

SYLLABUS



BACHLOR OF PHYSIOTHERAPY

(Effective from Academic Year 2022-23)

2022-23

&

2024-25



DR. C.V. RAMAN UNIVERSITY

Madhya Pradesh, Khandwa AN AISECT GROUP UNIVERSITY

Approved by : MP. Govt., AICTE, NCTE, MP PARAMEDICAL COUNCIL, PCI Recognized by : UGC Member of : AIU

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By the order of honorable Vice Chancellor.

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❖ Preamble

The objective of any program at paramedical institute is to prepare professionals well equipped with attitude-skills and knowledge demanded by the growing society. The CVRUK envisions all its programs in the best interest of its student and in this endeavor, it offers a new vision to all its under graduate courses. It imbibes learning outcome-based curriculum frame work (LOCF) for all its under graduate programs. The LOCF approach is envisioned to provide focused, outcome-based syllabus the teaching-learning experiences in a more student-centric manner.

The LOCF approach has been adopted to strengthen students experience as they engage themselves in the program of their choice. The under graduate programs will prepare the students both for academic pursuit as well as enhance his/her employability.

Each program widely elaborates its nature and promises the outcomes that are to be accompanied by studying the courses. The program also states the attributes that its offer to in calculate at the graduation level. The graduates' attributes encompass values related to wellbeing, emotional stability, critical thinking, social justice and also skills for employability. In short, each program prepares students for sustainability and lifelong learning.

The new curriculum of paramedical offers the student gains the requisite knowledge, skills and aptitude for the field of paramedical. The efforts are made to measure cognitive as well as applied learning. Student are not only trained on the core components but also in areas which are need based, innovative, and relevant keeping in pace with the fast-growing food industry. The course is internationally competitive.

The CVRUK hopes the LOCF approach of the program paramedical will help students in making an informed decision regarding the goals that they wish to pursue in further education and life.

In the pursuit of excellence in healthcare education, our paramedical school stands as a beacon of knowledge and compassion. Committed to shaping skilled professional, we provide a transformative learning environment, where dedication meets innovation. Welcome to a journey of discovery, where each student is nurtured to become a proficient and empathetic healthcare practitioner contributing to the wellbeing of society.

1. Introduction To Paramedical

“Paramedical services form the backbone of modern healthcare, encompassing a diverse range of crucial roles beyond conventional medical practice. From physiotherapist, emergency medical technicians and radiographers to laboratory technologist, paramedical professionals play a vital role in diagnosis, treatment, and overall patient care. This dynamic field combines technical expertise with a deep sense of compassion, ensuring, a holistic approach to health and wellbeing.”

The program is comprised of 3 broad interrelated curriculum areas: -

1. Perspective in education.
2. Curriculum and pedagogic studies.
3. Engagement with the field.

The extensive program provides enough flexibility in respect of lecture courses, practical training, and internship. C.V. Raman university is offering paramedical courses as per the guideline of M.P. Paramedical council. The paramedical course is of 4 ½ years duration which compromises of annual examination scheme. This course has been designed keeping in view the unique requirement of paramedical students.

❖ Objectives Of Paramedical Courses

“The objectives of a paramedical course are multifaceted, aimed, to equip students with the essential skills and knowledge to excel in healthcare. These courses focus on fostering a deep understanding of medical procedures, honing technical proficiency, cultivating empathy, and instilling a commitment to ethical practices. Ultimately, the goal is to produce. competent and compassionate paramedical professionals who contribute significantly to the healthcare ecosystem, meeting the evolving needs of society.”

❖ Bachelor Of Physiotherapy

“The objectives of bachelor of physiotherapy program include developing a comprehensive understanding of human anatomy, physiology, acquiring specialized skills in physiotherapeutic techniques, and fostering the ability to assess and design effective rehabilitation programs. Additionally, these programs aim to install critical thinking, research capabilities, and patient centric approach, ensuring graduates contribute proficiently to enhancing individuals’ physical wellbeing and quality of life.”

1. To systematize experience and strengthen the professional competencies.
2. to develop skills required in selecting and organizing learning experiences.
3. to understand the nature of learning process.
4. to develop skills involved in dealing with the academic and personal problems of learning.
5. to acquire knowledge and develop an understanding of various procedures and techniques of evaluation and their classroom applications.

The course content has been designed to provide aspiring teaching with the necessary knowledge, skills, and attitudes. The curriculum aims to preparer individuals to understand the principles of paramedical course.

2. Learning outcome-based curriculum framework.

2.1 Nature and extent of the program in maharishi charak school of paramedical science.

“The nature and extent of paramedical program encompass a comprehensive exploration of healthcare disciplines, combining theoretical knowledge with practical skills.

3. Graduate attributes in maharishi charak school of paramedical science.

Disciplinary knowledge: -graduate attributes in a paramedical course typically include skills like critical thinking, effective communication, clinical competence, ethical practice, teamwork, and adaptability to various healthcare settings. These attributes ensure graduates are well prepared for the dynamic and demanding field of paramedicine.

