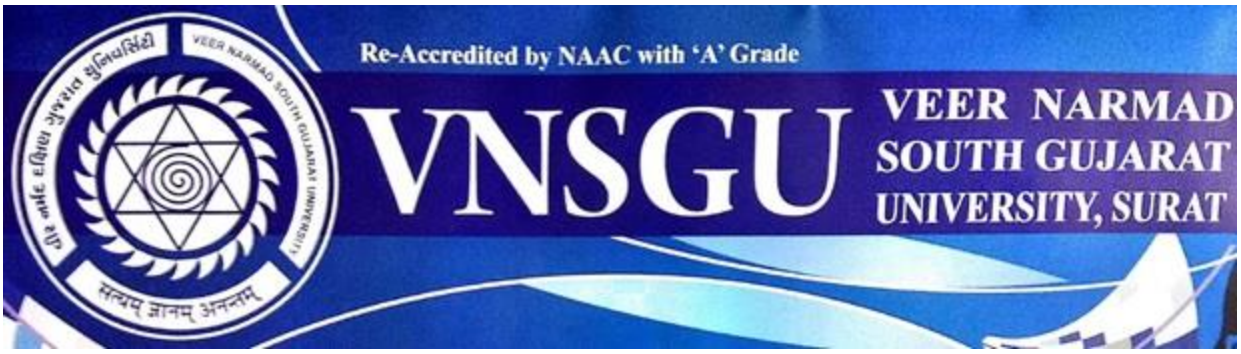

ACADEMIC REGULATIONS – BACHELOR OF PHYSIOTHERAPY (B. PT) PROGRAMME (4½ years Degree Course)

FACULTY OF MEDICINE

WITH EFFECT FROM ACADEMIC YEAR 2019-2020

BACHELOR OF PHYSIOTHERAPY – YEAR WISE SUBJECT CONTENT

First Year B. PT	Second Year B. PT	Third Year B. PT	Fourth Year B. PT
EXAM PAPERS			
Paper I: Human Anatomy	Paper I: Pathology & Microbiology	Paper I: General Medicine & Pediatrics	Paper I: Neuromuscular Physiotherapy
Paper II: Human Physiology	Paper II: Biochemistry & Pharmacology	Paper II: Surgery	Paper II: Musculoskeletal Physiotherapy
Paper III: Exercise Therapy – I & Basic Biomechanics	Paper III: Exercise Therapy – II & Exercise Physiology	Paper III: Orthopedics & Traumatology	Paper III: Cardiopulmonary Physiotherapy
Paper IV: Psychology & Sociology	Paper IV: Electrotherapy	Paper IV: Neurology, Obstetrics & Gynecology	Paper IV: Physiotherapy in Rehabilitation
Paper V: Biomedical Physics	Paper V: Kinesiology & Biomechanics	Paper V: Physical & Functional Diagnosis	Paper V: Sports Physiotherapy & Allied Therapeutics
Paper VI: English	Paper VI: Research Methodology	Paper VI: Biostatistics	Paper VI: Evidence based Physiotherapy & Ethics
NON-EXAM PAPERS			
A: Orientation to Physiotherapy	A: ENT & Dermatology conditions	A: Basics in Radiology & diagnostic procedures	A: Administration & management skills
B: First Aid	B: Basic Nursing	B: Psychiatry	B: Computer Applications

A. REGULATIONS GOVERNING BPT DEGREE COURSE:

1. These ordinances shall be called "The Ordinances, Syllabus and Scheme of Examination pertaining to the **Bachelor of Physiotherapy course, BPT."**
2. The Bachelor of Physiotherapy program shall be under the Faculty of Medicine.
3. The name of the Degree program shall be **Bachelor of Physiotherapy [BPT].**
4. This revised syllabus will be applicable from academic year 2019-20.

B. AIMS & OBJECTIVES OF BPT DEGREE COURSE:

1. AIM OF THE COURSE

The aim of the course in **"Bachelor of Physiotherapy"** is to qualify students who complete it satisfactorily to work independently as Physiotherapists, including working in interdisciplinary teams. The course must train students to plan, execute, evaluate and document physiotherapeutic work within the areas of promotion of good health, prevention of illness, treatment, habilitation, rehabilitation, and development of the profession, so that students acquire professional competence in the field of physiotherapy.

On the **Bachelor of Physiotherapy** course, acquiring professional competence means that the student must be able to:

I. Contribute to developing, supporting, maintaining and restoring people's optimal movement and functional abilities, with the aim of promoting good health and quality of life to prevent restrictions and loss of functionality in individuals.

II. Direct physiotherapeutic intervention aim is to focus on individuals and groups of all ages in interaction with their environment, leisure activities, work and taking into account ergonomic factors.

III. Work in cooperation with patients and their relatives, colleagues, and professionals from other disciplines, irrespective of their cultural and linguistic backgrounds.

IV. Initiate and participate in professionally-related research and development work.

V. Take further courses in theory and clinical practice after completing the basic education, including diploma, master's degree and special postgraduate degree courses.

Satisfactory completion of the course gives the right to use the title **Bachelor of Physiotherapy (BPT).**

2. OBJECTIVE OF THE COURSE

This course shall allow the students:

I. To acquire adequate knowledge of basic medical subjects and to develop skills and techniques of therapeutic exercises and therapeutic modalities so that they can manage various medical surgical conditions of patients.
II. To acquire knowledge so that they can point out by assessing the medical and surgical conditions of the patient.
III. To acquire skills in management, research and teaching as well as guidance and counseling of patients.
IV. To acquire proper attitude for compassion and concerns for patients and welfare of physically handicapped in the community.
V. To practice moral and ethical values with regard to physiotherapy.

3. ELIGIBILITY

3.1 Qualifying Examination:

As prescribed by the Admission Committee of Education department of Govt. of Gujarat from time to time.

3.2 Age:

A candidate seeking admission to Bachelor of Physiotherapy course should have completed 17 years of age, as on 31st December of the year of admission.

3.3 Medical Fitness Certificate:

Every candidate before admission to the course shall furnish to Principal of the Institution a certificate of Medical Fitness from an authorized Medical Officer to the effect, that the candidate is physically fit to undergo Physiotherapy course.

4. DURATION OF THE COURSE

The duration of the BPT course shall be **four and half years** including internship of six months.

5. MEDIUM OF INSTRUCTION

English shall be the medium of instruction for all the subjects of study and for the examinations of the BPT Course.

6. ATTENDANCE

A candidate is required to attend at least **80%** of the total classes conducted in a year in all subjects prescribed for that year, separately, in theory and practical / clinical to become eligible to appear for the university examination in the first attempt. Principals should notify at their college, the attendance details at the end of each academic year without fail, under intimation to the University.

No relaxation, whatsoever, will be permissible to this rule under any ground including indisposition etc. Condone of shortage of attendance rests with the discretion of Vice-Chancellor.

Filling of University examination form: Candidates desirous of appearing for University examination must forward their applications in the prescribed form to the registrar through the Principal of the Institutions on or before the date prescribed for the purpose.

7. INTERNAL ASSESSMENT

There should be a minimum of two (2) internal examinations during I, II, III and IV year. Distribution of 20 marks in internals is as follows:

a. Internal examination marks (Theory and Practical separately) – 10 marks

b. Attendance: 5 marks (3 marks for 80% to 90% and 5 marks for > 90%)

c. Seminar presentations, workshops and conferences attended, journal submission and discipline: 5 marks

The calculated internal marks must be sent to the University **twenty days** before the University examination as per notification. Proper record which forms the basis of the Internal Assessment should be maintained for all students and should be available for scrutiny. The marks of periodical tests should be displayed on the student notice board by Principals.

A Candidate must obtain a 35% mark in theory and practical separately in internal assessment to be eligible to write the university examination. Any student who fails in paper(s) of an academic year may re-appear for Internal Assessment Examination of the failed paper(s) again to improve the internal assessment marks. The fresh marks will be submitted to the university.

8. DETAILED COURSE CONTENT

FIRST YEAR B. PT

Paper No.	Subject Code	Subject title	Allotted Hours		Total Hours of study	No. of Hours / Week
			Theory	Practical		
I	PT0101	Human Anatomy*	150	100	250	7-8
II	PT0102	Human Physiology*	150	50	200	6-7
III	PT0103	Exercise Therapy – I & Basic Biomechanics	100	100	200	6-7
IV	PT0104	Psychology & Sociology	40+40	***	80	2-3
V	PT0105	Biomedical Physics	80	***	80	2-3
VI	PT0106	English	40	***	40	1-2
Non-Exam Papers						
A.	PTs0107	Orientation to Physiotherapy	30	***	30	1-2
B.	PTs0108	First Aid	40	***	40	1-2

* These medical subjects should be taken by respective medical faculty

SECOND YEAR B. PT

Paper No.	Subject Code	Subject title	Allotted Hours		Total Hours of study	No. of Hours / Week
			Theory	Practical		
I	PT0201	Pathology & Microbiology*	40+40	***	80	2-3
II	PT0202	Biochemistry & Pharmacology*	40+40	***	80	2-3
III	PT0203	Exercise Therapy – II & Exercise Physiology	100	150	250	7-8
IV	PT0204	Electrotherapy	100	150	250	7-8
V	PT0205	Kinesiology & Biomechanics	150	***	150	6-7
VI	PT0206	Research Methodology	50	***	50	2-3
Non-Exam Papers						
A.	PTs0207	ENT & Dermatology conditions	30	***	30	1-2
B.	PTs0208	Basic Nursing	30	***	30	1-2

* These medical subjects should be taken by respective medical faculty

THIRD YEAR B. PT

Paper No.	Subject Code	Subject title	Allotted Hours		Total Hours of study	No. of Hours / Week
			Theory	Practical		
I	PT0301	General Medicine & Pediatrics*	50+30	***	80	2-3
II	PT0302	Surgery*	80	***	80	2-3
III	PT0303	Orthopedics & Traumatology*	80	***	80	2-3
IV	PT0304	Neurology, Obstetrics & Gynecology*	50+30	***	80	2-3
V	PT0305	Physical & Functional Diagnosis	100	100	200	6-7
VI	PT0306	Biostatistics	50	***	50	2-3
		Non-Exam Papers				
A.	PTs0307	Basics in Radiology & diagnostic procedures	40	***	40	1-2
B.	PTs0308	Psychiatry	40	***	40	1-2

* These medical subjects should be taken by respective medical faculty

FOURTH YEAR B. PT

Paper No.	Subject Code	Subject title	Allotted Hours		Total Hours of study	No. of Hours / Week
			Theory	Practical		
I	PT0401	Neuromuscular Physiotherapy	80	70	150	6-7
II	PT0402	Musculoskeletal Physiotherapy	80	70	150	6-7
III	PT0403	Cardiopulmonary Physiotherapy	80	70	150	6-7
IV	PT0404	Physiotherapy in Rehabilitation	80	70	150	6-7
V	PT0405	Sports Physiotherapy & Allied Therapeutics	80	70	150	6-7
VI	PT0406	Evidence based Physiotherapy & Ethics	60	***	60	5-6
		Non-Exam papers				
A.	PTs0407	Administration & management skills	20	***	20	1-2
B.	PTs0408	Computer Applications	20	***	20	1-2

* These medical subjects should be taken by respective medical faculty

INTERNSHIP

S. No	Description	Course Hours / Week	Total (Approx.)
1.	Internship	46-48	1100
2.	Research	6-7	180
Total			1280

9. SCHEDULE OF EXAMINATION

Colleges will be conducting one internal examination and one preliminary examination and the internally assessed and calculated marks (as specified in clause 7) to be sent to the university at least 15 days before the commencement of the final university examinations in the format prescribed by the University.

The final university examinations will be held at the end of the respective years of study. The dates of examinations will be notified by the university from time to time.

10. CRITERIA FOR PASSING

10.1 Regular University Examination

Students are declared to have passed University examination in a subject, if they secure 50% of the marks in theory and 50% in practical separately. For computation of 50% marks in theory and practical, the marks scored in the internal assessment (theory and practical) shall be added to the University conducted written and practical examination. It is **not** compulsory to pass in section – I and section – II separately.

10.2 Promotion Criteria / Carry over system:

i. It is not mandatory to pass in 1st year B.P.T Examination to proceed to 2nd year B.P.T class. However, it is mandatory to pass in all subjects of 1st year B.P.T examination to be conducted in the month of February, to be eligible to appear for regular 2nd year B.P.T University examination.

ii. It is not mandatory to pass in 2nd year B.P.T Examination to proceed to 3rd year B.P.T class. (Students can be allowed to attend classes in 3rd B.P.T only if he/she has passed 1st B.P.T University exam.) However, it is mandatory to pass in all subjects of 2nd year B.P.T examination to be conducted in the month of February, to be eligible to appear for 3rd year B.P.T University examination.

iii. It is not mandatory to pass in 3rd year B.P.T Examination to proceed to 4th year B.P.T class. (Students can be allowed to attend classes in 4th B.P.T only if he/she has passed 2nd B.P.T University exam.) However, it is mandatory to pass in all subjects of 3rd year B.P.T examination to be eligible to appear for 4th year B.P.T University examination.

iv. A candidate cannot be declared to have passed the examination until he/she has passed in all the subjects in that particular examination.

11. SCHEME OF EXAMINATIONS

FIRST YEAR B. PT

Paper No.	Subject Code	Subject title	Duration of theory exam	Mark Distribution				
				Theory		Practical		Total Marks
				External	Internal	External	Internal	
I	PT0101	Human Anatomy	3 Hours	80	20	80	20	200
II	PT0102	Human Physiology	3 Hours	80	20	80	20	200
III	PT0103	Exercise Therapy – I & Basic Biomechanics	3 Hours	80	20	80	20	200
IV	PT0104	Psychology & Sociology	3 Hours	80 (40+40)	20	****	****	100
V	PT0105	Biomedical Physics	3 Hours	80	20	****	****	100
VI	PT0106	English	2 Hours	40	10	****	****	50

SECOND YEAR B. PT

Paper No.	Subject Code	Subject title	Duration of theory exam	Mark Distribution				Max. Marks
				Theory		Practical		
				External	Internal	External	Internal	
I	PT0201	Pathology & Microbiology	3 Hours	80 (40+40)	20	****	****	100
II	PT0202	Biochemistry & Pharmacology	3 Hours	80 (40+40)	20	****	****	100
III	PT0203	Exercise Therapy – II & Exercise Physiology	3 Hours	80	20	80	20	200
IV	PT0204	Electrotherapy	3 Hours	80	20	80	20	200
V	PT0205	Kinesiology & Biomechanics	3 Hours	80	20	****	****	100
VI	PT0206	Research Methodology	2 Hours	40	10	****	****	50

THIRD YEAR B. PT

Paper No.	Subject Code	Subject title	Duration of theory exam	Mark Distribution				Max. Marks
				Theory		Practical		
				External	Internal	External	Internal	
I	PT0301	General Medicine & Pediatrics	3 Hours	80 (50+30)	20	****	****	100
II	PT0302	Surgery	3 Hours	80	20	****	****	100
III	PT0303	Orthopedics & Traumatology	3 Hours	80	20	****	****	100
IV	PT0304	Neurology, Obstetrics & Gynecology	3 Hours	80 (50+30)	20	****	****	100
V	PT0305	Physical & Functional Diagnosis	3 Hours	80	20	80	20	200
VI	PT0306	Biostatistics	2 Hours	40	10	****	****	50

FOURTH YEAR B. PT

Paper No.	Subject Code	Subject title	Duration of theory exam	Mark Distribution				Max. Marks
				Theory		Practical		
				External	Internal	External	Internal	
I	PT0401	Neuromuscular Physiotherapy	3 Hours	80	20	80	20	200
II	PT0402	Musculoskeletal Physiotherapy	3 Hours	80	20	80	20	200
III	PT0403	Cardiopulmonary Physiotherapy	3 Hours	80	20	80	20	200
IV	PT0404	Physiotherapy in Rehabilitation	3 Hours	80	20	80	20	200
V	PT0405	Sports Physiotherapy & Allied Therapeutics	3 Hours	80	20	80	20	200
VI	PT0406	Evidence based Physiotherapy & Ethics	2 Hours	40	10	****	****	50

12. EXAMINERS

There shall be two (2) examiners for practical subjects; external examiner from outside the university and internal examiner from the same university.

(a) It is mandatory for the staffs involved in examination duty (Paper setting, paper evaluation and practical) in Physiotherapy subjects, to have a Master degree in Physiotherapy with a minimum of 3 years of experience and designation of Assistant Professor and above from an UGC recognized institution/University.

(b) All examiners should compulsorily fulfill the norms and standards as specified by UGC Regulations on Minimum Qualification for Appointment of Teachers and other academic staff in Universities and Colleges and other measures for the maintenance of standards in Higher Education, July 2018

Note: Number of students examined per day per examiner should not exceed 50. In case of increase in number of students, more pair of internal and external examiners should be included to conduct practical and to evaluate theory papers.

13. GRACE MARKS

If a student fails in a subject (theory or practical) in the annual University examination, a total of 10 grace marks will be given to the student by the University before the declaration of result irrespective of the number of heads under which the student has failed.

14. DECLARATION OF CLASS

First Class with Distinction – 75% and above marks in any subject in first attempt
First Class – 60% - 74% marks in aggregate in first attempt
Second Class – 50% - 59% marks in aggregate in first attempt
Pass class – passed in more than 1 attempt irrespective of the % of marks secured

15. EXEMPTION FROM RE-EXAMINATION

Candidates who have failed in the examination, but obtained pass marks in any subjects shall be exempted from re-examination in those subjects. Candidates who have failed in theory &/or practical in any subject, will have to appear in theory & practical both again for that particular subject.

16. INTERNSHIP PROGRAM

a. There shall be six months of Internship after the final year examination for students, declared to have passed the examination in all the subjects.
b. During the internship students shall have to work full time, average 7 hours per day, for 6 Calendar months.
c. The Internship should be rotatory and cover clinical branches concerned with Physiotherapy such as Neurology, Neurosurgery, Orthopaedics, Cardiothoracic including ICU, Sports, Paediatrics, General Medicine, General Surgery, Obstetrics and Gynaecology, both inpatient and outpatient services.
d. Internship completion certificates will be issued only after submission of the research project.
e. An internee shall be entitled for maximum 6 days leave during six months period of internship posting. An internee will not be permitted to avail more than 2 days leave in any department. Period of leave in excess of 2 days in a department will have to be extended in the same department. Under any circumstances this period will not be condoned by any authority. However, if any student wants to attend any state/national/international conference, workshop or seminar, then maximally 3 days study leave can be granted to the students with production of the proper documents or certificate. It should not be more than 3 days in any conditions.
f. If any students discontinue the compulsory rotatory internship more than 50% of internship duration, official permission under the preview of the Vice Chancellor of University is mandatory.
g. In case of any exigencies during which the students remain absent for a period more than 6 days, he/she will have to work for the extra days during which the students have remained absent.
h. Based on the attendance and work done during posting the Head of institution/department shall issue '**Certificate of Satisfactory completion**' of training following which the University shall award the Bachelor of Physiotherapy Degree or declare the students eligible for the same.

No student shall be awarded degree without successfully completing six-month internship.

Head of the institution (of colleges not having their own hospital) can at his/her discretion grant NOC to the students to do the Internship at the place of their choice provided the concerned Hospital has its own Physiotherapy clinic fully furnished with all the necessary equipment as per the curriculum of the Program. For the purpose of granting NOC the candidate shall have to submit to the Institution the status of Physiotherapy services available at the place where they intend to do their Internship.

It is mandatory for Internee to obtain NOC from the concerned Hospital/Institute prior to applying NOC from the head of Institute.

It is mandatory for interns to undertake a research project during internship period. Head of the institutions should appoint appropriately qualified guides to guide interns in their research project. Duly approved and completed research projects should be submitted to the college before completion of the internship period.

Internship completion certificates will be issued only after submission of the research project.

