subject 2

ADMINISTRATION, MANAGEMENT and MARKETING (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.

Course Outcomes: 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 and the community.
c. Acquire the knowledge of the basics in Managerial and Management skills, and 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.

1. Management: 5 hours
    - Management studies related to –local health care organization, Management and structure, planning delivery with quality assurance and funding of service delivery information technology career development in Physiotherapy.
2. Administration: 3 hours
    - Administration-principles-based on the Goal and functions -at large hospital set up / domiciliary services/ private clinic /academics
3. Methods of maintaining records: 2 hours
4. Budget planning: 3 hours
5. Performance analysis--physical structure / reporting system [man power / status /functions / quantity and quality of services/turn over- cost benefit revenue contribution: 3 hours
6. Setting up Therapeutic gymnasium, Fitness clinics, Cardiac and Pulmonary Rehab centers etc: 2 hours
7. Time management: 2 hours

RECOMMENDED REFERENCE BOOKS

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

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 and Respiratory Physiotherapy	80	20	100	80	20	100	---
Community Physiotherapy	80	20	100	80	20	100	---
Professional Practice and Ethics	---	---	---	---	---	---	50
Administration, Management and Marketing	---	---	---	---	---	---	50
Principles of Bioengineering	---	---	---	---	---	---	50
Research Methodology and Biostatistics	---	---	---	---	---	---	50
Total	**320**	**80**	**400**	**320**	**80**	**400**	**200**

PRAVARA INSTITUTE OF MEDICAL SCIENCES * Loni - 413736 Tal - Rahata Dist. Ahmednagar (M.S. India) * (Deemed to be University)

Registrar
Pravara Institute of Medical Sciences
(Deemed to be University)
Loni - 413736, Tal. Rahata
Dist. Ahmednagar (M.S. India)