TRANSCRIPT

Paper No.	Subject Title	Total hours
First Year B. PT		
Papers for University Examination		
I	**Human Anatomy**	**250**
II	**Human Physiology**	**200**
III	**Exercise Therapy – I**	**200**
IV	**Psychology & Sociology**	**80**
V	**Biomedical Physics**	**80**
VI	**English**	**40**
Non-Exam Papers		
A.	**Orientation to Physiotherapy**	**30**
B.	**First Aid & CPR**	**40**
	Clinical Observation	**140**
	Extra-curricular Activities (Conferences, Educational Tours, Sports and Cultural Activities)	**100**
Total Hours in First Year		**1160**
Second Year B. PT		
Papers for University Examination		
I	**Pathology & Microbiology**	**80**
II	**Biochemistry & Pharmacology**	**80**
III	**Exercise Therapy – II & Exercise Physiology**	**250**
IV	**Electrotherapy**	**250**
V	**Kinesiology & Biomechanics**	**150**
VI	**Research Methodology**	**50**
Non-Exam Papers		
A.	**ENT & Dermatology**	**30**
B.	**Basic Nursing**	**30**
	Supervised Clinical Observation	**140**
	Extra-curricular Activities (Conferences, Seminars, Educational Tours, Sports and Cultural Activities)	**100**
Total Hours in Second Year		**1160**
Third Year B. PT		
Papers for University Examination		
I	**General Medicine & Pediatrics**	**80**
II	**General Surgery, Neurosurgery & Cardiothoracic Surgery**	**80**
III	**Orthopedics & Traumatology**	**80**
IV	**Neurology, Obstetrics & Gynecology**	**80**

V	**Physical & Functional Diagnosis**	**200**
VI	**Biostatistics**	**50**
Non-Exam Papers		
A.	**Basics in Radiology & diagnostic procedures**	**40**
B.	**Psychiatry**	**40**
	Supervised Clinical Training	**450**
	Extra-curricular Activities (Conferences, Seminars, Workshops, Educational Tours, Sports and Cultural Activities)	**100**
Total Hours in Third Year		**1200**
Fourth Year B. PT		
Papers for University Examination		
I	**Neuromuscular Physiotherapy**	**150**
II	**Musculoskeletal Physiotherapy**	**150**
III	**Cardiopulmonary Physiotherapy**	**150**
IV	**Physiotherapy in Rehabilitation**	**150**
V	**Sports Physiotherapy & Allied Therapeutics**	**150**
VI	**Evidence based Physiotherapy & Ethics**	**60**
Non-Exam Papers		
A.	**Administration & management skills**	**20**
B.	**Computer Applications**	**20**
	Supervised Clinical Training	**450**
	Extra-curricular Activities (Conferences, Seminars, Workshops, Educational Tours, Sports and Cultural Activities)	**100**
Total Hours in Fourth Year		**1400**
Internship Program including Research work		
I	**Internship**	**1100**
II	**Research Work**	**180**
Total Hours in Internship		**1280**
Total Transcript Hours		**6200**

DETAILED SYLLABUS

&

COURSE CONTENT


FIRST YEAR BPT

Paper I: HUMAN ANATOMY

Subject Code: PT0101 Theory: 150 Hours Practical: 100 Hours

Method of Assessment: Written, Practical and Oral

Course Description: It is designed to provide students with the working knowledge of the structure of the human body which is essential foundation for their clinical studies. Studies are concerned with the topographical and functional anatomy of the limbs and thorax. Particular attention is paid to the muscles, bones and joints of the regions. The abdomen, pelvis, perineum, head and neck and central nervous system (CNS) are studied with particular reference to topics of importance to physiotherapists. The study of the CNS includes detailed consideration of the control of motor function.

S. No	Description of topics	Hours
Basic Structure – Not for Exam		
1.	**HISTOLOGY**	**5**
1.1	General Histology & basic tissues of body	
1.2	Cell, Epithelium, Connective tissues, Cartilage, bone, muscular tissues, Nervous tissue, lymphoid tissue, skin & appendages	
2.	**EMBRYOLOGY**	**4**
2.1	Ovum, Spermatozoa, Fertilization and formation of germ layers	
2.2	Development of skin, fascia, blood vessels and lymphatics	
2.3	Development of bones and muscles	
2.4	Development of neural tubes and spinal cord	
2.5	Development of brain and its structures	
Detailed structural anatomy		
1.	**MUSCULOSKELETAL ANATOMY – GENERAL**	**10**
1.1	Anatomical terminologies, Positions, planes and axes	
1.2	Osteology - Bone composition, functions, Classification, surface landmarks	
1.3	Arthrology - Joint Classification, structure, movements, blood supply and nervous supply	
1.4	Myology – Types of muscles and its functions	
2.	**MUSCULOSKELETAL ANATOMY – REGIONAL**	
2.1	***Upper Extremity***	**25**
2.1.1	Osteology: Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals and Phalanges	
2.1.2	Arthrology: Shoulder complex, Elbow joint, Radioulnar joint, Wrist Joint, Carpometacarpal joints, Metacarpophalangeal joints, intercarpal joints and phalangeal joints	
2.1.3	Myology: Origin, insertion, nerve supply and action of muscles that	

	move the shoulder, elbow, wrist and hand joints along with scapular muscles	
2.1.4	Structural anatomy of pectoral region, axilla, cubital fossa, palm, arches of the hand, blood vessels of arm, forearm and hand, lymphatic drainage of upper extremity	
2.2	***Lower Extremity***	**25**
2.2.1	Osteology: Pelvic bones, femur, Patella, Tibia, Fibula, Tarsals, Metatarsals and Phalanges	
2.2.2	Arthrology: Hip complex, knee complex, ankle joint, tibiofibular joints, intertarsal joints, metatarsophalangeal joints and phalangeal joints	
2.2.3	Myology: Origin, insertion, nerve supply and action of muscles that move the hip, knee, ankle and foot joints, pelvic floor muscles	
2.2.4	Structural anatomy of pelvic region, femoral triangle, inguinal region, popliteal fossa, foot, arches of foot, blood vessels of foot, lymphatic drainage of lower extremity	
2.3	***Trunk & Spine***	**20**
2.3.1	Osteology: Cervical, Thoracic, Lumbar, Sacral and coccygeal vertebrae, Ribs and sternum	
2.3.2	Arthrology: Intervertebral joints, joints of thoracic cage	
2.3.3	Myology: Origin, insertion, nerve supply and action of muscles that move the spinal column and thoracic region	
2.3.4	Structural anatomy of intervertebral disc	
2.4	***Head & Neck***	**10**
2.4.1	Osteology: Bones of the skull, facial bones and Mandible	
2.4.2	Arthrology: Joints of the skull and facial bones	
2.4.3	Myology: Origin, insertion, nerve supply and action of muscles of the face and neck	
2.4.4	Structural anatomy of the triangles of neck	
3.	**NEURO ANATOMY**	**25**
3.1	Classification of Nervous system	
3.2	Nerve structure and classification	
3.3	Neuron structure and classification	
3.4	Parts of spinal nerve	
3.5	Simple reflex arc	
3.6	Central Nervous system	
3.6.1	Parts of CNS	
3.6.2	Brain – Anatomy and blood supply of Cerebrum, Cerebellum, mid brain and brainstem, medulla oblongata, Pyramidal and extrapyramidal system, Thalamus and Hypothalamus	
3.6.3	Structural anatomy of meninges	
3.6.4	Structural anatomy of ventricles (Brief) and CSF circulation	

3.6.5	Spinal Cord – Anatomy, blood supply and pathways	
3.7	Cranial nerves – Course, function and testing	
3.8	Sympathetic and parasympathetic system	
3.9	Peripheral nervous system	
4.	**CARDIOVASCULAR ANATOMY**	**6**
4.1	Structural anatomy of veins, arteries and capillaries	
4.2	Heart – internal and external features, blood supply	
4.3	Conductive system of heart	
4.4	Lymphatic circulation, lymph nodes	
5.	**RESPIRATORY ANATOMY**	**6**
5.1	Structural anatomy of upper and lower respiratory tracts	
5.1.1	Nasal air passages, Trachea, Lungs, pleura, bronchial tree, bronchopulmonary segments	
5.1.2	Diaphragm – Origin, insertion, nerve supply, action	
5.2	Mechanism of respiration	
5.3	Accessory muscles of respiration	
6.	**ANATOMY OF DIGESTIVE ORGANS**	**3**
6.1	Components of the digestive system	
6.2	Divisions of the Abdominal cavity, Surface anatomy	
6.3	Muscles of abdominal wall	
6.4	Digestive organs (Brief)	
7.	**ANATOMY OF ENDOCRINE SYSTEM**	**6**
7.1	Structural anatomy of endocrine glands	
8.	**URINARY AND REPRODUCTIVE ANATOMY**	**5**
8.1	Structural anatomy of urinary system and organs	
8.2	Structural anatomy of genital system of male and female	

Recommended Books:

1. Human Anatomy - B.D. Chaurasia
2. Textbook of Anatomy - Inderbir Singh
3. Handbook of Osteology - Poddar
4. Neuroanatomy – Vishram Singh
5. Principles of Anatomy and Physiology – Tortora
6. Cunningham’s Manual of Practical Anatomy
7. Anatomy and Physiology – Smout & McDowell
8. Gray’s Anatomy
9. Clinical Anatomy for Medical Students - Richard Snell

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

PRACTICAL (100 Hours)

- ✓ Identification of dissected parts of Upper extremity, lower extremity, thoracic, abdominal viscera and brain including muscles and nerves **(60 Hours)**
- ✓ Identification of bones and joints – articulated and disarticulated **(20 Hours)**
- ✓ Demonstrate and practice of Surface Anatomy of bones, ligaments, muscles, nerves of body **(20 Hours)**

PRACTICAL EXAM FORMAT

1. Spots **(10 x 3 = 30 marks)**
    a. 10 spots based on
        i. Bones
        ii. Organs – Only Brain, Heart, Kidney and Lungs

2. Journal of Anatomy **(5 marks)**
3. Viva on structural anatomy of bones, muscles, nerves and organs (Only Brain, Heart, Kidney and Lungs**) (45 marks)**

Paper II: HUMAN PHYSIOLOGY

Subject Code: PT0102 Theory: 150 Hours Practical: 50 Hours

Method of Assessment: Written, Practical and Oral

Course Description: At the end of the course the student will be able to explain the normal functioning of all the organ systems and their interaction for well co-ordinated total body functions with special reference to musculoskeletal, nervous, cardio-respiratory, female urogenital system and alteration in functions of organs due to aging, analyze physiological responses & adaptation to environmental stresses with special emphasis on physical activity and temperature. Acquire the skill of basic clinical examination with special emphasis to peripheral and central nervous system, cardio-vascular and respiratory system, exercise tolerance.

S. No	Description of topics	Hours
	Basic Structure – Not for Exam	
1.	**GENERAL PHYSIOLOGY**	**5**
1.1	Cell, Organelles – Structure and Function	
1.2	Structure of cell membrane	
1.3	Transport mechanisms across cell membrane	
1.4	Body fluids – Composition	
1.	**BLOOD**	**10**
1.1	Composition and functions	
1.2	Plasma - composition and functions	
1.3	Plasma proteins – Types and functions	
1.4	RBC, WBC, Platelets – Structure, formation and functions	
1.5	Lymph-Composition, Circulation and functions	
1.6	Hemoglobin – Structure and functions	
1.7	Anemia – Types	
1.8	Hemostasis, blood coagulation mechanisms, disorders in coagulation	
1.9	Bleeding time, clotting time, ESR and blood indices	
1.10	Blood grouping, Rh Factor – Types and Significance	
2.	**CARDIOVASCULAR SYSTEM**	**20**
2.1	Structure and functions of arteries, arterioles, capillaries and veins	
2.2	Structure, properties and function of heart, heart valves, blood and nerve supply of heart	
2.3	Conducting system of the heart	
2.4	Cardiac Cycle – Description of phases	
2.5	Heart sounds – Types, characteristics and identification	
2.6	Cardiac output, Stroke Volume, Heart Rate, Blood pressure, Peripheral vascular resistance– Definitions, normal values, regulations and variations	
2.7	Basic understanding of Electrocardiography	

3.	**RESPIRATORY SYSTEM**	**20**
3.1	Structure and functions of upper and lower Respiratory tracts including nasal passages, trachea, bronchi, bronchioles and alveoli	
3.2	Primary and accessory muscles of respiration	
3.3	Neural and chemical regulation of respiration	
3.4	Mechanism of respiration	
3.5	Gaseous exchange in respiration	
3.6	Pulmonary function tests, Spirometry, lung volumes and capacities	
3.7	Anatomical and Physiologic dead space	
3.8	Pulmonary circulation	
3.9	Hypoxia, Asphyxia, Cyanosis – Description and types	
3.10	Artificial Respiration	
4.	**NERVE AND MUSCLE PHYSIOLOGY**	**20**
4.1	Nerves - Structure and function, classification, properties	
4.1.1	Neurophysiology of nerve injuries and classification of nerve injuries	
4.2	Muscle – Classification, Structure and properties	
4.2.1	Contractile mechanism of muscles, excitation – coupling reactions	
4.2.2	Motor Unit, neuromuscular junction, muscle tone, Fatigue	
5.	**DIGESTIVE SYSTEM**	**10**
5.1	Digestive Organs - Structure and function of stomach, pancreas, liver, gall bladder and intestine	
5.2	Salivary secretions and gastric juices – Functions and regulation	
5.3	Mastication and swallowing – Stages and mechanism	
5.4	Digestion and absorption of nutrients	
6.	**EXCRETORY SYSTEM**	**15**
6.1	Excretory organs - Structure and function of kidneys, nephrons and Juxta medullary apparatus	
6.2	Renal blood flow and regulation	
6.3	Formation of Urine, Glomerular Filtration Rate (GFR)	
6.4	Regulation of water excretion from body	
6.5	Structure and function of urinary bladder	
6.5.1	Types of bladder in pathological conditions	
6.6	Mechanism of defecation	
6.7	Skin and temperature regulation	
7.	**SPECIAL SENSES**	**5**
7.1	Vision – Structure and functions of eye ball and its components	
7.1.1	Visual Pathways, visual reflexes, adaptation to light and dark	
7.1.2	Pathology of vision	
7.2	Hearing - Structure and function of external, middle and inner ear	
7.2.1	Auditory pathway and testing of hearing	
7.2.2	Pathology of hearing	
7.3	Taste - Structure and function of tongue	

7.3.1	Gustatory pathway and testing for taste	
7.3.2	Pathology of taste	
7.4	Smell - Structure and function of nose	
7.4.1	Olfactory pathway and testing of olfaction	
7.4.2	Pathology of olfaction	
7.5	Touch - Structure and function of skin	
7.5.1	Sensory pathway, superficial reflexes, types of sensation	
7.5.2	Sensory affection in pathological conditions	
8.	**ENDOCRINE SYSTEM**	**15**
8.1	Physiology and classification of Endocrine glands and hormones	
8.2	Functions, classification and regulation of secretion of hormones – Pituitary, Thyroid, Parathyroid, Adrenal, Gonads and Pancreas	
9.	**NERVOUS SYSTEM**	**25**
9.1	Physiology and classification of nervous system	
9.2	Structure and function of Brain	
9.2.1	Structure and function of Cerebral cortex, Sensory and motor Homunculus	
9.2.2	Structure and function of Corpus Callosum	
9.2.3	Structure and function of Basal Ganglia	
9.2.4	Structure and function of Thalamus and Hypothalamus	
9.2.5	Structure and function of Brain Stem – Pons, Midbrain and Medulla Oblongata	
9.2.6	Structure and function of Cerebellum	
9.2.7	Structure and function of Limbic system	
9.3	Structure and function of Spinal Cord	
9.3.1	Spinal nerves, Reflex arc and monosynaptic reflexes	
9.4	Structure and functions of Peripheral nerve	
9.5	Ascending and descending pathways	
9.6	Structure and functions of ventricles	
9.6.1	Cerebrospinal Fluid – Formation, composition, circulation and functions	
9.7	Upper and lower motor neurons - Functional significance	
9.8	Structure and function of Cranial nerves and their examination	
9.9	Postural and Equilibrium mechanisms	
9.10	Autonomic nervous system – Functions	
9.11	Neurophysiology of Pain – Pain pathways, Gate control theory of pain and pain modulation	
10.	**REPRODUCTIVE SYSTEM**	**5**
10.1	Male - Functions of testes, pubertal changes in males, testosterone - action and regulations of secretion	
10.2	Female - Functions of ovaries and uterus, pubertal changes, menstrual cycle, estrogens and progesterone - action and regulation	

Recommended Books:

1. Human Physiology - Chatterjee
2. Concise Medical Physiology - Chaudhuri
3. Human Physiology - Sembulingam
4. A Textbook of Practical Physiology - Ghai C L
5. Practical physiology - Vijaya Joshi
6. Samson and Wright's Applied Physiology
7. Textbook of Medical Physiology - Guyton & Hall
8. Principles of Anatomy & Physiology - Tortora

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

PRACTICAL (50 Hrs)

- ✓ Demonstration of RBC, WBC, Platelet count, ESR, Bleeding and clotting time, Hemoglobin estimation and blood grouping **(10 Hrs)**
- ✓ Identification of graphs displaying properties of muscles, lung volumes and capacities and ECG wave forms **(5 Hrs)**
- ✓ Practical application of clinical examination of Health-related Physical Fitness – Cardiovascular endurance, Muscular Endurance, Muscular strength, Flexibility and Body composition **(10 Hrs)**
- ✓ Practical application of clinical examination of Blood Pressure measurement – Palpatory and auscultatory methods **(5 Hrs)**
- ✓ Practical application of clinical examination of Auscultation of Heart sounds and Breath sounds **(5 Hrs)**
- ✓ Demonstration of Spirometry – Recording of lung volumes and capacities **(2 Hrs)**
- ✓ Practical application of clinical examination of heart rate, respiratory rate, superficial, deep and cortical reflexes **(5 Hrs)**
- ✓ Practical application of clinical examination of cranial nerves **(8 Hrs)**

PRACTICAL EXAM FORMAT

1. Spots **(10 x 3 = 30 marks)**
    a. 10 spots based on
        i. Graphs – Muscle properties, ECG, Lung volumes and capacities
        ii. Tools used for assessment of physical fitness
        iii. Stethoscope and its parts
        iv. Sphygmomanometer and its parts
        v. Spirometer
2. Journal of Physiology **(5 marks)**
3. Viva on structure and functions of various systems of the body covered in the syllabus **(45 marks)**

Paper III: EXERCISE THERAPY – I AND BASIC BIOMECHANICS

Subject Code: PT0103 Theory: 100 Hrs Practical: 100 Hrs

Method of Assessment: Written, Practical and Oral

Course Description: In this course, the students will learn the basic principles and effects of exercise as a therapeutic modality and will learn the techniques in the restoration of physical functions and basic biomechanics involves the study of basic concepts of human movements.

S. No	Description of topics	Hours
1.	**INTRODUCTION TO EXERCISE AND EXERCISE THERAPY**	**4**
1.1	Significance of assessment in prescribing exercise	
1.2	Physiological effects and uses of exercise	
1.3	Planning treatment through exercise	
2.	**BASIC BIOMECHANICS**	**5**
2.1	Terminologies related to movements – Axis, Planes, Kinetics, Kinematics, types of muscle contraction and work, Closed and Open chain activities, shunt and spurt muscles, Angle of pull	
3.	**SIMPLE MACHINES**	**4**
3.1	Definition, properties, types and uses of Levers, pulley and springs	
3.2	Mechanical Advantage	
4.	**THERAPEUTIC GYMNASIUM**	**6**
4.1	Tools and equipment used in exercise therapy-Uses and application	
5.	**STARTING POSITIONS**	**5**
5.1	Fundamental and derived starting positions	
5.2	Effects, uses and muscle work	
6.	**MOVEMENTS CLASSIFICATION**	**15**
6.1	Active movements	
6.1.1	Free exercises – Principles, techniques of application, indications, contraindications, effects and uses	
6.1.2	Active Assisted exercise - Principles, Classification, techniques of application, indications, contraindications, effects and uses	
6.1.3	Resisted exercise (in general and brief) - Principles, Classification, techniques of application, indications, contraindications, effects and uses	
6.2	Passive movements - Principles, Classification, techniques of application, indications, contraindications, effects and uses	
6.3	End feel – definition, types of normal and abnormal end feel	
7.	**GONIOMETRY**	**10**
7.1	Causes for restriction of range of motion	
7.2	Definition – goniometry, Active range of motion, passive range of	

	motion	
7.3	Types of goniometer, uses	
7.4	Principles, techniques of application, indications, contra indications, limitations of goniometry for joints of upper limb and lower limb	
7.5	Tools used to measure range of motion of spine, Principles, techniques of application, indications, contra indications, limitations of goniometry for spine	
7.6	Normal range of motion of upper limb, lower limb joints and spine	
7.7	Trick movements – Definition, types and its significance in exercise	
8.	**SUSPENSION THERAPY**	**6**
8.1	Definition, types, principles of application, therapeutic effects and uses, indications and contra indications	
9.	**BREATHING EXERCISES**	**6**
9.1	Patterns of breathing, types of breathing exercises - Techniques and principles of application, therapeutic effects and uses, indications and contra indications	
10.	**LIMB LENGTH MEASUREMENTS – TYPES, TECHNIQUES OF MEASURING**	**5**
11.	**GIRTH MEASUREMENTS**	**5**
12.	**AMBULATORY DEVICES AND WALKING AIDS**	**8**
12.1	Crutches – Types, measurement methods, uses	
12.2	Application of 2 point, 3 point and 4 point gait patterns	
13.	**SOFT TISSUE MOBILIZATION (MASSAGE)**	**15**
13.1	Definition, classification of massage	
13.2	Principles of application, Physiological effects and therapeutic uses, indications and contra indications of different types of massage techniques	
13.3	Massage for upper limb, neck, face, chest, back, and lower limb	
14.	**GROUP EXERCISE AND HOME EXERCISE**	**6**

Recommended Books:

1. Principles of Exercise Therapy - Dena Gardiner.
2. Practical Exercise Therapy - Margaret Hollis.
3. Therapeutic Exercise - Kisner & Colby
4. Principles and Practices of Therapeutic Massage - Sinha A G
5. Measurement of Joint Motion – a guide to Goniometry - Cynthia Norkins
6. Therapeutic exercise - Hall & Brody

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

PRACTICAL (100 Hours)

Practical skillful application of techniques of

- ✓ Observation of muscle work of various positions
- ✓ Active assisted movements, Passive movements, Resisted exercises
- ✓ Goniometry
- ✓ Suspension exercises
- ✓ Breathing exercises
- ✓ Limb length measurements
- ✓ Girth measurements
- ✓ Soft tissue mobilization

PRACTICAL EXAM FORMAT

1. Spots **(10 x 3 = 30 marks)**
    a. Based on therapeutic Gymnasium
2. Demonstration of techniques of application of any two of the following: **(30 marks)**
    a. Free Exercise
    b. Active/Active-Assisted/Resisted Exercise
    c. Passive movements of limbs
    d. Goniometry of joints of limbs
    e. Suspension therapy
    f. Breathing exercises
    g. Limb length measurements
    h. Girth measurements
    i. Soft tissue mobilization
3. Viva on basic biomechanics, principles, indications and contra indications of various techniques covered in the syllabus **(15 marks)**
4. Journal of Exercise Therapy **(5 marks)**

PAPER IV: SECTION – I PSYCHOLOGY

Subject Code: PT0104A **Theory: 40 Hours**

Method of Assessment: Written

Course description: Human Psychology involves the study of various behavioral patterns of individuals, theories of development, normal and abnormal aspects of motor, social, emotional and language development, communication and interaction skills appropriate to various age groups. Sociology will introduce student to the basic sociology concepts, principles and social process, social institutions (in relation to the individual, family and community) and the various social factors affecting the family in rural and urban communities in India will be studied. The study of these subjects will help the student to understand their clients while assessment and while planning appropriate treatment methods.

S. No	Description of topics	Hours
1.	**INTRODUCTION TO PSYCHOLOGY**	**4**
1.1	Definition, Branches and methods	
1.2	Role of Psychology in Physiotherapy	
1.3	Influence of heredity and environment on individual – Nature Vs Nurture	
1.4	Development and growth of behavior in infancy and childhood, adolescence, adulthood and old age, normal and abnormal	
2.	**MOTIVATION**	**3**
2.1	Definition and types	
2.2	Motivation cycle	
2.3	Theories of motivation	
3.	**ATTENTION AND PERCEPTION**	**3**
3.1	Types of attention, Factors determining attention	
3.2	Principles of perceptual grouping	
3.3	Errors or abnormalities in perception – Illusions and Hallucinations	
4.	**PERSONALITY**	**3**
4.1	Definition, types and theories of personality	
4.2	Factors influencing personality	
4.3	Assessment of Personality and personality disorders	
5.	**LEARNING**	**5**
5.1	Theories of learning – Trial and error, Classical and Operant conditioning	
5.2	Learning disabilities	
6.	**ATTITUDE AND BEHAVIOR MODIFICATION**	**3**
6.1	Definition and theories of attitude and behavior	

6.2	Methods and therapies for behavioral modification	
6.3	Factors affecting attitude and behavior	
7.	**MEMORY**	**3**
7.1	Types and Theories	
7.2	Methods to improve memory	
8.	**THINKING**	**3**
8.1	Types and Process of thinking	
8.2	Problem solving, decision making and creative thinking	
9.	**EMOTION**	**3**
9.1	Theories of emotion and stress	
9.2	Physiological and psychological changes to stress	
9.3	Stress management	
10.	**FRUSTRATION AND CONFLICT**	**2**
10.1	Types of frustration and conflict	
10.2	Defense mechanism – Denial, Identification, regression, repression, projection, sublimation and rationalization	
11.	**INTELLIGENCE**	**2**
11.1	Theories of intelligence	
11.2	Intelligence tests and their uses	
12.	**COMMUNICATION**	**4**
12.1	Different types	
12.2	Effective communication skills	
13.	**COUNSELING**	**2**
13.1	Principles of psychological counseling, its significance	

Recommended Books:

1. Introduction to psychology - S.K.Mangal
2. Introduction to psychology - Morgan and King,
3. Psychology for Physiotherapists - Ramalingam

PAPER IV: SECTION – II SOCIOLOGY

Subject Code: PT0104B **Theory: 40 Hours**

Method of Assessment: Written

S. No	Description of topics	Hours
1.	**INTRODUCTION TO SOCIOLOGY**	**3**
1.1	Definition and Branches	
1.2	Role of sociology in Physiotherapy	
2.	**SOCIAL FACTORS IN HEALTH AND DISEASE**	**3**
2.1	Definition and role of social factors in health and disease conditions	
3.	**SOCIALIZATION**	**4**
3.1	Meaning and nature	
3.2	Primary, secondary and anticipatory socialization	
3.3	Agencies of socialization	
4.	**FAMILY AND SOCIAL GROUPS**	**6**
4.1	Role of social groups in health and disease	
4.2	Types of social groups – Primary, secondary and Formal, informal	
4.3	Family as a social group	
4.4	Types of family and their functions; Advantages and disadvantages	
4.5	Role of family in health and disease	
5.	**COMMUNITY**	**4**
5.1	Advantages and disadvantages of Urban and Rural community	
5.2	Health Hazards in urban and rural communities	
6.	**CULTURE**	**4**
6.1	Definition and significance	
6.2	Role of culture in health and disease	
7.	**SOCIAL CHANGE**	**5**
7.1	Meaning and significance	
7.2	Factors affecting social change	
7.3	Stress related to social change	
7.4	Social change and its role in health and disease	
8.	**SOCIAL PROBLEMS**	**6**
8.1	Common Social problems encountered in the society	
8.2	Consequences of the following social problems and their remedies	
8.2.1	Population explosion	
8.2.2	Poverty and unemployment	
8.2.3	Beggary	
8.2.4	Alcoholism	
8.2.5	Juvenile delinquency	
8.2.6	Prostitution	

8.2.7	Geriatric issues	
9.	**SOCIETY AND THE DISABLED**	**4**
9.1	Meaning of disability	
9.2	Social security and legislation for the disabled	
10.	**SOCIAL WORKER**	**1**
10.1	Role of Medical Social Worker in rehabilitation	

Recommended Books:

1. Introduction to the study of Sociology - Sachdeva and Vidyabushan
2. Textbook of Sociology for Physiotherapy Students - KP Neeraja
3. Text Books of Sociology for Graduates Nurses and Physiotherapy Students - Indrani T K
4. Sociology for Physiotherapists - Dibyendunarayana Bid

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I (Psychology): 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II (Sociology): 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

PAPER V: BIOMEDICAL PHYSICS

Subject Code: PT0105 **Theory: 80 Hours**

Method of Assessment: Written

Course Description: At the end of the course the candidate will be able to Describe the fundamentals of general physics and able to relate its application in Physiotherapy, Understand basic physical principles of sound, light and heat and their application in Physiotherapy, Understand basic aspects of electricity and electronics as related to its application in electrotherapy instruments, Describe in brief certain common electrical components such as capacitors, transformers, valves and transistors; and will be able to identify such components.

S. No	Description of topics	Hours
1.	**GENERAL PHYSICS**	**15**
1.1	Force	
1.1.1	Definition, types, unit	
1.1.2	Motion and its types, Newton's Laws of motion	
1.2	Equilibrium	
1.2.1	Definition and types	
1.3	Work, power, energy and torque	
1.3.1	Definition, types and unit	
1.4	Friction	
1.4.1	Definition and types, Laws governing friction	
1.5	Fluid mechanics and Hydrodynamics	
1.5.1	Physical properties of water	
1.5.1.1.	Buoyancy, Specific Heat and Thermal Conductivity, Viscosity, Hydrostatic pressure	
1.5.1.2	Archimedes principles, Pascal's Law	
1.6	Elasticity	
1.6.1	Principles, Hook's Law	
2.	**HEAT**	**10**
2.1	Properties of heat and temperature	
2.2	Heat transfer and conducting properties	
2.3	Kirchoff's law, Joule's law of heat production, Grothus law and laws of thermodynamics, cosine law, inverse square law	
2.4	Biophysics of superficial heat and cold	**10**
3.	**SOUND**	
3.1	Frequency, Wavelength, Amplitude, vibration and phases of sound	

3.2	Newton's formula for velocity of sound	
3.3	Lap lace's correction	
3.4	Interference and resonance of sound waves	
3.5	Doppler effect and Echo	
3.6	Ultrasonic sound waves – production and application	
4.	**LIGHT**	**10**
4.1	Electromagnetic spectrum	
4.2	Laws of emission, reflection, refraction, absorption and interference	
4.3	Fiber optics and LASER	
5.	**ELECTRICITY**	**15**
5.1	Definition, types and units	
5.2	Characteristics of charged body and lines of forces	
5.3	Electromagnetic induction, Potential difference and EMF	
5.4	Resistance in series and parallel	
5.5	Current	
5.5.1	Types – Direct current, alternate current and modified current; units of measurement of current	
5.5.2	Ohm's law, Faraday's law, Lenz's law, Fleming's right hand rule and Eddy currents	
5.6	Valves, Transformers	
5.6.1	Principles, types, construction and working	
5.7	Fuse	
5.7.1	Uses and practical implications	
5.8	Electric Shock	
5.8.1	Definition, types and safety precautions	
6.	**MODERN PHYSICS**	**10**
6.1	X-ray – Production, properties and application	
6.2	IR rays and UV rays – Short wave and microwave diathermy.	
	Therapeutic currents –Iimpulses, definition and types, pulse duration and depletion times	
	Galvanic current, Faradic currents, Surging current, exponentially progressive current, biphasic current	
7.	**ELECTRONICS**	**10**
	Thermionic valves and their characteristics, semi-conductor devices: diode, its characteristics, types and uses	
	Rectifier, half wave, full wave, its characteristics, types and uses	
	Transistor: types, mode of connection, characteristics, use as an amplifier,	
	Oscillating circuit, production of shaped pulses	
	Triode valve as amplifier and oscillator	
	Cathode Ray Oscilloscope	

Recommended Books:

1. Biophysical Bases of Electrotherapy - Alex Ward, 1st Edition
2. Physical Principles Explained - Low & Reed
3. Biophysics: An Introduction - Roland Glaser
4. Principal of Electronics - V. K. Mehta
5. Fundamentals of Physics - Robert Resnik

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

PAPER VI: ENGLISH

Subject Code: PT0106 **Theory: 40 Hours**

Method of Assessment: Written

Course Description: This course is designed to help the student acquire a good command and comprehension of the English language through individual, papers and conferences. The student at the end of training is able to Read and comprehend English language, Speak and write grammatically correct English, Appreciates the value of English literature in personal and professional life.

S. No	Description of topics	Hours
1.	**GRAMMAR**	**10**
1.1	Vocabulary, framing sentences	
1.2	Phonetics	
2.	**COMPREHENSION**	**5**
2.1	Reading and comprehending	
3.	**COMPOSITION**	**15**
3.1	Various forms of composition	
3.1.1	Letter writing	
3.1.2	Notes taking	
3.1.3	Resume and curriculum vitae development	
4.	**SPOKEN ENGLISH**	**10**
4.1	Verbal communication	
4.2	Discussion, debate and Public speaking skills	

Recommended Books:

1. English Grammar Collins, Birmingham University, International Language Data Base
2. Wren and Martin - Grammar and Composition
3. Spoken English - V Shasikumar and P V Dhanija

NON-EXAM PAPERS

A. ORIENTATION TO PHYSIOTHERAPY

Course Description: This course is designed to help the student acquire the geographical orientation of the various concerned sections of the education department and clinical training areas and to get an overall idea about the graduate programme and its scope in the professional practice.

S. No	Description of topics	Hours
1.	History of Physiotherapy	3
2.	Definition, Scope, branches, code of conduct, governing bodies – National and International	4
3.	Status of Physiotherapy profession in India and abroad	4
4.	Modes of management of disorders and diseases in Physiotherapy	4
5.	Role of Physiotherapists in the health care system	4
6.	Branches and fields in Physiotherapy	5
7.	Scope and areas of practice for Physiotherapy professionals	4
8.	Basic guidelines of Code of conduct in Physiotherapy	2

B. FIRST AID

Course Description: At the completion of this course the student of First Aid and CPR must be able to identify and manage situation of common emergencies.

S. No	Description of topics	Hours
1.	Significance of First Aid	2
2.	Principles of emergency care and First Aid	2
3.	Basic instrumentations used in First Aid	3
4.	First Aid for accident victims	3
5.	First Aid during natural disaster and calamities	3
6.	First Aid in fractures and spinal cord injuries	3
7.	First Aid in cardiac arrest	3
8.	First Aid in respiratory distress and failure	3
9.	First Aid in Burns	3
10.	First Aid in poisoning	3
11.	First Aid in drowning	3
12.	First Aid in Shocks	3
13.	Concept of Cardiopulmonary resuscitation	6

TRANSCRIPT

Second Year B. PT		
Papers for University Examination		
I	Pathology & Microbiology	80
II	Biochemistry & Pharmacology	80
III	Exercise Therapy – II & Exercise Physiology	250
IV	Electrotherapy	350
V	Kinesiology & Biomechanics	150
Non-Exam Papers		
A.	ENT & Dermatology	30
B.	Basic Nursing	30
	Supervised Clinical Observation	140
	Extra-curricular Activities (Conferences, Seminars, Educational Tours, Sports and Cultural Activities)	100
Total Hours in Second Year		1210

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Paper I: SECTION – I: PATHOLOGY

Subject Code: PT0201A **Theory: 40 Hrs**

Method of Assessment: Written

Course Description: This subject form a vital link between preclinical subjects and clinical subjects. Pathology involves the study of causes and mechanisms of diseases. The knowledge and understanding of Pathology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient.

S. No	Description of topics	Hours
1.	**GENERAL PATHOLOGY**	
1.1	**Introduction**	01
1.2	**Cell injuries**	03
1.2.1	Aetiology and Pathogenesis with a brief recall of important aspects of normal cell structure	
1.2.2	Reversible cell injury: Types, Sequential changes, Cellular swellings, vacuolation, Hyaline changes, Mucoid changes.	
1.2.3	Irreversible cell injury: Types of Necrosis & Gangrene, Autolysis.	
1.2.4	Pathologic calcification: Dystrophic and Metastatic. Intracellular Accumulations	
1.3	**Inflammation and Repair**	03
1.3.1	Acute inflammation: features, causes, vascular and cellular events, Inflammatory cells and Mediators	
1.3.2	Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples	
1.3.3	Repair, Wound healing by primary and secondary union, factors promoting and delaying the process. Healing in specific site including bone healing	
1.4	**Circulatory Distrurbances**	03
1.4.1	Hyperemia/Ischemia and Haemorrhage	
	Edema: Pathogenesis and types	
	Thrombosis and Embolism: Formation, Fate and Effects	
	Infarction: Types, Common sites	
1.5	**Growth Disturbances and Neoplasia**	03
1.5.1	Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, dysplasia. Precancerous lesions	
1.5.2	Neoplasia: Definition, classification, Biological behaviour: Benign and Malignant. Carcinoma and Sarcoma	
1.6	**Hematology**	03
1.6.1	Constituents of blood and bone marrow, Regulation of hematopoiesis	

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1.6.2	Anemia: Classification, clinical features & lab diagnosis	
1.6.3	Hemostatic disorders, Vascular and Platelet disorders & lab diagnosis	
1.6.4	Coagulopathies - (i) Inherited (ii) Acquired with lab diagnosis	
1.6.5	Leukocytic disorders: Leukocytosis, Leukopenias, Leukemoid reaction	
1.6.6	Leukemia: Classification, clinical manifestation, pathology and Diagnosis	
1.6.7	Hemorrhagic disorders: Hemophilia - causes and classification	
2.	**SYSTEMIC PATHOLOGY**	
2.1	**Cardiovascular Pathology**	**04**
2.1.1	Congenital Heart diseases, Atherosclerosis, Rheumatic Heart disease, Myocardial Infarction, Thromboplebitis, Endocarditis - aetio-pathogenesis and diagnosis	
2.2	**Respiratory Pathology**	**03**
2.2.1	Pneumonia, Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases - aetio-pathogenesis and diagnosis	
2.3	**Musculoskeletal Pathology**	**03**
2.3.1	Osteomyelitis, Rickets/ Osteomalacia, osteoporosis, Rheumatoid arthritis, Osteoarthritis, Paget's disease, Gout, inflammatory myopathy, muscular dystrophies - aetio-pathogenesis and diagnosis	
2.4	**Neuropathology**	**04**
2.4.1	Meningitis, Encephalitis, Cerebral Hemorrhage, Cerebro Vascular Accident, Brief outline of CNS Tumors, Neuritis, Neuralgia, GBS, Neuropathies - aetio-pathogenesis and diagnosis	
2.5	**Gasterointestinal Pathology**	**02**
2.5.1	Peptic ulcer, benign & malignant tumors of intestine, infective & inflammatory bowel diseases, intestinal tuberculosis, 'Crohn's disease, ulcerative colitis - aetio-pathogenesis and diagnosis	
2.6	**Hepato-Biliary Pathology**	**02**
2.6.1	Hepatitis – Classification, aetio-pathogenesis and diagnosis, Cirrhosis	
2.6.2	Jaundice: Types, aetio-pathogenesis and diagnosis	
2.7	**Urinary pathology**	**02**
2.7.1	Nephritis, Glomerular Nephritis, Nephrotic Syndrome - aetio-pathogenesis and diagnosis	
2.8	**Dermatopathology**	**02**
2.8.1	Skin tumors: Squamos cell carcinoma, Basal cell carcinoma, Melanoma - aetio-pathogenesis and diagnosis	
2.9	**Endocrine pathology**	**02**
2.9.1	Non-neoplastic lesions of Thyroid, Thyroid tumors, Diabetes mellitus	

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Recommended Books:

1. Textbook of Pathology – Harsh Mohan
2. Pathologic basis of Disease – Cotran, Ramzi
3. Pathology of Disease - Naik
4. Pathology: Implications for Physical Therapists – Goodman and Boissonnault

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Paper I: SECTION – II: MICROBIOLOGY

Subject Code: PT0201B **Theory: 40 Hrs**

Method of Assessment: Written

Course Description: Microbiology involves the study of common organisms causing diseases including nosocomial infections and precautionary measures to protect one from acquiring infections. The knowledge and understanding of Microbiology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient.

S. No	Description of topics	Hours
1.	**INTRODUCTION**	01
2.	**CLASSIFICATION OF MICRO ORGANISM**	10
2.1	Bacterial Morphology, cells structure, difference between prokaryotes and eukaryotes, capsule, flagella, fimbrae, pilli, cell wall, plasma membrane, cytoplasm, ribosomes	
2.2	Classification of Bacteria, Morphological characteristics of different bacteria	
2.3	Definitions: infections, parasite, host, vector, fomite, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate	
3.	**MODES OF TRANSMISSION OF DISEASES**	04
3.1	Various routes of spread of infection, Hospital acquired infection, Bacteria responsible for nosocomial infectious	
4.	**STERILIZATION & DISINFECTION**	05
4.1	Physical Methods, Chemical Methods, Mechanism of Sterilizations, Difference between sterilization and disinfection, Universal precautions and waste disposal process, Biomedical Waste management, Universal precautions (PPE and immunization)	
5.	**BACTERIOLOGY**	05
5.1	Pathogenesis, collection and transportation for laboratory diagnosis of: Gram Positive Cocci: Staphylococci, Streptococci and Pneumococci; Myobacterial: M. Tuberculosis, M. leprae; Gram-Negative Bacilli - Typhoid, Cholera, Dysentery; Urinary tract infections-E.coli	
6.	**VIROLOGY**	05
6.1	Pathogenesis, collection and transportation for laboratory diagnosis of: Poliomyelitis, Herpes, Rabies, Measles, HIV infection, Chickenguniya	
7.	**IMMUNOLOGY**	05
7.1	Active, passive, Natural, acquired, Antigen, Antibody, type of antibodies, Antigen antibody reactions, Hypersensitivity reactions, Mechanism of immunity, Immunization, Handling of infected materials	
8.	**MYCOLOGY**	05
8.1	General properties of fungi. Classification based on disease: superficial, subcutaneous, deep mycosel opportunistic infections including Mycotoxins, systemic mycoses	
8.2	General principles of fungal diagnosis, Rapid diagnosis. Method of collection of samples. Antifungal agents	

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Recommended Books:

1. Textbook of Microbiology – Ananth Narayan
2. Textbook of Microbiology – Chakrovorthy
3. Medical Microbiology - Irving

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I (Pathology): 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II (Microbiology): 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

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Paper II: SECTION – I: BIOCHEMISTRY

Subject Code: PT0202A **Theory: 40 Hrs**

Method of Assessment: Written

Course Description: At the end of this curriculum students will be able to identify the mechanisms of metabolism of various macro and micro nutrients. They will be able to correlate the biochemical aspects of various disorders and diseases. They will acquire knowledge in brief about the clinical biochemistry, with special reference to liver and renal function tests, blood study for lipid profile, metabolism of fat, carbohydrates, proteins, bone minerals, electrolyte balance, water balance and acid – base balance.

S. No	Description of topics	Hours
1.	**CARBOHYDRATE CHEMISTRY AND METABOLISM**	**04**
1.1	Definition, classification, composition, sources, properties and functions	
1.2	Metabolism and absorption	
1.3	Aerobic and anaerobic glycolysis	
1.4	Glycogenolysis, glycogenesis	
1.5	Hormonal regulation of glucose	
2.	**LIPID CHEMISTRY AND METABOLISM**	**04**
2.1	Definition, classification, composition, sources, properties and functions	
2.2	Metabolism and absorption	
3.	**PROTEINS AND AMINOACIDS: CHEMISTRY AND METABOLISM**	**04**
3.1	Definition, classification, composition, sources, properties and functions	
3.2	Metabolism and absorption	
4.	**ENZYMES**	**04**
4.1	Definition, classification with examples, Factors affecting enzyme action	
4.2	Isoenzyme and co-enzyme	
4.3	Clinical importance and uses of enzymes	
4.4	Inhibition and type of inhibitors	
5.	**NUCLEIC ACIDS**	**02**
5.1	Chemistry, composition and functions	
5.2	DNA, RNA – definition, structure and function, types, difference between DNA and RNA, genetic code	

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6.	VITAMINS	04
6.1	Definition, Classification and functions, dietary sources of each of the vitamins	
6.2	Absorption and transport, Daily requirements, deficiency and toxicity	
7.	MINERALS	03
7.1	Definition, functions, dietary sources of Calcium, phosphate, iron, Magnesium, fluoride, selenium, molybdenum, copper, zinc etc	
7.2	Absorption and transport, Daily requirements, deficiency and toxicity	
8.	ACID-BASE BALANCE	03
8.1	Buffer systems of the body	
8.2	Role of various physiological systems in acid – base balance	
9.	WATER AND ELECTROLYTE BALANCE	03
9.1	Mechanism of regulation of water balance including thermoregulation	
9.2	Mechanism of regulation of Electrolyte balance and role of ADH	
10.	CLINICAL BIOCHEMISTRY	04
10.1	Biochemical events of muscle contraction	
10.2	Liver function test and its clinical importance	
10.3	Renal function test and its clinical importance	
11.	NUTRITION	05
11.1	Importance of nutrition	
11.2	Nutritional values of food	
11.3	Basal Metabolic Rate (BMR), factors affecting BMR and its importance	
11.4	Recommended daily dietary allowances for adult male, female and children	
11.5	Nutritional disorders	

Recommended Books:

1. Essentials of Biochemistry – Satyanarayan
2. Textbook of Medical Biochemistry – Chatterjee
3. Textbook of Biochemistry for Medical students - Vasudevan

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Paper II: SECTION – II: PHARMACOLOGY

Theory: 40 Hrs

Subject Code: PT0202B

Method of Assessment: Written

Course Description: This subject involves the study of effects of various drugs on the systems of the body prescribed for different diseases and disorders. It also involves describing the common routes of administration, adverse reactions of these drugs, precautions to be taken in administration and effects it may have on the Physiotherapeutic interventions used.

S. No	Description of topics	Hours
1.	**GENERAL PHARMACOLOGY**	**04**
1.1	Introduction, Definitions, Classification of drugs, Sources of drugs, Routes of drug administration	
1.2	Distribution of drugs, Metabolism and Excretion of drugs, Pharmacokinetics, Pharmacodynamics	
1.3	Factors modifying drug response	
1.4	Elementary knowledge of drug toxicity, drug allergy, drug resistance, drug potency, efficacy and drug antagonism	
2.	**AUTONOMIC NERVOUS SYSTEM**	**04**
2.1	General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System	
2.2	Cholinergic and Anti-Cholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants	
3.	**CARDIOVASCULAR PHARMACOLOGY**	**06**
3.1	Drugs Used in the Treatment of Heart Failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors	
3.2	Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators	
3.3	Antiarrhythmic Drugs	
3.4	Drugs Used in the Treatment of Vascular Disease and Tissue Ischemia: Vascular Disease, Hemostasis Lipid-Lowering agents, Antithrombotics, Anticoagulants and Thrombolytics	
3.5	Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers	
3.6	Cerebral Ischemia	
3.7	Peripheral Vascular Disease	

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4.	NEUROPHARMACOLOGY	06
4.1	Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines	
4.2	Antianxiety Drugs: Benzodiazepines, Other Anxiolytics	
4.3	Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium	
4.4	Antipsychotic drugs	
5.	DISORDERS OF MOVEMENT	03
5.1	Drugs used in Treatment of Parkinson's Disease	
5.2	Antiepileptic Drugs	
5.3	Spasticity and Skeletal Muscle Relaxants	
6.	INFLAMMATORY/IMMUNE DISEASES	06
6.1	Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Nonaspirin NSAIDs, drug Interactions with NSAIDs	
6.2	Glucocorticoids: Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids	
6.3	Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout	
6.4	Drugs Used in the Treatment of Neuromuscular Immune/Inflammatory Diseases: Myasthenia gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythmatosus, Scleroderma, Demyelinating Disease	
7.	RESPIRATORY PHARMACOLOGY	05
7.1	Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis	
8.	DIGESTION AND METABOLISM	03
8.1	Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea	
8.2	Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemics	
9.	CHEMOTHERAPY	03
9.1	General Principles, administration and side effects	

Recommended Books:

1. Pharmacology for Physiotherapy students – Padmaja Udaykumar
2. Pharmacology for Physiotherapist – H L Sharma, K K Sharma
3. Pharmacology Handbook for Physiotherapists - Jacqueline Reznik Ofer Keren Joanne Morris Iftah Biran

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QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I (Biochemistry): 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II (Pharmacology): 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

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Paper III: EXERCISE THERAPY – II AND EXERCISE PHYSIOLOGY

Subject Code: PT0203 **Theory: 100 Hrs** **Practical: 150 Hrs**

Method of Assessment: Written, Practical and Oral

Course Description: In this course, the students will learn the advanced principles of exercise as a therapeutic modality and will learn and practice the techniques in the restoration of physical functions that involve the basic concepts of human movements. They will also understand and apply the physiological basis of exercise including energy requirements for exercise.

S. No	Description of topics	Hours
1.	JOINT MOBILIZATION	08
1.1	Range of motion restriction – Causes; Definition – Mobilization, Manipulation; indications, limitations, contraindications and precautions, applications of Mobilization technique to various joints	
1.2	Differentiate mobilization and manipulation	
1.3	Principles and application of Maitland, Kaltenborn and Mulligan joint mobilization and manipulation techniques	
2.	TRACTION	04
	Definition, types, indications, contraindications and principles of application of techniques of manual and mechanical traction	
3.	MUSCLE LENGTH TESTING (MLT)	08
3.1	Flexibility – Definition; causes of muscle tightness, difference between tightness and contracture	
3.2	Contractures – Definition, types and characteristics	
3.3	Principles and techniques of testing muscle length	
4.	STRETCHING	08
4.1	Definition, properties of soft tissue, mechanical and neurophysiological properties of connective tissue, mechanical properties of non-contractile tissue	
4.2	Determinants, types and effect of different stretching techniques, precautions and general applications of different stretching technique	
5.	MANUAL MUSCLE TESTING (MMT)	08
5.1	Causes of muscle weakness	
5.2	Principles, grades, indications and limitations of MMT	
5.3	Techniques of MMT for upper, lower limb, trunk and facial muscles	

6.	RESISTED EXERCISE	08
6.1	Differentiate strength, power and endurance	
6.2	Tools used for resistance in exercise – Dumbbells, barbells, weights, theraband, thera tubes etc	
6.3	Types of resisted exercises: Manual and Mechanical resistance exercise, Isometric exercise, Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Open-Chain and Closed-Chain exercise, Isokinetic exercise	
6.4	Specific exercise regimens	
6.4.1	Isotonic: de Lormes, Oxford, Macqueen, Circuit weight training	
6.4.2	Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle Isometrics	
6.5	Plyometric Training	
7.	PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION (PNF)	08
7.1	Definition, Neurophysiological principles of PNF, principles of techniques and application	
7.2	PNF diagonal patterns of Upper limb, lower limb, trunk, head and neck	
7.3	Techniques of emphasis – stretching and strengthening techniques	
8.	AEROBIC EXERCISE	06
8.1	Definition, types, determinants and principles of application	
8.2	Physiological effects and uses in therapy and various therapeutic conditions	
8.3	Basic procedures to evaluate aerobic capacity	
9.	HYDROTHERAPY	06
9.1	Properties of water and their advantages in exercising	
9.2	Goals, indications, precautions and contraindications	
9.3	Accessories and tools used in Hydrotherapy	
9.4	Badragaz technique, Whirl Pool Bath and Hubbard tank – Principles of application of techniques	
10.	POSTURE	05
10.1	Definition, characteristics of good and bad posture	
10.2	Postural control	
10.3	Types of deviant postures	
10.4	Postural assessment and tools used	
10.5	Postural correction exercises and techniques	
11.	BALANCE	05
11.1	Definition and Key terms	
11.2	Balance control, Components of balance	
11.3	Balance impairment, its causes and Balance assessment	
11.4	Balance training	

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12.	COORDINATION	05
12.1	Definition of coordination and incoordination	
12.2	Causes of incoordination	
12.3	Coordination tests – Equilibrium and non-equilibrium	
12.4	Principles and techniques of application of Frenkel's exercises	
13.	FUNCTIONAL EXERCISE	03
13.1	Significance of incorporation of functionality to exercises	
13.2	Mat activities	
13.3	Functional progression of exercise from lying to walking	
14.	POSTURAL DRAINAGE	03
15.	RELAXATION TECHNIQUES	03
15.1	Definition of muscle tone, fatigue, postural tone, physical and psychological stress	
15.2	Indications for relaxation	
15.3	Principles and application of different General and Local relaxation techniques	
16.	EXERCISE PHYSIOLOGY	12
15.1	Energy currency, synthesis and utilization of Adenosine Tri Phosphate (ATP)	
15.2	Immediate, Short term and Long term energy systems – mechanisms	
15.3	Physiological effects of exercise on various systems of the body	

Recommended Books:

1. Therapeutic Exercise: Foundations and Techniques – Carolyn Kisner
2. Maitland's Peripheral Manipulation: Management of Neuromusculoskeletal Disorders - Elly Hengeveld Kevin Banks
3. Manual Mobilization of the Joints: The Kaltenborn Method of Joint Examination and Treatment : The Extremities - Freddy M. Kaltenborn, Olaf Evjenth, Traudi Baldauf Kaltenborn, Dennis Morgan, Eileen Vollowitz
4. The Mulligan Concept of Manual Therapy: Textbook of Techniques – Wayne Hing, Toby Hall, Darren Rivett, Bill Vicenzino, Brian Mulligan
5. Daniels and Worthingham's Muscle Testing: Techniques of Manual Examination - Hislop, H.J. and Montgomery, J.
6. Muscles: Testing and Function, with Posture and Pain – Florence Kendall, Elizabeth Kendall McCreary
7. PNF in Practice - An Illustrated Guide - Adler, Susan, Beckers, Dominiek, Buck, Math
8. Stretching Anatomy – Arnld Nelson, Jouko Kokkonen
9. The Science and Physiology of Flexibility and Stretching - David G. Behm
10. Stretching for Functional Flexibility - Phil Armiger, Michael A. Martyn

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11. Therapeutic Stretching Hands-On Guides for Therapists - Jane Johnson
12. Essentials of Exercise Physiology - Victor L. Katch, William D. McArdle, Frank I. Katch
13. Physiology of Sport and Exercise - W. Larry Kenney, Jack H. Wilmore, David L. Costill
14. Exercise Physiology - Theory and Application to Fitness and Performance - Scott K. Powers, Edward T. Howley

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

PRACTICAL **(150 Hours)**

Practical skillful application of techniques of

1. Different types of mobilization techniques
2. Mechanical and manual traction techniques
3. Muscle length testing procedures
4. Stretching of various muscles of upper, lower limb, neck and trunk
5. Manual muscle testing procedures for various muscles of upper, lower limb, neck and trunk
6. Different types of resisted exercise techniques including Plyometrics
7. Diagonal patterns of PNF for Upper, lower limb, trunk and head and neck
8. Specific techniques of emphasis in PNF – Stretching and strengthening
9. Basic aerobic testing procedures and aerobic exercises
10. Observational assessment of Posture
11. Balance and coordination testing
12. Balance and coordination exercises

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PRACTICAL EXAM FORMAT

1. Demonstration of techniques of application of any two of the following: **(40 marks)**
   a. Mobilization techniques
   b. Mechanical and manual traction techniques
   c. Muscle length testing of any one of the muscles
   d. Stretching of any one of the muscles
   e. Manual muscle testing of any one of the muscles
   f. Resisted exercise technique
   g. Techniques of PNF for upper or lower limb or head or neck or trunk
   h. Any one of the techniques of emphasis in PNF
   i. Observational postural analysis
2. Demonstration of techniques of application of any two of the following: **(20 marks)**
   a. Any one of the types of resisted exercise techniques
   b. Testing of balance and coordination
   c. Exercises for balance and coordination
3. Viva on basic biomechanics, principles, indications and contra indications of various techniques covered in the syllabus **(15 marks)**
4. Journal of Exercise Therapy - II **(5 marks)**

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Paper IV: ELECTROTHERAPY

Subject Code: PT0204 **Theory: 150 Hrs** **Practical: 200 Hrs**

Method of Assessment: Written, Practical and Oral

Course Description: The student will learn the principles, techniques and effects, indication, contra- Indication and the dosage parameter for various electro therapeutic modalities in the restoration of physical function. In addition they will learn the physiological effects and therapeutic uses of various topical pharmacotherapeutic agents to be used for the application of therapeutic effects along with electrotherapy modalities.

S. No	Description of topics	Hours
1.	**INTRODUCTION**	10
1.1	Action Potential, Resting membrane potential, Propagation of Action Potential, Motor unit, Synapse, Accommodation, Stimulation of Healthy Muscle, Stimulation of Denervated Muscle, Stimulation for Tissue Repair	
1.2	Types of currents – Alternating, Direct; Low, medium and high frequency; their therapeutic effects	
1.3	Modified Direct and alternating currents used in therapy	
1.4	Basic introduction to Pain – Types, pathway, theories and modulation	
2.	**LOW FREQUENCY CURRENTS**	20
2.1	Sinusoidal currents, Anodal-Cathodal Galvanism, Neuromuscular Electrical Stimulation	
2.2	Faradic current – Definition, physiological and therapeutic effects, indications, contraindications and techniques of application in neuromuscular stimulation	
2.3	Galvanic current - Definition, physiological and therapeutic effects, indications, contraindications and techniques of application in neuromuscular stimulation	
2.4	Didynamic current – Definition, therapeutic effects and application	
2.5	High Voltage Pulsed Galvanic Stimulation (HVPGS) - Definition, therapeutic effects and application	
2.6	Iontophoresis - Definition, Principles, Techniques of application, Ions commonly used in iontophoresis and their clinical indication, Physiological effect & Therapeutic effects, Dosage, Dangers & Contraindications	
2.7	Transcutaneous Electrical Nerve Stimulation (TENS) -- Definition, types, physiological and therapeutic effects. indications, contraindications and techniques of application	

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3.	**MEDIUM FREQUENCY CURRENTS**	**20**
3.1	Interferential Currents (IFC) - Definition , Production of interferential current, Types (Static & Dynamic) ,Parameters, Indications & Contraindications, Physiological & therapeutic effects, Dangers & Precautions	
3.2	Russian Currents & Rebox Currents	
4.	**HIGH FREQUENCY CURRENTS**	**20**
4.1	Short Wave Diathermy (SWD) - Definition of Short wave, Frequency and Wavelength, mechanism of production of SWD	
4.2	Types of electrodes, principles of placement and spacing of electrodes	
4.3	Indications, contraindications, dangers, precautions, physiological and therapeutic effects	
4.4	Various methods of application in various conditions and Tuning	
4.5	Pulsed Short Wave Diathermy - Definition, characteristics & mechanism of production, methods of application, Indications, contraindications, dangers, precautions, physiological and therapeutic effects	
4.6	Micro Wave Diathermy (MWD) - Definition, characteristics & mechanism of production, methods of application, Indications, contraindications, dangers, precautions, physiological and therapeutic effects	
4.7	Long Wave Diathermy (LWD) - Definition, characteristics & mechanism of production, methods of application, Indications, contraindications, dangers, precautions, physiological and therapeutic effects	
5.	**ELECTROMAGNETIC SPECTRUM**	**15**
5.1	Physical properties of electromagnetic radiations- reflection, refraction, absorption, penetration	
5.2	Infrared Rays (IRR) - Definition, Production of Infra-Red rays, types of generators - luminous and non-luminous generators; Method of application, Parameter - Penetration, Duration and Frequency of treatment; Indications, contraindications, dangers, precautions, physiological and therapeutic effects	
6.	**ULTRA VIOLET RAYS (UVR)**	**05**
6.1	Definition, Production of UVR, Types of UVR - Mercury vapour lamps (Kromayer lamp), Fluorescent tubes (Alpine sun lamp), Theraktin tunnel and PUVA apparatus	
6.2	Test dosage and its calculations, Filters, sensitizers	
6.3	Method of application in various conditions. Parameters - Penetration, Absorption, Duration and Frequency of treatment; Indications, contraindications, dangers, precautions, physiological and therapeutic effects	

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7.	LASER	07
7.1	Definition, characteristics & mechanism of production, Types of LASER	
7.2	Method of application. Parameters - Penetration, Duration and Frequency of treatment; Indications, contraindications, dangers, precautions, physiological and therapeutic effects	
8.	ULTRASOUND	10
8.1	Definition, characteristics & mechanism of production	
8.2	Coupling media, Various methods of application	
8.3	Mode, Intensity, Duration and Frequency of treatment	
8.4	Physiological effects and therapeutic effects – Thermal and non-thermal effects	
8.5	Indications, contraindications, dangers, precautions, physiological and therapeutic effects	
8.6	Phonophoresis & its implications	
9.	CRYOTHERAPY	08
9.1	Physiological and therapeutic effects of cold, heat versus cold	
9.2	Different techniques of application, Indications, contraindications, dangers and precautions	
9.3	**Contrast Bath** - Methods of application, Therapeutic uses, Indications & Contraindications	
10.	WAX THERAPY	08
10.1	Principles & Composition of Wax Bath Therapy unit, Various methods of application	
10.2	Indications, contraindications, dangers, precautions, physiological and therapeutic effects	
11.	MOIST HEAT THERAPY (HYDRO COLLATOR PACKS)	07
11.1	Principles, Methods of application	
11.2	Indications, contraindications, dangers, precautions, physiological and therapeutic effects	
12.	ELECTRODIAGNOSIS	20
12.1	Faradic Galvanic (FG) test, Strength Duration (SD) curve, Nerve Conduction Studies (NCS), Electromyography (EMG)	
12.2	Chronaxie and Rheobase	
12.3	Biofeedback – Physiological Principles, different methods of application, indications and contraindications	

Recommended Books:

1. Clayton's Electrotherapy: Theory and Practice – Froster, A. and Palastanga, N.
2. Electrotherapy Explained: Principles and Practice – Val Robertson, Alex Ward, John Low, Ann Reed

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3. Clinical Electrotherapy – Roger M. Nelson, Dean P. Currier, Karen W. Hayes
4. Physical Agents in Rehabilitation – Michelle Cameron
5. Thermal Agents in Rehabilitation – Susan L. Michlovitz
6. Basis of Electrotherapy – Subhash Khatri
7. Fundamentals of Electrotherapy & Biomedical Physics – Ashish Kakkad
8. Evidence-Based Guide to Therapeutic Physical Agents – Alain Yvan Belanger
9. Electrotherapy: Evidence-Based Practice – Sheila Kitchen

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

PRACTICAL **(200 Hours)**

A. Identification of basic electrical components in electrotherapeutic equipment.
B. Demonstration and practice of use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.
C. Demonstration and practice of evaluation of patient's condition common to electrotherapy techniques, Reading of medical records, identifying indications and contraindications for electrotherapy.
D. Significance and explanation of Performa used in Electrotherapy
    a. Patient reception, explanation of importance of electrotherapy in his/her condition
    b. Collection of apparatus and accessories used for treatment
    c. Demonstration of placement of electrodes/leads

1. Motor point identification and stimulation of individual muscle and group muscle
2. Faradic foot bath, Faradism under pressure.
3. Plotting Strength Duration (SD) graph, diagnosis using electro diagnostic test – Faradic Galvanic (FG) test and SD curve.
    a. Measuring Chronaxie and Rheobase
4. Placement of electrodes in TENS & IFT for various indications

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5. Demonstration and practice of treatment techniques using SWD. Pulsed Short Wave Diathermy, Microwave diathermy and Long Wave Diathermy.
6. Demonstration and practice of treatment techniques using IRR
7. Demonstration and practice of technique of UVR exposure for various conditions
    a. Calculation of test dose
8. Demonstration and practice of technique of application of LASER
9. Demonstration and practice of application of Ultrasound for different regions using various methods of application
10. Demonstration and practice of application of cryotherapy using various methods
11. Demonstration and practice of application of contrast bath
12. Demonstration and practice of application of wax bath using various methods
13. Demonstration and practice of application of Hydrocollator packs
14. Demonstration of Nerve Conduction Studies (NCS) and Elecctromyography (EMG)
15. Demonstration of Biofeedback techniques used in diagnosis and therapy

PRACTICAL EXAM FORMAT

1. Demonstration of techniques of application of any two of the following: **(40 marks)**
    a. Identification and stimulation of motor points of individual or group muscles
    b. Faradism under pressure
    c. Faradic Foot bath
    d. Plotting Strength Duration (SD) graph with Chronaxie and Rheobase calculations
    e. Electrode placements of TENS, IFT for various conditions
    f. Electrode placements of SWD for various conditions
    g. Application of Ultra sound for various conditions

2. Demonstration of techniques of application of any two of the following: **(20 marks)**
    a. Application of IRR for various conditions
    b. Calculation of test dose and application of UVR in specific conditions
    c. Application of LASER in specific conditions
    d. Application of cryotherapy using various methods
    e. Application of contrast bath
    f. Application of wax bath using various methods
    g. Application of Hydrocollator packs

3. Viva on basic Physical principles of electrotherapy, indications and contra indications of various techniques covered in the syllabus **(15 marks)**
4. Journal of Exercise Therapy - II **(5 marks)**

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Paper V: KINESIOLOGY & BIOMECHANICS

Subject Code: PT0205 **Theory: 150 Hrs**

Method of Assessment: Written

Course Description: Students will learn the concepts and mechanical principles that form the basic to human movement. At the end of this course, they will be able to describe the Biophysical properties of connective tissue, & effect of mechanical loading, & factors which influence the Muscle strength, & mobility& stability of articular & periarticular soft tissues. It will supplement the knowledge of anatomy and enable the student to have a better understanding of the principles of biomechanics and their application in musculoskeletal function and dysfunction.

S. No	Description of topics	Hours
	PART – I: BASICS OF BIOMECHANICS AND KINESIOLOGY	
1.	**INTRODUCTION**	**05**
1.1	Revision of basic biomechanics: Kinetics, Kinematics and other principles, Osteokinematics and Arthrokinematics, Young's Modulus, Stress-Strain curve, Creep properties of viscoelastic tissues	
2.	**HUMAN SKELETAL STRUCTURE AND FUNCTION**	**08**
2.1	Composition and structure of bone, biomechanical properties of bone, response of bone to stress, pathomechanics of bone damage	
2.2	Composition and structure of articular cartilage, biomechanical properties of articular cartilage, lubrication of articular cartilage, response of articular cartilage to stress, pathomechanics of articular cartilage damage	
2.3	Classification of Joints, their structure and functions	
3.	**SKELETAL MUSCLE STRUCTURE AND FUNCTION**	**08**
3.1	Composition and structure of skeletal muscles, mechanics of muscle contraction, muscle fiber types and differentiation, Behavioral properties of musculotendinous unit – Extensibility, Elasticity and irritability	
3.2	Factors affecting muscular force generation: Length – Tension relationship, Force – Velocity relationship, Stretch – Shortening cycle	
3.3	Pathomechanics of muscle damage and injuries	
4.	**BIOMECHANICS OF TENDONS, LIGAMENTS AND NERVES**	**06**
4.1	Composition, structure and biomechanical properties of tendons, ligaments and nerves. Response of tendons, ligaments and nerves to stress, pathomechanics of tendon, ligament and nerve injury	

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PART – II: BIOMECHANICS OF UPPER EXTREMITY		
5.	**BIOMECHANICS OF SHOULDER COMPLEX**	15
5.1	Structure and functions of joints of the shoulder complex: Sternoclavicular joint, Acromioclavicular joint, Coracoclavicular joint, Glenohumeral joint, Scapulothoracic joint. Ligaments, bursae and their functions in stability and mobility of shoulder complex.	
5.2	Mechanics and pathomechanics of muscle activity at the Shoulder complex	
5.3	Analysis of forces on the shoulder complex during movements and activity.	
6.	**BIOMECHANICS OF ELBOW UNIT**	10
6.1	Structure and functions of Elbow joint: Humeroradial joint, Humeroulnar joint and Superior Radioulnar joint. Ligaments, capsule, bursae and their functions in stability and mobility of elbow joint.	
6.2	Mechanics and pathomechanics of muscle activity at the Elbow joint	
6.3	Analysis of forces on the Elbow joint during movements and activity.	
7.	**BIOMECHANICS OF WRIST AND HAND UNIT**	10
7.1	Structure and functions of wrist and hand joints: Inferior Radioulnar joint, wrist joint, intercarpal joints, carpometacarpal joints, metacarpophalangeal joints and interphalangeal joints. Ligaments and their functions in stability and mobility of wrist and hand.	
7.2	Mechanics and pathomechanics of muscle activity at the forearm	
7.3	Analysis of forces on the wrist joint during movements and activity.	
7.4	Mechanics and pathomechanics of intrinsic muscles of the hand	
7.5	Analysis of forces of pinch and grasp activity	
PART – III: BIOMECHANICS OF HEAD AND SPINE		
8.	**BIOMECHANICS OF HEAD AND FACE UNIT**	08
8.1	Mechanics and pathomechanics of muscle activity at the face, eyes	
8.2	Structure and functions of temporomandibular joint (TMJ)	
8.3	Mechanics and pathomechanics of muscle activity at the TMJ	
8.4	Analysis of forces on the TMJ during movements and activity	
9.	**BIOMECHANICS OF HEAD SPINE UNIT**	15
9.1	Structure and functions of spinal column: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae. Intervertebral discs, ligaments and their functions in stability and mobility of spine.	
9.2	Mechanics and pathomechanics of cervical spine and its muscles	
9.3	Analysis of forces on the cervical spine during movements and activity	
9.4	Mechanics and pathomechanics of thoracic spine and its muscles including Respiratory mechanics	
9.5	Analysis of forces on the thoracic spine during movements and activity	
9.6	Mechanics and pathomechanics of lumbar and sacral spine and its muscles	

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9.7	Analysis of forces on the lumbosacral spine during movements and activity	
9.8	Significance of integrated function of Lumbo - Pelvic – Hip (LPH) complex	
	PART – IV: BIOMECHANICS OF LOWER EXTREMITY	
10.	**BIOMECHANICS OF HIP AND PELVIS COMPLEX**	**15**
10.1	Structure and functions of joints of the pelvis and hip. Ligaments, capsule, bursae and their functions in stability and mobility of hip and pelvis complex.	
10.2	Mechanics and pathomechanics of muscle activity at the hip and pelvis complex	
10.3	Analysis of forces on the hip and pelvis complex during movements and activity.	
11.	**BIOMECHANICS OF KNEE COMPLEX**	**15**
11.1	Structure and functions of joints of the Knee: Medial and Lateral tibiofemoral, Patellofemoral joints and superior tibiofibular joint. Menisci, Ligaments, Capsule, bursae and their functions in stability and mobility of knee complex.	
11.2	Mechanics and pathomechanics of muscle activity at the knee complex	
11.3	Analysis of forces on the knee complex during movements and activity.	
12.	**BIOMECHANICS OF ANKLE AND FOOT COMPLEX**	**10**
12.1	Structure and functions of joints of the ankle and Foot: Inferior tibiofibular joint, Talocrural joint, subtalar joint, Intertarsal joints, Tarsometatarsal joints, metatarsophalangeal joints and interphalangeal joints. Ligaments and their functions in stability and mobility of ankle and foot complex.	
12.2	Mechanics and pathomechanics of muscle activity at the ankle and foot complex	
12.3	Analysis of forces on the ankle and foot complex during movements and activity.	
12.4	Structure and function of plantar arches	
	PART – V: BIOMECHANICS OF POSTURE AND GAIT	
13.	**POSTURE**	**10**
13.1	Definition of posture, Characteristics of optimal posture, factors affecting optimal posture and common postural abnormalities	
13.2	Observational and Objective methods to analyze posture	
14.	**GAIT**	**15**
14.1	Definition of Gait, functional goal of Gait: Weight Acceptance, Single limb support and limb advancement	

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14.2	Gait Cycle, Phases of Gait, Terminologies used in Gait cycle: Traditional and Ranchos Los Amigos (RLA)	
14.3	Temporal and Spatial parameters of gait, physiological determinants of gait.	
14.4	Characteristics of optimal gait: Kinetics and Kinematics of Gait – Joint kinematics, muscle activation during gait and Ground Reaction Forces (GRF).	
14.5	Factors influencing optimal gait. Pathological Gait: Mechanisms, deviations and effect of the deviations on different joints	
14.6	Gait Assessment and Analysis: Observational Gait Analysis (OGA), Instrumented Gait Analysis and its clinical application	

Recommended Books:

1. Joint Structure and Function: A Comprehensive Analysis - Pamela K Levangie, Cynthia C Norkin
2. Essentials of kinesiology for the Physical Therapist Assistant - Paul Jackson Mansfield, Donald A. Neumann
3. Clinical Kinesiology and Anatomy - Lynn S. Lippert
4. Kinesiology: The Mechanics and Pathomechanics of Human Movement - Carol A. Oatis
5. Measurement for Evaluation in Kinesiology - Ted A. Baumgartner, Andrew S. Jackson, Matthew T. Mahar, David A. Rowe
6. Biomechanics: Principles and Application – Donald R. Peterson, Joseph D. Bronzino
7. Biomechanical Basis of Human Movement - Joseph Hamill, Kathleen M. Knutzen

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

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NON-EXAM PAPERS

A. ENT & DERMATOLOGY CONDITIONS

Course Description: This course is designed to help the student acquire the basic knowledge on the clinical presentation, pathophysiology, signs and symptoms, clinical examination and management of common conditions of skin and Ear, Nose and Throat (ENT)

S. No	Description of topics	Hours
1.	Anatomy and Physiology of Ear, Nose and Throat	4
2.	Focused learning on Otitis media, Facial palsy, Sinusitis and nasal septal defects	4
3.	Common pharmacological and surgical management of ENT conditions	4
4.	Tracheostomy procedures and role of Physiotherapy	4
5.	Hearing loss as a disability and Hearing Aids	3
6.	Anatomy and Physiology of Integumentary system	4
7.	Skin Infections: Fungal, Bacterial and viral.	4
8.	Physiotherapeutic interventions in conditions affecting the integumentary system	3

B. BASIC NURSING

Course Description: At the completion of this course, students must be able to identify the role of nursing professionals in the healthcare management and manage situation of common emergencies as a team with the nursing professionals.

S. No	Description of topics	Hours
1.	Nursing as a profession: History of Nursing	6
2.	Role of nurses in health care management system	4
3.	Collaborative functioning of nurses with other health care professionals	4
4.	Nurses as bed side care providers	4
5.	Nutrition and its significance to nurses	4
6.	Nurses in emergency care	4
7.	Nurses in ICU	4

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THIRD YEAR
B.P.T.

BACHELOR OF PHYSIOTHERAPY –SUBJECT CONTENT

Third Year B. PT
EXAM PAPERS
Paper I: General Medicine & Pediatrics
Paper II: General Surgery
Paper III: Orthopedics & Traumatology
Paper IV: Neurology, Obstetrics & Gynecology
Paper V: Physical & Functional Diagnosis
Paper VI: Research Methodology & Biostatistics
NON-EXAM PAPERS
A: Basics in Radiology & diagnostic procedures
B: Psychiatry

DETAILED COURSE CONTENT

THIRD YEAR B. PT

Paper No.	Subject Code	Subject title	Allotted Hours		Total Hours of study	No. of Hours / Week
			Theory	Practical		
	PT0301	General Medicine & Pediatrics*	50+30	***	80	2-3
I	PT0302	Surgery*	80	***	80	2-3
II	PT0303	Orthopedics & Traumatology*	80	***	80	2-3
V	PT0304	Neurology, Obstetrics & Gynecology*	50+30	***	80	2-3
V	PT0305	Physical & Functional Diagnosis	100	100	200	6-7
VI	PT0306	Research Methodology & Biostatistics	40+40	***	80	4-5
		Non-Exam Papers				
A.	PTs0307	Basics in Radiology & diagnostic procedures	20	***	20	1-2
B.	PTs0308	Psychiatry	20	***	20	1-2

* These medical subjects should be taken by respective medical faculty

THIRD YEAR B. PT

Paper No.	Subject Code	Subject title	Duration of theory exam	Mark Distribution				Max. Marks
				Theory		Practical		
				External	Internal	External	Internal	
I	PT0301	General Medicine & Pediatrics	3 Hours	80 (50+30)	20	****	****	100
II	PT0302	Surgery	3 Hours	80	20	****	****	100
III	PT0303	Orthopedics & Traumatology	3 Hours	80	20	****	****	100
IV	PT0304	Neurology, Obstetrics & Gynecology	3 Hours	80 (50+30)	20	****	****	100
V	PT0305	Physical & Functional Diagnosis	3 Hours	80	20	80	20	200
VI	PT0306	Research Methodology & Biostatistics	3 Hours	80	20	****	****	100

TRANSCRIPT

Third Year B. PT		
Papers for University Examination		
I	General Medicine & Pediatrics	80
II	Surgery	80
III	Orthopedics & Traumatology	80
IV	Neurology, Obstetrics & Gynecology	80
V	Physical & Functional Diagnosis	200
VI	Research Methodology & Biostatistics	80
Non-Exam Papers		
A.	Basics in Radiology & diagnostic procedures	20
B.	Psychiatry	20
	Supervised Clinical Observation	450
	Extra-curricular Activities (Conferences, Seminars, Educational Tours, Sports and Cultural Activities)	100
Total Hours in Third Year		1190

Paper I: SECTION – I: GENERAL MEDICINE

Subject Code: PT0301A **Theory: 50 Hours**

Method of Assessment: Written

Course Description: This module will focus on etiology, pathophysiology, clinical presentation and management of various medical conditions involving the cardio vascular, respiratory, pulmonary, metabolic and general infections enabling the learner to acquire skills to identify the conditions with appropriate history and clinical examination. Students will also learn the pharmacological management of these medical conditions, its effects on various symptoms and its use during therapy.

S. No	Description of topics	Hours
1.	**CARDIOVASCULAR MEDICINE**	**18**
1.1	Definition, Classification, Manifestation, general principles of diagnosis and management of Hypertension	
1.2	Definition, Manifestation, general principles of diagnosis and management of cardiac conditions – Ischemic Heart Disease, Rheumatic Heart Disease, Myocardial Infarction, Angina Pectoris, Heart Failure, Infective Endocarditis, Cardiomyopathy	
1.3	Definition, Manifestation, general principles of diagnosis and management of valvular heart disease – Congenital and Acquired	
1.4	Investigations used in Cardiovascular conditions – Basics of ECG (normal and abnormal), Stress testing	
1.5	ICU – Instrumentation including ventilation setting and monitoring, Assessment, monitoring and management in ICU	
2.	**RESPIRATORY MEDICINE**	**14**
2.1	Definition, Manifestation, general principles of diagnosis and management of common respiratory infections – Tuberculosis, pneumonia, bronchitis, lung abscess	
2.2	Definition, Manifestation, general principles of diagnosis and management of Obstructive and restrictive lung diseases – Chronic Bronchitis, Bronchiectasis, Asthma, Cystic Fibrosis	
2.3	Definition, Manifestation, general principles of diagnosis and management of pleural diseases – Pleural effusion, Pneumothorax, Hydropneumothorax, Emphysema	
2.4	Definition, classification, Manifestation, general principles of diagnosis and management of chest wall deformities	
2.5	Definition, Manifestation, general principles of diagnosis and management of Occupational lung diseases	

2.6	Investigations used in respiratory and pulmonary conditions – Chest X-ray, Blood Gas Analysis, Pulmonary Function testing (PFT)	
3.	**METABOLIC AND ENDOCRINE MEDICINE**	**08**
3.1	Definition, classification, Manifestation, general principles of diagnosis and management of Diabetes mellitus	
3.2	Definition, Manifestation, general principles of diagnosis and management of Thyroid, pituitary and adrenal conditions	
3.3	Definition, Manifestation, general principles of diagnosis and management of Obesity	
3.4	Definition, Manifestation, general principles of diagnosis and management of Nutrition Deficiency diseases	
4.	**BONE, JOINT AND CONNECTIVE TISSUE DISORDERS**	**05**
4.1	Definition, Manifestation, general principles of diagnosis and management of Arthritis (Rheumatoid and Osteo)	
4.2	Definition, Manifestation, general principles of diagnosis and management of Gout, Systemic Lupus Erythmatosis and Polymyositis	
5.	**DISORDERS OF BLOOD**	**05**
5.1	Definition, classification, Manifestation, general principles of diagnosis and management of Anemia	
5.2	Definition, classification, Manifestation, general principles of diagnosis and management of Hemophilia	

Recommended Books:

1. Davidson's Principles and practice of Medicine – Stuart H Ralston, Ian D Penman, Mark W J Strachan, Richard P Hobson
2. Harrison's Manual of Medicine – Dennis L Kasper, Eugene Braunwald, Anthony S Fauci, Stephen L Hauser, Dan L Longo, J Larry Jameson
3. Hutchinson's Clinical Methods: An Integrated Approach to Clinical Practice – Michael Swash, Michael Glynn
4. Kumar and Clark's Clinical Medicine – Parveen Kumar, Michael Clark

Paper I: SECTION – II: PEDIATRICS

Subject Code: PT0301B **Theory: 30 Hours**

Method of Assessment: Written

Course Description: This module will focus on etiology, pathophysiology, clinical presentation and management of various pediatrics conditions and students will acquire skills to identify and describe normal development and growth of a child, significance and importance of immunization and psychological aspects of development. It also will enable the learner to acquire skills of clinical examination of a neonate with respect to various physiological functions.

S. No	Description of topics	Hours
1.	**NORMAL GROWTH AND DEVELOPMENT**	03
1.1	Normal motor, sensory, mental, social and language development	
2.	**PRENATAL, NEONATAL AND POSTNATAL**	03
2.1	High Risk Pregnancy – maternal and neonatal factors	
2.2	Maternal infections	
2.3	Pregnancy induced hypertension and other chronic maternal diseases	
3.	**IMMUNIZATION PROGRAMMES FOR NEWBORN & CHILDREN**	03
3.1	WHO specified vaccinations	
4.	**NUTRITION FOR NEWBORN**	07
4.1	Nutritional requirements, breast feeding	
4.2	Malnutrition syndromes, Vitamin and mineral deficiencies in children and their management	
5.	**MEDICAL ISSUES IN CHILDREN**	14
5.1	Definition, pathology, clinical presentation and management of Cerebral Palsy, Poliomyelitis, Muscular Dystrophy, Rheumatic Fever, Mental retardation, Atrial Septal Defect, Ventricular Septal Defect and Patent Ductus Arteriosus	
5.2	Definition, pathology, clinical presentation and management of Tetanus, Diptheria, measles, chicken pox and malaria	

Recommended Books:

1. Examination of the Newborn: A Practical Guide – Helen Baston, Heather Durward
2. Nelson's Essentials of Pediatrics – Karen J Marcdante, Robert M Kleigman
3. Practical Pediatrics – M J Robinson, D M Roberton

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 50 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any Two out of Four)	10x2=20
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 30 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

Paper II: SURGERY

Subject Code: PT0302 **Theory: 80 Hours**

Method of Assessment: Written

Course Description: This module will enable the students to understand the basics of types of surgery, surgical incisions and post-surgical complications. It will also enable the learners to identify and interpret the investigations, pre-operative and post-operative evaluation, indications and management related to general surgery, neurosurgery, cardiothoracic surgery and reconstructive surgeries.

S. No	Description of topics	Hours
1.	**WOUND AND HEALING**	**10**
1.1	Classification of wound, basic process involved in repair, phases of healing process, clinical management of wound, factors affecting healing, scars and its types	-
2.	**GENERAL SURGERY**	**20**
2.1	Anaesthesia and its types, effects, indications and contraindications, potential complications and its management	
2.2	Common surgical incisions – classification, indications, advantages and disadvantages, complications.	
2.3	Abdominal Surgeries – Brief description of incisions, complications and management of appendisectomy, cholecystectomy, partial colostomy, ileostomy, hernia, prostractomy, nephrectomy	
2.4	Surgical Oncology – Definition, types, clinical manifestation, stages and surgical procedures involved in the management of cancer (specific to lungs, spine, breast, cervix and oral cavity)	
2.5	Mastectomy - classification, incisions, complications and management	
2.6	Tracheostomy - classification, indications, incisions and complications	
2.7	Surgical management of vascular disorders, Deep vein Thrombosis, Gangrene – classification, clinical presentation and management	
3.	**CARDIOTHORACIC AND PULMONARY SURGERY**	**20**
3.1	Brief description of indications, surgery and complications of surgeries of thorax, lungs, pleura and pericardium	
3.2	Brief description of clinical presentation, surgical management and complications of various valvular and congenital heart diseases – Ischemic heart disease, Atrial Septal Defect (ASD), Ventricular Septal Defect (VSD) and Patent Ductus Arteriosus (PDA)	

3.3	Brief description of indications, surgery and complications of peripheral arterial disorders including Deep Vein Thrombosis (DVT), Varicose veins, Arteriosclerosis, Atherosclerosis, Buerger's Disease, Raynaud's disease.	
3.4	Brief description of indications, surgery and complications of Thoracotomy, lobectomy, pneumonectomy, thoracoplasty	
4.	NEUROSURGERY	20
4.1	Brief description of indications and complications of neurosurgeries – Craniotomy, Cranioplasty, Deep Brain Stimulation, Shunting procedures, laminectomy and Rhizotomy, Thalamatomy, Pallidotomy, Endarterectomy	
4.2	Brief description of indications, surgery and complications of Intra cranial and spinal tumours, aneurysms and AV malformation	
4.3	Brief description of surgical options and management of peripheral nerve injuries	
5.	RECONSTRUCTIVE SURGERY	10
5.1	Skin grafts – Types, indications with special emphasis to burns and wounds	
5.2	Ulcers – Classification and post-operative care	
5.3	Keloid and hyperkeloid scar management	
5.4	Tendon transfer surgeries and their post-surgical management	

Recommended Books:

1. A Manual of Clinical Surgery – S Das
2. Bailey and Love's Short Practice of Surgery – Norman S Williams, Christopher J K Bulstrode, J Rojnan O'Connell
3. Essential Neurosurgery – Andrew H Kaye
4. Cardiothoracic Surgical procedures and techniques: A Practical Manual – J Ernesto Molina
5. Cardiac Surgery – Joseph E Fischer
6. General Thoracic Surgery – Thomas W Shields, Joseph Locicero III, Carolyn E Reed, Richard H Feins
7. Textbook of Plastic and Reconstructive Surgery – Deepak M Kalaskar, Peter E Butler, Shadi Ghali
8. Reconstructive Surgery: Anatomy, Technique and Application – Glyn Evan, Michael Zenn

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

Paper III: ORTHOPEDICS & TRAUMATOLOGY

Subject Code: PT0303 **Theory: 80 Hours**

Method of Assessment: Written

Course Description: This module will enable the learner to understand the aetiology, pathomechanics, clinical manifestation, conservative and surgical management of various traumatic and non-traumatic musculoskeletal and orthopedic conditions. It will also focus on clinical examination skills, differential diagnosis, application and interpretation of investigative procedures related to orthopedic conditions.

S. No	Description of topics	Hours
1.	**INTRODUCTION**	05
1.1	Orthopedic terminologies	
1.2	Clinical examination of an orthopedic patient – history taking, physical examination, differential diagnosis, investigative procedures (Plain radiograph, CT scan, MRI) – in brief	1
2.	**TRAUMATOLOGY**	40
2.1	*Fractures*	
2.1.1	Definition, classification, causes and mechanisms, clinical features, process of healing and repair, complications and management	
2.1.2	Causes, types, clinical presentation, mechanism of injury, complications, conservative and surgical management of Upper limb fractures	
2.1.3	Causes, types, clinical presentation, mechanism of injury, complications, conservative and surgical management of Lower limb fractures	
2.1.4	Causes, types, clinical presentation, mechanism of injury, complications, conservative and surgical management of Spine, thorax and pelvic fractures	
2.2	***Subluxations and Dislocations***	
2.2.1	Definition, classification, causes and mechanisms, clinical features, complications and management of subluxations and dislocations	
2.2.2	Causes, types, clinical presentation, mechanism of injury, complications, conservative and surgical management of shoulder, acromioclavicular, elbow and hip subluxations and dislocations	
2.3	***Soft tissue Injuries***	
2.3.1	Definition, grades and differentiation of terms used in soft tissue injuries – Strain, sprain, contusion, capsulitis, tendinitis, bursitis, tenosynovitis, Fasciitis	

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2.3.2	Causes, types, clinical presentation, mechanism of injury, complications, conservative and surgical management of soft tissue injuries of Upper limb	
2.3.3	Causes, types, clinical presentation, mechanism of injury, complications, conservative and surgical management of soft tissue injuries of Lower limb	
2.3.4	Causes, types, clinical presentation, mechanism of injury, complications, conservative and surgical management of soft tissue injuries of spine	
2.3.5	Crush injuries of hand and foot	
2.4	***Amputations***	
2.4.1	Indications for amputation, Classification, Levels of amputation of Upper and Lower limb, general principles of management following amputation	
3.	**NON-TRAUMATOLOGY**	35
3.1	***Deformities and Anomalies***	
3.1.1	Definition, classification, causes, clinical presentation, investigations, complications and management of congenital and acquired deformities of neck and Spine – Klippel Feil syndrome, Torticollis, Thoracic and chest wall deformities, Hyperlordosis, Hyperkyphosis, Scoliosis, Spina Bifida, Meningomyelocele	
3.1.2	Definition, classification, causes, clinical presentation, investigations, complications and management of congenital and acquired deformities of Upper limb – Sprengel's shoulder, Scapular winging, Cubitus Valgus, Cubitus Varus, Dupuytren's contracture, Madelung's deformity, limb deficiencies and hand anomalies	
3.1.3	Definition, classification, causes, clinical presentation, investigations, complications and management of congenital and acquired deformities of Lower limb – Congenital Dislocation of Hip, Coxa Vara, Coxa Valga, Genu Varum, Genu Valgum, Genu Recurvatum, Congenital Talipes Equinovarus, Pes cavus, Pes Planus, Hallux Valgus, Hallux Rigidus, Hammer Toe	
3.2	***Infective, Inflammatory and Degenerative Conditions***	
3.2.1	Definition, classification, causes, clinical presentation, investigations, complications and management of common infective conditions of musculoskeletal system – Osteomyelitis, Pyogenic Arthritis, Tuberculous Arthritis, Septic Arthritis	
3.2.2	Definition, classification, causes, clinical presentation, investigations, complications and management of common inflammatory conditions - Rheumatoid Arthritis, Psoriatic Arthritis, Hemophilic Arthritis, Juvenile Arthritis, Gouty Arthritis,	

	Periarthritis, Spondylitis, Capsulitis, Tendinitis, Bursitis, Tenosynovitis	
	Definition, classification, causes, clinical presentation, investigations, complications and management of common degenerative conditions – Spondylosis, Spondylolysis and listhesis, Intervertebral Disc Prolapse, Tennis Elbow and Golfer's Elbow, Osteoarthrosis	
3.3	***Tumors***	
3.3.1	Definition, classification, causes, clinical presentation, investigations, complications and management of benign and malignant tumors of musculoskeletal system	
3.4	***Metabolic bone diseases***	
3.4.1	Definition, causes, clinical presentation, investigations, complications and management of metabolic bone diseases – Osteomalacia, Osteopenia, Osteoporosis, Rickets	
3.5	***Surgical Procedures in Orthopedics***	
3.5.1	Classification, Indications, pre-operative and post-operative management of common orthopedic surgical procedures – Arthroplasties, Osteotomies, Arthrodesis, spinal surgeries	
3.6	***Miscellaneous Orthopedic conditions***	
3.6.1	Causes, clinical presentation, complications, conservative and surgical management of entrapment syndromes, compartment syndrome, IT Band syndrome, Piriformis syndrome, Plica syndrome, Hoffa's Fat Pad syndrome	
3.6.2	Causes, clinical presentation, complications, conservative and surgical management of poliomyelitis, leprosy, Metatarsalgia, Morton's Neuroma, Coccydynia	

Recommended Books:

1. Apley's System of Orthopedics and Fractures – Louis Solomon, David Warwick, Selvadurai Nayagam
2. Clinical Orthopedic Examination – Ronald McRae
3. Cyriax's Illustrated Manual of Orthopedic Medicine – J H Cyriax, P J Cyriax
4. Taylor's Musculoskeletal problems and injuries – Robert B Taylor
5. Turek's Orthopedics: Principles and their application – Stuart L Weinstein, Joseph A Buckwalter
6. Essentials of Orthopedic Surgery – Sam W Weisel, John N Delahay
7. Surgical Exposures in Orthopedics: The Anatomic Approach – Stanley Hoppenfeld, Piet de Boer, Richard Buckley

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QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

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Paper IV: SECTION – I: NEUROLOGY

Subject Code: PT0304A **Theory: 50 Hours**

Method of Assessment: Written

Course Description: This module will enable the learner to understand the aetiology, pathomechanics, clinical manifestation, conservative and surgical management of various neurological conditions. It will also focus on clinical examination skills, differential diagnosis, application and interpretation of investigative procedures related to neurological conditions.

S. No	Description of topics	Hours
1.	**INTRODUCTION**	**02**
1.1	Applied neuroanatomy: of brain and spinal cord, blood supply, connections of cerebellum and extra pyramidal tracts, relationship of spinal nerves to spinal cord segments, cranial nerves and plexuses (in Brief)	
1.2	Applied physiology: basis / disorders of tone, muscle contraction & movement, posture, bladder and bowel control, level of lesion – in brief	
2.	**NEUROLOGICAL ASSESSMENT**	**06**
2.1	Principles of clinical examination, diagnosis and differential diagnosis	
	Assessment of higher mental function, cranial nerves, motor and sensory system, tone, cerebellar function	
2.2	Investigative procedures in neurological conditions (in brief)	
3.	**DISORDERS OF BRAIN**	**15**
3.1	Cerebrovascular accidents - Definition, classification, causes, clinical presentation, investigations, complications, medical and surgical management	
3.2	Traumatic Head injury – classification, causes, clinical presentation, investigations, complications, medical and surgical management; Brief description on coma.	
3.3	Extrapyramidal lesions – classification based on region involved, causes, clinical presentation, investigations, complications, medical and surgical management of Parkinson's disease, Parkinsonism, Chorea, Athetosis, Dystonia, Hemiballismus	
3.4	Cerebellar Dysfunction – classification, causes, clinical presentation, investigations, complications, medical and surgical management	

3.5	Cranial Nerve lesions – causes, clinical presentation, investigations, complications, medical and surgical management	
3.6	Brain Tumors – classification, causes, clinical presentation, investigations, complications, medical and surgical management	
4.	**DISORDERS OF SPINAL CORD**	**07**
4.1	Traumatic Spinal Cord Injury – classification based on level of lesion, causes, clinical presentation, investigations, complications, medical and surgical management	
4.2	Spinal Tumors – classification, causes, clinical presentation, investigations, complications, medical and surgical management	
4.3	Classification, causes, clinical presentation, investigations, complications, medical and surgical management of Transverse Myelitis, Sub acute combined degeneration of cord, Conus Medullaris syndrome, Syringomyelia and Spina Bifida	
5.	**PERIPHERAL NERVE LESIONS**	**08**
5.1	Classification, causes, clinical presentation, investigations, complications, medical and surgical management of peripheral nerve injuries of Upper and Lower extremities	
5.2	Classification, causes, clinical presentation, investigations, complications, medical and surgical management of Entrapment or compression neuropathies of Upper and Lower extremities	
5.3	Classification, causes, clinical presentation, investigations, complications, medical and surgical management of Polyneuropathy	
5.4	Causes, clinical presentation, investigations, complications, medical and surgical management of Plexopathies – Brachial and Lumbosacral	
5.5	Classification, causes, clinical presentation, investigations, complications, medical and surgical management of radiculopathies of Upper and Lower extremities	
6.	**DEMYELINATING AND INFLAMMATORY CONDITIONS**	**03**
6.1	Classification, causes, clinical presentation, investigations, complications, medical and surgical management of Acute Disseminated Encephalomyelitis, Multiple Sclerosis, Guillian Barre Syndrome, Encephalitis, Meningitis, Poliomyelitis, Tabes Dorsalis	
7.	**NEUROMUSCULAR DISORDERS**	**03**
7.1	Classification, causes, clinical presentation, investigations, complications, medical and surgical management of Progressive Muscular Dystrophy, Spinal Muscular Atrophy, Myopathies, Motor Neuron Disease	

8.	**NEUROMUSCULAR JUNCTION DISORDERS**	**02**
8.1	Classification, causes, clinical presentation, investigations, complications, medical and surgical management of Myasthenia Gravis, Eaton-Lambert syndrome	
9.	**CHILDHOOD NEUROLOGICAL DISORDERS**	**04**
9.1	Classification, causes, clinical presentation, investigations, complications, medical and surgical management of Cerebral Palsy, Down's syndrome, Autism, Hydrocephalus, Epilepsy	

Recommended Books:

1. Adams and Victor's Principles of Neurology – Allan H Ropper, Robert H Brown
2. Bickerstaff's Neurological Examination in Clinical Practice – Kameshwar Prasad, John Spillane, Ravi Yadav
3. Brian's Disease of the Nervous System – Michael Donaghy
4. Clinical Neurology – Michael J Aminoff, David A Greenberg, Roger P Simon
5. Color Atlas of Neuroscience: Neuroanatomy and Neurophysiology – Ben Greenstein, Adam Greenstein
6. Harrison's Neurology in Clinical Medicine – Stephen L Hauser
7. Movement Disorders in Clinical Practice – K Ray Chaudhari, Willian G Ondo
8. Neurology and Neurosurgery Illustrated – Kenneth W Lindsay, Ian Bone, Robin Callander
9. A Color Handbook: Pediatric Neurology – James F Bale Jr., Joshua L Bonkowsky, Francis M Filloux, Gary L Hedlund, Denise M Nielsen, Paul D Larsen
10. Textbook of Traumatic Brain Injury – Jonathan M Silver, Thomas W McAllister, Stuart V Yudofsky

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Paper IV: SECTION – II: OBSTETRICS & GYNECOLOGY

Subject Code: PT0304B **Theory: 30 Hours**

Method of Assessment: Written

Course Description: This module will focus on the basic principles of etiology, pathophysiology, clinical examination, investigation, diagnosis, management and prognosis of various medical conditions involving the female reproductive system. It will cover normal and abnormal physiological events related to puberty, pregnancy and menopause and clinical examination related to it.

S. No	Description of topics	Hours
1.	**GYNECOLOGICAL CONDITIONS**	**12**
1.1	Physiology of puberty and menstruation, hormonal regulation of menstruation	
1.2	Classification of menstrual abnormalities, clinical presentation, diagnosis and management	
1.3	Classification, causes, clinical presentation, diagnosis and management of Urogenital dysfunctions - Uterine prolapse, Cystocele, Rectocele, Enterocele, Urethrocele	
1.4	Indications, principles, pre and post-surgical management of common gynecological surgeries – Pelvic floor repairs, Hysterectomy, Hysterosalphingography	
1.5	Causes, clinical presentation, diagnosis and management of pelvic inflammatory diseases	
1.6	Physiology, complications and management of pre, peri and post-menopausal symptoms	
2.	**PREGNANCY AND LABOR**	**18**
2.1	Diagnosis of pregnancy, Development of fetus, physiological changes during pregnancy, prenatal complications, diagnosis and management	
2.2	High risk pregnancy, Eclampsia, Diabetes Mellitus, Anaemia – diagnosis and management	
2.3	Stages and events of normal labor	
2.4	Types of Surgical procedures of labor, post-operative care – Assisted Delivery, Episiotomy, Forceps delivery, Caeserian section	
2.5	Complications during labor and its management	
2.6	Postnatal complications and its management, Puerperium and lactation, complications of multiple or repeated child bearing	

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2.7	Medical termination of pregnancy – types, complications and management	

Recommended Books:

1. A Guide to Effective care in Pregnancy and Childbirth – Murray Enkin, Marc J N C Keirse, James Neilson, Caroline Crowther, Leila Duley, Ellen Hodnett, Justus Hofmeyr
2. DC Dutta's Textbook of Gynecology – Hiralal Konar
3. DC Dutta's Textbook of Obstetrics – Hiralal Konar
4. Dewhurst's Textbook of Obstetrics and Gynaecology – Keith D Edmonds
5. Howkins & Bourne Shaw's Textbook of Gynaecology – Sunesh Kumar, VG Padubidri, Shirish N Daftary
6. Obstetrics for Undergraduates – Parimala Devi
7. Practical Obstetrics and Gynaecology Handbook for the General Practitioner – Tan Thiam Chye, Tan Kim Teng, Tay Eng Hseon

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 50 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any Two out of Four)	10x2=20
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 30 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

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Paper V: PHYSICAL AND FUNCTIONAL DIAGNOSIS

Subject Code: PT0305 **Theory: 100 Hours** **Practical: 100 Hrs**

Method of Assessment: Written, Practical and Oral

Course Description: This module will enable the students to understand assessment and evaluation, its significance in diagnosis, both physical and functional. It will be an integration of clinical knowledge to physiotherapy specialty, gained in medical and surgical subjects and thereby students can apply this knowledge to diagnose conditions and plan treatment goals based on the physical and functional diagnoses.

S. No	Description of topics	Hours
1.	**INTRODUCTION**	3
1.1	Definition of Assessment and Evaluation, Diagnosis and differential diagnosis	
1.2	Definition of physical diagnosis and functional diagnosis	
2.	**ASSESSMENT FORMATS**	12
2.1	SOAP format in general and specific to various specialized areas of disorders – Musculoskeletal, neurological, cardiorespiratory, sports, pediatrics, geriatrics, women's health	
2.2	Functional examination- scale and its interpretation, importance of reliability & validity in different types of scales, Patient Reported Outcome Measures and Performance Based Outcome Measures	
2.3	Functional Diagnosis using ICIDH-2, ICF	
3.	**DIAGNOSTIC AND INVESTIGATIVE PROCEDURES**	5
3.1	Principles of use, Interpretation and limitations of common investigative procedures used in diagnosis – Radiograph, CT Scan, MRI, ECG, PFT, ABG, Spirometry, Electrodiagnosis including FG test, SD curve, Nerve Conduction Studies, EMG, H and F Reflex, Diagnostic Biofeedback – in Brief	
4.	**PAIN ASSESSMENT**	5
4.1	Definition, characteristics, types of pain including CRPS I & II, and mechanism of pain and pain modulation	
4.2	Subjective and objective methods and tools to evaluate pain	
5.	**MUSCULOSKELETAL ASSESSMENT AND EVALUATION**	20
5.1	Postural Assessment - Common methods and tools used and its interpretation	
5.2	Gait Assessment - Components of Gait cycle, observational gait analysis, Temporospatial measures of Gait and its measurements, Self-reported and Performance based measures of Gait Assessment,	

	Instrumented Gait Analysis, different components used and its interpretation, Pathological gait patterns in common Neuromusculoskeletal conditions, its presentation and assessment	
5.3	Motor Examination - Assessment and Evaluation of tone, reflexes (Deep Tendon), Assessment and Evaluation of Joint mobility (ROM) – Passive, Active, Resisted and Isometric, End feel, Assessment and Evaluation of Muscle power and strength, different methods used to assess muscle strength and power, Muscle Length Testing, Limb length measurement, measurement of various angles specific to upper limb, lower limb and spine	
5.4	Special Tests - Commonly used special tests for upper, lower limb and spine, Brief summary of Sensitivity and specificity of special tests	
6.	**NEUROLOGICAL ASSESSMENT AND EVALUATION**	**20**
6.1	Sensory Examination – Dermatomal assessment, Assessment and Evaluation of superficial, deep and cortical sensation specific to common pathological conditions,	
6.2	Assessment and Evaluation of reflexes – superficial, primitive neonatal, cortical	
6.3	Assessment and Evaluation of higher mental function–Level of consciousness, cognitive function including memory and attention, speech and language, cortical functions	
6.4	Assessment and Evaluation of Cerebellar dysfunction including coordination and balance testing	
6.5	Assessment and Evaluation of movement disorders	
6.6	Cranial nerve examination	
6.7	Assessment and Evaluation of peripheral nerve injury and impairment	
6.8	Assessment and Evaluation of autonomic and bladder dysfunctions	
7.	**CARDIOPULMONARY & RESPIRATORY ASSESSMENT AND EVALUATION**	**20**
7.1	Measurement of vitals (Heart rate, blood pressure, respiratory rate)	
7.2	Interpretation of Cough and sputum examination, Arterial Blood Gas Analysis	
7.3	Interpretation of heart sounds, breath sounds and breathing patterns	
7.4	Chest expansion measurements and assessment of symmetry of chest movement	
7.5	Assessment and Evaluation of Dyspnea, Rate of Perceived Exertion	
7.6	Functional capacity Evaluation – Submaximal and maximal exercise testing protocols	
	Pulmonary Function Testing (PFT) and Spirometry	

8.	SPORTS AND FITNESS ASSESSMENT AND EVALUATION	15
8.1	Brief introduction - On field and laboratory assessment and evaluation and preparticipation evaluation	
8.2	Anthropometric measures in assessment of fitness including body composition	
8.3	Assessment and Evaluation of Aerobic capacity, Anaerobic capacity, Flexibility, muscle strength and power in Sports and Fitness	
8.4	Brief introduction to performance testing in sports	

Recommended Books:

1. Assessment in Physical Medicine and Rehabilitation: Views and perspectives – Michel Barat, Franco Franchignoni
2. Clinical Tests for the Musculoskeletal System Examinations: Signs, Phenomena – Klaus Buckup
3. Orthopedic Physical Assessment Atlas and Video: Selected Special Tests and Movements – David J Maggie, Derrick Sueki
4. Diagnosis for Physical Therapists: A Symptom-Based Approach – Todd E Davenport, Kornelia Kulig, Chris Sebelski, James Gordon, Hugh G Watts
5. Differential Diagnosis for Physical Therapists: Screening for Referral – Catherine Cavallaro Goodman, Teresa E. Kelly Snyder
6. Dutton's Orthopaedic Examination, Evaluation and Intervention – Mark Dutton
7. Evaluation of Joint Motion: Methods of Measurement and Recording – Dortha Esch, Marvin Lepley
8. Goniometry and Manual Muscle Testing: A Handbook for Students and Clinicians – Lynn Van
9. Handbook of Pain Assessment – Dennis C Turk, Ronald Melzack
10. Principles and Practice of Physical Rehabilitation – Neeta J Vyas, Megha S Sheth, Srishti S Sharma, Priyasingh B Rangey
11. Writing Patient/Client Notes: Ensuring Accuracy in Documentation – Ginge Kettenb
12. Rehabilitation and Health Assessment: Applying ICF Guidelines – Elias Mpofu, Thomas Oakland
13. Pulmonary Function Testing and Cardiopulmonary Stress Testing – Vincent C Madama
14. Joint Range of Motion and Muscle Length Testing – Nancy Berryman Reese, William D. Bandy
15. Lukan's Documentation for Physical Therapist Assistants – Wendy D. Bircher
16. Daniels and Worthingham's Muscle Testing: Techniques of Manual Examination – Helen J Hislop, Jacqueline Montgomery
17. Measurement of Joint Motion A Guide to Goniometry – Cynthia C. Norkin, D. Joyce White

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18. Neuromusculoskeletal Examination and Assessment: A Handbook for Therapists – Nicola J. Petty
19. Therapy Outcome Measures for Rehabilitation Professionals – Pamela Enderby, Alexandra John, Brian Petheram
20. Interpretation of Pulmonary Function Tests: A Practical Guide – Robert E. Hyatt, Paul D. Scanlon, Masao Nakamura
21. Wilkins' Clinical Assessment in Respiratory Care – Albert J. Heuer, Craig L. Scanlan
22. Rapid ECG Interpretation – Gabriel Khan
23. Manual of Nerve Conduction Studies – Ralph M. Buschbacher, Nathan D. Prahlow
24. Electromyography in Clinical Practice – Bashar Katirji
25. 101 Performance Evaluation Tests – Brian Mackenzie
26. Assessments for Sport and Athletic Performance – David H. Fukuda
27. Performance Assessment for Field sports – Christopher Carling, Thomas Reilly, A. Mark Williams

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

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PRACTICAL (100 Hours)

Practical skillful application of appropriate assessment, evaluation and diagnostic procedures on patients:

1. Demonstration and practice of different subjective and objective pain assessment, evaluation and interpretation of test results
2. Demonstration and practice of Observational postural assessment and measurement of various postural angles and its interpretation
3. Demonstration and practice of Observational gait analysis and measurement of temporal and spatial variables and its interpretation
4. Demonstration and practice of Examination of superficial, deep and cortical sensation and its interpretation
5. Demonstration and practice of assessment of tone, joint mobility including range of motion and flexibility and its interpretation
6. Demonstration and practice of assessment of muscle strength, power and endurance and its interpretation
7. Demonstration and practice of limb length measurement and its interpretation
8. Demonstration and practice of commonly used special tests as a diagnostic tool and its interpretation
9. Demonstration and practice of reflex testing and its interpretation
10. Demonstration and practice of assessment of higher mental function and its interpretation
11. Demonstration and practice of assessment of cerebellar dysfunction and its interpretation
12. Demonstration and practice of cranial nerve examination and its interpretation
13. Demonstration of basics of interpretation of Electrodiagnosis including Faradic Galvanic Testing, Nerve Conduction Velocity and EMG
14. Demonstration and practice of vital signs examination and its interpretation
15. Demonstration and practice of chest expansion measurement and its interpretation
16. Demonstration and practice of Rate of Perceived Exertion and its interpretation
17. Demonstration of submaximal exercise testing and its interpretation
18. Demonstration of Pulmonary Function Testing and spirometry and its interpretation
19. Demonstration of commonly used aerobic and anaerobic tests and their interpretation
20. Demonstration and practice of assessment of fitness parameters and their interpretation

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PRACTICAL EXAM FORMAT (80 marks)

Type	Description	Marks (40)
Long Case*	Detailed subjective examination	5
	Relevant Physical Examination	10
	Differential Diagnosis based on history and Physical Examination	5
	Evaluation (including interpretation of results of examination)	10
	Diagnosis – Clinical, Physical and Functional	10

*Long Case: Students should perform a detailed assessment and evaluation of patient with any neuro, musculoskeletal, cardiorespiratory, sports conditions and identify the clinical and Physiotherapy diagnosis based on their evaluation.

Type	Description	Marks (20)
Short Case*	Relevant Physical Examination	8
	Evaluation (including interpretation of results of examination)	7
	Diagnosis – Possible physical and functional limitations of patient based on the signs elicited	5

* Short Case: Students should perform the technique of examination of a specific symptom (for example: pain assessment, tone assessment, motor or sensory assessment) on any neuro, musculoskeletal, cardiorespiratory, sports conditions and identify the possible functional limitation based on the signs elicited.

Viva on the basic principles of assessment, evaluation and diagnosis aspects of neuro, musculoskeletal, cardiorespiratory and sports conditions. (20 marks)

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Paper VI: SECTION – I: RESEARCH METHODOLOGY

Subject Code: PT0306A **Theory: 40 Hours**

Method of Assessment: Written

Course Description: This module will explain the basic concepts of research, importance of conducting research in Physiotherapy and will enable students to learn the basic methods to conduct research in a clinical set up. It will simplify the steps of conducting research from the beginning by formulating a research question and explain the different methods used to take forward the research, sample selection, data collection and will lead to statistical analysis which is part of Biostatistics. It will also provide the basics of reporting the results and writing a scientific research paper.

S. No	Description of topics	Hours
1.	**INTRODUCTION**	06
1.1	Understanding Research: Basic concepts of research, its application in various fields and its importance in Physiotherapy. Types of research, Research method versus Research methodology. Characteristics of good research, Problems encountered by researchers in India	
1.2	Steps in research process, Concepts and components of research proposal	
	PART – I: THE RESEARCH PROCESS – PLANNING STAGE	
2.	**RESEARCH QUESTION**	03
2.1	Research Question, its components, methods to frame a research question	
2.2	Research Variables: Dependent and Independent, Levels of measurement (Outcome variables), measurement errors, scaling techniques. Hypothesis: Null and Alternative, One and Two tailed Hypothesis. Formulating a Hypothesis	
3.	**REVIEW OF LITERATURE**	05
3.1	Significance of literature review, methods of review and tools used for literature search – search engines and databases	
3.2	Critical appraisal of searched literature	
4.	**STUDY DESIGNS**	10
4.1	Classification of study designs: characteristics, pros and cons of different types of study designs.	
5.	**TESTING THE HYPOTHESIS**	03
5.1	Understanding hypothesis testing, Errors encountered in testing the hypothesis	
5.2	Basics of choosing the right statistical tests	

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PART – II: THE RESEARCH PROCESS – EXECUTION STAGE		
6.	**DATA COLLECTION PROCEDURE**	03
6.1	Reliability and Validity: Definition, importance of reliability and validity during data collection.	
6.2	Types of data and methods used for data collection, pros and cons of various data collection methods	
7.	**ORGANIZING AND PROCESSING DATA**	02
7.1	Methods of organizing and processing data, its significance	
8.	**REPORTING RESEARCH SCIENTIFICALLY**	04
8.1	Basic understanding of reporting research findings, steps to follow while submitting research findings	
9.	**RESEARCH ETHICS**	04
9.1	Ethics: Definition, importance in research and different types of scientific misconduct in research.	
9.2	Plagiarism: Definition, types and ways to prevent it.	
9.3	Getting Research Into Practice (GRIP), Introduction to basics of Evidence Based Practice	

Recommended Books:

1. Research Methods for Clinical Therapists: Applied Project Design and Analysis – Carolyn M Hicks
2. Rehabilitation Research: Principles and Applications – Russell Carter, Jay Lubinsky, Elizabeth Domholdt
3. Research Methodology: Methods and Techniques – C R Kothari
4. Essentials of Research Methodology for All Physiotherapy and Allied Health Sciences Students – A Thangamani Ramalingam, S N Senthilkumar

15/08/2021

Paper VI: SECTION – II: BIOSTATISTICS

Subject Code: PT0306B **Theory: 40 Hours**

Method of Assessment: Written

Course Description: Biostatistics as a subject covers the basic concepts of statistics in human research, methods of data collection procedures commonly used in research, representation of data in analytical formats, its analysis and interpretation. After completion of this module, students will be able to identify the appropriate statistical methods and tests to use in their research. This will also enable them to use appropriate statistical applications to analyze their data and reason out the interpretation of their research results in publication.

S. No	Description of topics	Hours
1.	INTRODUCTION	02
1.1	Definition – Statistics and Biostatistics	
1.2	Basic application of statistics in health care research	
1.3	Descriptive versus Inferential statistics	
2.	VARIABLES AND DATA	05
2.1	Types of Variables, scales of measurement	
2.2	Data, types – Qualitative and Quantitative, data collection methods (in brief)	
2.3	Representing data – Types of data presentation, Basic principles of graphical and tabular presentation	
3.	PROBABILITY	03
3.1	Meaning of probability, probability of an event, binomial distribution	
3.2	Normal distribution and characteristics of a normal curve	
3.3	Divergence from normality – Skewness and Kurtosis	
4.	MEASURES OF CENTRAL TENDENCY	04
4.1	Definition and calculation of Mean, median and mode – Grouped and Ungrouped	
4.2	Comparison of Mean, Median and Mode	
4.3	Reasoning behind the use of mean, median and mode	
4.4	Partition values – Quartiles, Deciles and Percentiles	
5.	MEASURES OF DISPERSION	03
5.1	Range, Mean deviation and standard deviation and their significance in statistics	

6.	SAMPLING PROCEDURE	03
6.1	Population and Sample, sample size calculation and its significance, sampling frame, types of sampling – random and non-random and its sub types..	
7.	HYPOTHESIS TESTING	04
7.1	Types of hypothesis – Null and Alternative, One tailed and Two tailed. Level and tests of significance, degrees of freedom, acceptance and rejection of null hypothesis.	
7.2	Type I and Type II errors	
8.	CORRELATION AND REGRESSION	04
8.1	Bivariate distribution, coefficient of correlation, calculation and interpretation of correlation coefficient, graphical representation of correlation statistics	
8.2	Lines of regression, types of regression coefficient, calculation and interpretation of regression coefficient	
9.	PARAMETRIC AND NON-PARAMETRIC TESTS	09
9.1	Difference between parametric and non-parametric tests	
9.2	Reasoning behind choosing a parametric or non-parametric test	
9.3	Tests for normality, Paired and Unpaired t-test, Z test, ANOVA, ANCOVA, MANOVA, Repeated Measures ANOVA	
9.4	Chi Squared test, Wilcoxon test, Mann Whitney test, Kruskal-Wallis test, Friedmann test	
10.	STATISTICAL SOFTWARES	03
10.1	Brief introduction to software used for statistical analysis	

Recommended Books:

1. Methods in Bio-Statistics – B.K. Mahajan
2. An introduction of Biostatistics – Sunder Rao. P.S.S
3. Basic Biostatistics: Statistics for Public Health Practice – B. Burt Gerstman
4. Essential Medical Statistics – Betty R Kirkwood, Jonathan A. C. Sterne

18/05/2021

QUESTION PAPER PATTERN FOR THEORY EXAMINATION

Section – I: 40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 1 Long Essay Type	(Any One out of Two)	10x1=10
Q: 2 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 3 Short Answer Type	(Any Five out of Six)	3x5=15
Section – II:40 Marks		
Type of question	**Number of Questions**	**Marks for Each Question**
Q: 4 Long Essay Type	(Any One out of Two)	10x1=10
Q: 5 Short Essay Type	(Any Three out of Four)	5x3=15
Q: 6 Short Answer Type	(Any Five out of Six)	3x5=15

NON-EXAM PAPERS

A. BASICS IN RADIOLOGY & DIAGNOSTIC PROCEDURES

Course Description: This course is designed to help the student acquire the basic knowledge on understanding the indications for radiology in musculoskeletal and cardiothoracic conditions, its interpretation along with other diagnostic procedures commonly used in Physiotherapeutic and medical diagnosis.

S. No	Description of topics	Hours
1.	Basic principles of imaging techniques – X-ray, CT scan, MRI, US imaging	6
2.	Common Indications for imaging techniques in musculoskeletal and cardiothoracic conditions	3
3.	Precautions and dangers of exposure	3
4.	Interpretation of diagnostic findings of X-ray, CT scan, MRI, US imaging	8

B. PSYCHIATRY

Course Description: At the completion of this course, students must be able to identify the basic principles of Psychiatry and common human behavior. This module will also enable students to understand behavioral changes in relation to pathological conditions and methods to identify and manage them.

S. No	Description of topics	Hours
1.	Difference between normal and abnormal human behavior	2
2.	Classification of Psychiatric disorders	3
3.	Psychoneurotic, Psychosomatic and personality disorders – Basic introduction, differences, clinical presentation and management	4
4.	Drug and Alcohol abuse and dependence	3
5.	Psychiatric disorders of childhood and adolescence	3
6.	Commonly used Psychiatric tests	2
7.	Psychiatric counselling and therapies – Basic principles	3

FOURTH YEAR B. PHYSIOTHERAPY

SCHEME OF EXAMINATION: SUBJECTS AND DISTRIBUTION OF MARKS

Sr. No.	Subject Code	Subject	Theory Marks		Practical Marks		Total Marks
			External	Internal	External	Internal	
1	PT0401	Physiotherapy in Neurological Conditions	80	20	80	20	200
2	PT0402	Physiotherapy in Musculoskeletal Conditions	80	20	80	20	200
3	PT0403	Physiotherapy in Cardio respiratory and Medical Surgical Conditions	80 (55+25)	20 (15+5)	80	20	200
4	PT0404	Community Physiotherapy Rehabilitation and assistive technologies	80 (55+25)	20 (15+5)	80	20	200
5	PT0405	Ethics and Management	40	10	-	-	50
Total			**360**	**90**	**320**	**80**	**850**

DISTRIBUTION OF HOURS

Paper No.	Subject Code	Subject	Theory Hours	Practical Hours	Total	No. of Hours / Week
I	PT0401	Physiotherapy in Neurological Conditions	120	20	140	4-5
II	PT0402	Physiotherapy in Musculoskeletal Conditions	120	20	140	4-5
III	PT0403	Physiotherapy in Cardiorespiratory and Medical Surgical Conditions	100	20	120	3-4
IV	PT0404	Community Physiotherapy Rehabilitation	60	-	60	2-3
		Assistive Technologies	30	-	30	
V	PT0405	Recent Practice Trends • Professional Practice & Ethics • Administration, Management and Marketing	20 20	-	20 20	1-2
		Supervised Clinical Practice (4 Hours/Day)	-	960	960	24

1. PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Subject Code: PT0401 **Total Hours: 140**

OBJECTIVES: -

At the end of the course candidate will be able to

1. Acquire the knowledge of normal neurodevelopment with specific reference to locomotion.
2. Assess, identify and analyze neuromotor and psychosomatic dysfunction in terms of alteration in the muscle tone, power, coordination, involuntary movements, sensations, perceptions etc.
3. Correlate the assessment findings with provisional diagnosis and investigations such as EMG/NCS and arrive at Physical and functional diagnosis with clinical reasoning in various neuromuscular disorders.
4. Plan, prescribe and execute short term and long term treatment with special reference to relief of neuropathic and psychosomatic pain and use of various physiotherapeutic techniques/ modalities, including ergonomic advice and parent education in neuro pediatric cases.
5. Prescribe appropriate orthoses/splints and fabricate temporary protective and functional splints.

SYLLABUS: -

1. Review of basic neuro anatomy and physiology
2. Physiotherapy techniques to improve tone, voluntary control, co-ordination.
3. Neuro physiotherapeutic Techniques: Concepts, principles, techniques and effects of: NDT, PNF, Brunnstrom movement therapy, Vojta therapy, Rood's sensory motor approach, Contemporary task-oriented approach.
4. Application of skills as PNF, co-ordination, functional re- education, balancing exercise by using techniques based on neuro physiological principles.
5. Tools used for neuro rehabilitation like vestibular balls, tilt board etc.
6. Application of transfer, functional re-education exercises & gait training.
7. Bladder training.
8. Developing a philosophy for caring.
9. Prescription of appropriate orthotic devices & fabrication of temporary splints.
10. Lifting techniques, wheel chair modifications, adaptive devices.
11. Ergonomic advice for prevention/rehabilitation to the patients / parents /caregivers.
12. Education about handling of a patient.
13. **Pediatric Neuro-physiotherapy**
    Use of various Neurophysiological approaches & modalities in high risk babies, minimum brain damage, developmental disorders, Cerebral palsy, Down's syndrome, Hydrocephalus, Spina bifida.
14. **Assessment & management of brain Disorders**
    Stroke, Meningitis, Encephalitis, Head Injury, Parkinson's disease, parkinsonism syndromes, Multiple sclerosis, Brain tumors.

15. **Assessment & management of spinal cord lesions and bladder dysfunction**
    Multiple sclerosis, transverse myelitis, Poliomyelitis/PPRP, syringomyelia, spinalcord injury and sub-acute combined degeneration of spinal cord, Motor neuron disease (ALS, SMA and other types), spinal tumors.
16. **Assessment & Management of Co-ordination Disorders**
    Ataxia, Friedriech's ataxia, Cerebellar ataxia, Sensory ataxia.
17. **Assessment & Management of Muscle Disorders**
    Muscular dystrophy (DMD) & other myopathies.
18. **Assessment & Management of disorders of neuromuscular junction**
    Myasthenia Gravis.
19. **Assessment & management of neuropathies and nerve injuries**
    Emphasis on 5th, 7th and 8th cranial nerves, Peripheral nerves, Polyneuropathy – Classification of Polyneuropathies.
20. **Pre- and post-surgical assessment & management in neuro surgery**
    Hydrocephalus and myelomeningocele, C.V. junction anomalies, syringomyelia
21. **Electro diagnostic procedures and prognosis in neurological disorders**
    SD curves, EMG & NCS.

Topic Distribution for Paper Setting	
Section	Topic Sr. No.
I (40 Marks)	1-15
II (40 Marks)	16-21

2. PHYSIOTHERAPY IN MUSCULO-SKELETAL CONDITIONS

Subject Code: PT0402 **Total Hours: 140**

OBJECTIVES: -

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

1. Identify, discuss and analyze the musculoskeletal dysfunction in terms of biomechanical, kinesiological and biophysical basis and correlate the same with the provisional diagnosis, routine radiological and electro physiological investigations and arrive at appropriate physical and functional diagnosis with clinical reasoning
2. Describe as well as acquire the skill of executing short- and long-term physiotherapy treatment by selecting appropriate modes of mobilization/ manipulation, electrotherapy, therapeutic exercise and appropriate ergonomic advice for the relief of pain, restoration/maintenance of function & / or rehabilitation for maximum functional independence in ADLs at home & workplace
3. Understand the nature of sports injuries, able to evaluate and treat sports injuries, understand the role of physiotherapist in training and rehabilitating a sports person
4. Prescribe appropriate walking aids, orthoses and prosthesis

SYLLABUS: -

Anatomy of bones and soft tissues (musculoskeletal system)

1. Evaluation, interpretation of investigations & functional diagnosis (ICF) with appropriate clinical reasoning for planning & implementation of management techniques.
2. Planning, Prescription & Implementation of short term & long term goals withclinical reasoning.
3. Documentation.
4. Different physiotherapeutic techniques for functional restoration/ maintenance and prevention of disability.
5. Different electro therapeutic techniques for relief of acute and chronic pain, swelling, wound healing, re-education with clinical reasoning.
6. Different physiotherapeutic techniques to improve/maintain muscle performance.
7. Different physiotherapeutic techniques to increase joint mobility.
8. Different physiotherapeutic strategies for correction / maintenance of good posture.
9. Different physiotherapeutic strategies to improve efficiency and safety of gait pattern.
10. Prescription of appropriate orthotic & prosthetic devices & fabrication of simple temporary splints.
11. Appropriate Home Program & Ergonomic advice for preventive measures &Functional efficiency at home & work place.
12. **Physiotherapy approach in traumatology**
    Definition of fracture, classification of fracture, signs and symptoms of fracture, healing process of fracture, factors affecting healing, methods of reduction, complications of fracture.

13. **Physiotherapy assessment in fracture cases**
    Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period Physiotherapy assessment and management of upper limb fractures and dislocations, lower limb fractures and dislocations including pelvis and spinal fractures.
14. **Physiotherapy assessment & management of soft tissue injury**
    Contusion, sprains, strains, ruptures.
15. **Physiotherapy assessment & management of degenerative conditions**
    Osteoarthritis (OA) with emphasize on Knee, Hip and Hand cervical spondylosis, lumbar spondylosis.
16. **Physiotherapy assessment & management of inflammatory conditions**
    Rheumatoid arthritis (RA), ankylosing spondylitis (AS), Still's disease, gout, periarthritis, bursitis, synovitis, capsulitis, tendinitis, tenosynovitis, fasciitis, Osgood Schlatter disease.
17. **Physiotherapy assessment and management of infective Conditions**
    Tuberculosis (TB) of spine and other major joints, osteomyelitis, pyogenic arthritis, septic arthritis.
18. **Physiotherapy assessment & management of congenital and acquired deformities**
    Congenital - CTEV, CDH, Torticollis, pesplanus, pescavus, Sprengel's scapula, Madelung's deformity.
    Acquired: scoliosis, kyphosis, coxavara, genu varum, valgum and recurvatum, wry Neck.
19. **Physiotherapy assessment & management of spinal conditions**
    Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Intervertebral disc prolapse, Sacro-iliac joint dysfunction, Coccydynia Sacralisation, Lumbarisation, Spina bifida occulta.
20. **Physiotherapy assessment & management of amputations**
    Definition, indications, types, levels of amputation of lower and upper extremities, pre and post operative assessment and management with emphasize on stump care and bandaging, pre and post prosthetic training and complete rehabilitation.
21. **Rehabilitation of patient with orthopedic surgery**
    Pre and post operative management of arthroplasty of all major joints, girdle stone arthroplasty, arthrodesis, arthroscopy, osteotomy, re-attachment of limb.
22. **Physiotherapy assessment & management of re-constructive surgery**
    Cerebral Palsy, poliomyelitis, leprosy.
23. **Physiotherapy assessment & management of hand injury**
24. **Physiotherapy assessment & management of metabolic and hormonal disorders of the bone tissue**
    Osteoporosis, rickets, osteomalacia.
25. **Physiotherapy assessment & management of miscellaneous orthopaedic conditions**

Mallet finger, trigger finger, Dequerian's disease, metatarsalgia, hallux valgus, Dupuytren's contracture, thoracic outlet syndrome, chondromalacia patellae, ganglion, tennis elbow, plantar fasciitis.

26. **Sports Medicine**
    Introduction & classification of sports injury
    Aetiological factors
    Prevention of sports injury
    Frequency and site of injury
    Investigation and assessment in sports injury
27. **Management of sports injuries**
    Pharmacology in sports
    Rehabilitation in sports

Topic Distribution for Paper Setting	
Section	Topic Sr. No.
I (40 Marks)	1-20
II (40 Marks)	21-27

3. PHYSIOTHERAPY IN CARDIO RESPIRATORY & MEDICAL SURGICAL CONDITIONS

Subject Code: PT0403 **Total Hours: 120**

3.1 PHYSIOTHERAPY IN CARDIO-PULMONARY CONDITIONS

OBJECTIVES: -

At the end of the course candidate will be able to

1. Identify, discuss and analyze cardio vascular and pulmonary dysfunction based on pathophysiological principles and arrive at the appropriate physical and functional diagnosis.
2. Select strategies for cure, care and prevention to adopt restorative and rehabilitative measures for maximum possible functional independence of a patient at home, work place and in community
3. Execute the effective physiotherapeutic measures (with appropriate clinical reasoning)with special emphasis to breathing retraining, nebulization, humidification, bronchial hygiene, general mobilization and exercise conditioning in general medical and surgical conditions
4. Acquire knowledge of the overview of patients care at the intensive care area, artificial ventilation, suctioning, positioning for bronchial hygiene and continuous monitoring of the patient at the intensive care area
5. Acquire the skill of evaluation and interpretation of functional capacity using simple exercise tolerance tests, symptom limited tests
6. Acquire the skill of basic cardiopulmonary resuscitation

SYLLABUS: -

1. **Anatomy and physiology of respiratory & cardiac system**
   Anatomy of thorax, biomechanics of thoracic cage, muscles of respiration, ventilation perfusion matching /mismatching, compliance
2. **Investigations and tests**
   Sub maximal /maximal exercise tolerance testing, Cardiac & Pulmonary radiographs, PFT, ABG, ECG, hematological and biochemical Tests
3. **Physiotherapy techniques to increase lung volume**
   Positioning, breathing exercises, Neurophysiological facilitation of respiration, mechanical aids - Incentive spirometry, CPAP, IPPB
4. **Physiotherapy techniques to decrease the work of breathing**
   Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids: IPPB, CPAP,BIPAP
5. **Physiotherapy techniques to clear secretions**
   Hydration, Humidification & Nebulization, Mobilization and breathing exercises, postural drainage, Manual techniques: Percussion, vibration and shaking, ACBT,

Autogenic Drainage, Mechanical aids: PEP, Flutter, IPPB, facilitation of cough and huff, suctioning

6. **Physiotherapy in common complications following surgery And Drug therapy**
   Drugs to prevent and treat inflammation, drugs to treat bronchospasm, drugs to treat breathlessness, drugs to help sputum clearance, drugs to inhibit coughing, drugs to improve ventilation, drugs to reduce pulmonary hypertension, drug delivery doses, inhalers and nebulizers
7. **Introduction to ICU & mechanical ventilator**
   ICU monitoring – apparatus, airways and tubes used in the ICU - Physiotherapy in the ICU – common conditions in the ICU. Mechanical ventilator: types, modes of ventilator, advantages and disadvantages Oxygen therapy, CPR, aseptic precautions
8. **Physiotherapy assessment & management techniques in Obstructive lung conditions**
   Chronic bronchitis, emphysema, asthma, bronchiectasis, cystic fibrosis
9. **Physiotherapy assessment & management techniques in Restrictive lung conditions**
   Rib fracture, Pleural effusion, pleurisy and empyema, pulmonary embolism, pulmonary tuberculosis, atelectasis, pneumothorax, bronchopulmonary fistula, pneumonia, ARDS
10. **Physiotherapy following Lung surgeries**
    Pre and post operative physiotherapy assessment and management in Lobectomy, Pneumonectomy, decortication, thoracoplasty
11. **Pulmonary Rehabilitation**
    Definition, aims and objectives, team members, benefits, principles of exercise prescription and techniques of rehabilitation
12. **Anatomy and physiology of cardiovascular system**
    Anatomy, blood supply and conduction system of heart
13. **Physiotherapy assessment & management for cardiovascular disorders**
    Cardiovascular disease, congestive heart failure, myocardial infarction, valvular diseases of heart, cyanotic and acyanotic congenital heart diseases, endocarditis
14. **Cardiac Rehabilitation**
    Definition, aims and objectives, team members, benefits, principles of Exercise prescription and techniques of rehabilitation
15. **Physiotherapy assessment & management of vascular diseases**
    Venous: Thrombosis, phlebitis and phlebo-thrombosis, varicose veins, DVT, venous ulcers
    Arterial: Berger's disease, acute and chronic arterial occlusion, lymphedema

3.2 PHYSIOTHERAPY IN GENERAL MEDICAL-SURGICAL CONDITIONS

OBJECTIVES: -

1. Acquire knowledge of rationale of basic investigative approaches in the medical system and surgical intervention regimes related to cardio vascular and pulmonary impairment

2. Select strategies for cure, care and prevention to adopt restorative and rehabilitative measures for maximum possible functional independence of a patient at home, workplace and in community
3. Acquire the knowledge of evaluation and physiotherapy treatment for obstetrics and gynecological surgical conditions
4. Acquire the knowledge of various conditions where physiotherapy plays a vital role in the rehabilitation (psychiatry, dermatology and ENT conditions)
5. Assess the various degrees of burns, plan and implement physiotherapy techniques for the rehabilitation of a burn and wound patient.

SYLLABUS: -

1. **Physiotherapy assessment & management for abdominal surgeries**
   Surgeries on upper gastro- intestinal tract - oesophagus- stomach- duodenum, surgery on large and small intestine – appendicectomy, cholecystectomy, partial colectomy, illieostomy, nephrectomy.
   Hernia: herniotomy, herniorraphy, hernioplasty.
2. **Physiotherapy Assessment & management in onco surgeries**
   Mastectomy: simple, radical; hysterectomy; prostatectomy; neck dissection
3. **Physiotherapy in obstetrics and gynecology surgeries**
   Electrotherapy and exercise therapy measures following pelvic repair and caesarean section.
4. **Wounds, local infections, ulcers, pressure sores**
   UVR and other electrotherapeutic modalities for healing of wound, prevention of hypergranulated scars, relief of pain and mobilization
5. **Physiotherapy in burns, skin grafts and re-constructive plastic surgery**
6. **Physiotherapy in ENT conditions**
   Non-suppurative otitis media, chronic suppurative otitis media, otosclerosis, labyrinthitis and mastoidectomy resulting into facial palsy, laryngectomy, pharyngeo – laryngectomy, tracheostomy and its care, sinusitis
7. **Physiotherapy in skin conditions**
   Leprosy, acne, alopecia, psoriasis, syphilis
8. **Physiotherapy in psychiatric conditions**
   Schizophrenia, depression, psychosis, anxiety
9. **Emergency Care**
   Basic Life Support, First aid & emergency care, Biomedical waste management.

Topic Distribution for Paper Setting	
Section	Topic Sr. No.
I (55 Marks)	Cardiorespiratory Conditions
II (25 Marks)	Medical Surgical Conditions

4. COMMUNITY PHYSIOTHERAPY REHABILITATION AND ASSISTIVE TECHNOLOGIES

Subject Code: PT0404 **Total Hours: 90**

4.1 COMMUNITY PHYSIOTHERAPY REHABILITATION (60 Hours)

OBJECTIVES: -

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

1. Describe the general concepts about Health, Disease & Physical fitness
2. Describe policies for the rehabilitation of disabled and Role of Council to promote physiotherapy as a health delivery system
3. Describe the strategies to assess prevalence & incidence of various conditions responsible for increasing morbidity in the specific community, role of physiotherapy in reducing morbidity, expected clinical & functional recovery, reasons for non-compliance in specific community & environmental solution for the same
4. Describe the evaluation of disability & planning for prevention & rehabilitation.
5. Describe CBR in urban & rural set up, WHO policies, concept of team work, role of multi- purpose health worker
6. Identify with clinical reasoning the prevailing contextual (environmental & psychosocial, cultural) factors, causing high risk, responsible for various dysfunctions & morbidity related to lifestyle & specific community like women, aged, industrial workers & describe planning strategies of interventional policies to combat such problems.

SYLLABUS: -

1. **Concepts of community health**
   Preventive, promotive, restorative and rehabilitative
   WHO definition of health and disease
   Health delivery system - 3 tier
2. **Disability types**
   Physical &Psychological Evaluation, prevention & Legislation related to Persons with Disability (PWD)
3. **CBR**
   Definition, principles, types (institutional, reach out and community),concepts, WHO policies
   Principles of Team work of medical practitioner, Physiotherapist, Occupational Therapist, Speech & Audiology Therapist, Prosthetist & Orthotist, Clinical psychologist, vocational counselor and social worker. Role of Physiotherapy in team, concept of multipurpose health worker, role of Physiotherapy and strategies in 3 tier Health delivery system, communication strategies.
4. **Health Care**
   a. Prevention, Promotion & Restoration
   b. In peri-pubertal age group
   c. In women-pregnancy and menopause

d. In Geriatrics- neuromusculoskeletal, cardiovascular, pulmonary, metabolic and degenerative conditions
e. In Obese / over weight
f. In Cardiovascular and Pulmonary conditions
g. In Diabetes
h. Health promotion for all

5. **Women and child care**
   a. Antenatal exercises, Specific Breathing exercises, Relaxation, Postural training, Pelvic floor strengthening exercises with clinical reasoning
   b. Physiotherapy during labor
   c. Postnatal exercises program after normal labor / labor with invasive procedures with clinical reasoning
   d. Menopause - Osteoporosis, Mental health, Physiotherapy management
   e. Preterm babies
   f. Adolescent age group
   g. Nutritional disorders in women and children
6. **Geriatrics**
   Physiology of aging, environmental changes and adaptations, balance and falls Role of Physiotherapy in geriatric population.
7. **Physical fitness**
   Energy system, Endurance, Aerobic Exercise, pacing of activity.
8. **Ergonomics**
9. **IQ Testing**

4.2 REHABILITATION AND ASSISITIVE TECHNOLOGIES (30 Hours)

OBJECTIVES: -

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

1. Acquire knowledge about biomechanical principles of application of variety of aids& appliances used for ambulation, protection & prevention
2. Acquire in brief knowledge about various materials used for splints/Orthosis& Prostheses and selection criteria for splints/Orthosis& Prostheses
3. Acquire the skill of fabrication of simple splints made out of low-cost material.

SYLLABUS: -

1. Introduction and terminology: prosthesis and orthosis
2. Classification of orthosis and prostheses
3. Bio-mechanical principles of orthotic application
4. Bio-mechanical principles of prosthetic application
5. Orthotic appliances for Hip, Knee, Ankle& foot - Prescription and design &modification
6. Spinal conditions inclusive of fractures, spondylolisthesis, kyphosis, scoliosis etc.
7. Upper limb conditions – splinting prescriptions with principles
8. Prosthesis –

- Upper & lower limb; endo skeletal & exo skeletal,
- Hip, knee & foot prosthetic components with k-levels
- Upper limbs: cosmetic restoration, terminal devices (body powered), self-help devices (ADL equipments), myoelectric, microprocessor / sensor controlled (externally powered)
- Adaptive devices

9. Psychological & Physiological aspects of orthotic and prosthetic application
10. Material used in fabrication of Prosthetiscs & Orthotics briefly.
11. Mobility aids:
    Canes, crutches, walking frames, walkers, wheel chairs manual/ electrically powered.

Topic Distribution for Paper Setting	
Section	Topic Sr. No.
I (55 Marks)	Community Physiotherapy Rehabilitation
II (25 Marks)	Assistive technologies

5. ETHICS AND MANAGEMENT

Subject Code: PT0405 **Total Hours: 40**

5.1 ETHICS (20 Hours)

OBJECTIVES: -

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

1. Understand the moral values and meaning of ethics.
2. Acquire bedside manners and communication skills in relation with patients, peers seniors and other professionals.
3. Develop psychomotor skills for physiotherapist patient relationship.
4. Develop skill to evaluate and make decision for plan of management based on sociocultural values and referral practice.
5. Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals.
6. Develop bedside behavior, respect & maintain patients' confidentiality.
7. Understand the importance of council, its functioning and Act.

SYLLABUS: -

1. Outlines of Gujarat State Council for Physiotherapists (GSCPT) Act 2011 with more emphasis on formation, functions of council, importance for registration etc.
2. Ethical principles in health care services, research, teaching related to physiotherapy.
3. Scope of practice as patient manager, consultant, critical inquirer, educator, administrator.
4. Rules of professional conduct
   a. Physiotherapy as a profession
   b. Relationship with patients
   c. Relationship at health care institution i.e. hospital, clinic etc.
   d. Relationship with colleagues and peers
   e. Relationship with medical and other professionals
5. Confidentiality and responsibility
6. Malpractice and negligence
7. Professional development, competence and expertise
8. Sale of goods: personal and professional standards
9. Legal aspects: legal responsibility of physiotherapists for their action in the professional context understanding liability and obligations in case of medico legal action.

5.2 ADMINISTRATION, MANAGEMENT & MARKETING (20 Hours)

OBJECTIVES: -

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

1. Learn the management basics in fields of clinical practice, teaching, research and

physiotherapy practice in the community.

2. Acquire communication skills in relation with patients, peers, seniors and other professionals & the community.
3. Acquire the knowledge of the basics in managerial & management skills, & use of information technology in professional practice.
4. Develop psychomotor skills for physiotherapy practice.
5. Develop skill to evaluate and make decision for plan of management based on sociocultural values and referral practice.
6. Develop behavioral skill and humanitarian approach while communicating with patients, relatives, society at large and co-professionals

SYLLABUS: -

1. Management studies related to local health care organization management &structure, planning delivery with quality assurance & funding of service delivery, information technology and career development in physiotherapy.
2. Administration-principles-based on the goal & functions at large hospital setup/domiciliary services/private clinic/ academics.
3. Budget-planning.
4. Performance analysis- physical structure/ reporting system (man power, status, functions, quantity & quality of services, turn over, cost benefit revenue contribution)
5. Setting up therapeutic gymnasium, fitness clinics, cardiac and pulmonary rehab centers etc
6. Time management