- **Communication Skills:** - Aspiring teachers need strong communication skills to effectively interact with students, colleagues, parents, and the wider community. Communication is not just about speaking; it also involves active listening. Teachers need to pay attention to students' questions, concerns, and feedback to create an inclusive and supportive learning environment. Besides that, the teachers give various assignments that enable student to develop skills in public speaking writing and effective’s interpersonal skills. Presentations in each paper enhances their confidence, ability to express themselves; presentation skills.
- **Research-related skills:** - Research related skills in paramedical fields involve the ability to critically evaluate scientific literature, design and conduct research studies, collect and analyses data, and communicate findings effectively. Proficiency in statistical analysis, ethical research practices, and staying updated on the latest advancements are also crucial for paramedical professionals engaged in research activities.
- **Cooperation/Team work:** - Cooperation and teamwork are essential skills that paramedical students need to develop throughout their program. As future educators, they will work closely with colleagues, administrators, parents, and, most importantly, their students. Cooperation and teamwork play a significant role as they foster a collaborative and supportive learning environment, prepare future educators for the dynamics of the classroom, and equip them with essential skills to succeed in their teaching careers.
- **Self-directed learning:** - Incorporating self-directed learning in the paramedical program empowers aspiring educators to become lifelong learners, critical thinkers, and proactive professionals who can continuously improve their paramedical practice and make a positive impact on their students learning experiences. By fostering self-directed learning, educators aim to produce graduates who are adaptable, reflective, and committed to continuous professional development. These qualities are essential for educators to meet the diverse needs of their students and contribute positively to the ever-changing landscape of education.
- **Multicultural competence:** - Multicultural competence in paramedical practice involves understanding and respecting diverse cultural backgrounds among patients. Paramedical professionals should be sensitive to cultural differences, communicate effectively with individuals from various backgrounds, and adapt their approach to

provide culturally competent care. This includes recognizing cultural beliefs about health and illness, addressing language barriers, and promoting inclusivity to ensure the wellbeing of all patients.

- **Moral and ethical awareness/reasoning:** - Student has awareness of ethical conduct in different situations (academic and personal). They have skills in understanding and avoiding unethical behavior such as misrepresentation, plagiarism and environmental misuse and violence. They are formally taught ethics of research and human interventions.
- **Leadership readiness/qualities:** - Leadership readiness in paramedical professionals involves qualities like effective communication, decision making skills, adaptability, and the ability to inspire and motivate a team. Strong problem solving, empathy, and commitment to continuous learning are also vital. Paramedical leaders must be able to handle high pressure situations, foster collaboration within their team, and exhibit a strong ethical foundation in their decision-making processes.
- **Lifelong learning:** - Students acquire ability to gain knowledge and skills which are necessary in life for the holistic development for meeting their professional and personal needs in varying environment and changing contexts.

4. Qualification descriptors for maharishi charak school of paramedical science.

The following descriptors indicate the expectations from Paramedical students.

- Demonstrating a strong understanding of the subjects and staying updated with current developments in their field.
- Acquiring effective strategies and techniques to engage and support diverse learners.
- Developing skills to maintain an orderly and conducive learning environment.
- Designing well-structured lesson plans aligned with learning objectives and student needs.
- Designing and implementing fair and effective assessment methods to measure student progress.
- Adapting teaching approaches to meet the diverse learning needs of students.
- Integrating educational technology to enhance teaching and learning experiences.
- Engaging in self-reflection to improve practices and student outcomes.

5. Program learning outcome in maharishi charak school of paramedical science.

The learning outcomes of the course are: -

1. Proficiency in essential clinical procedures.
2. Effective communication skills with patients and colleagues.
3. Critical thinking and problem-solving ability.
4. Adherence to high ethical standards in paramedical practice.
5. Cultural competence for diverse patient interactions.
6. Ability to work collaboratively in term-based healthcare settings.
7. Commitment to ongoing professional development and learning.
8. Demonstration of leadership qualities in paramedical roles.
9. Application of evidenced based practices in health.
10. Adaptability to diverse and dynamic healthcare environment.

6. Structure of paramedical course in maharishi charak school of paramedical science.

The structure of paramedical includes: -

1. Foundation course: -Introduction to basic sciences and foundational knowledge relevant to paramedical.
2. Core paramedical course: -in depth study of topics such as anatomy, physiology, hematology, pharmacology, emergency, medical procedures etc. subjects.
3. Clinical training: -hands on experience in clinical settings, including internship and practical training to apply theoretical knowledge.
4. Ethics and legal aspects: -understanding ethical standards and legal considerations in paramedical practice.
5. Communication skills: -Training in effective communication, both with patients and healthcare professionals.

REGULATION

Regulation for various Degree courses (3 years and above) in paramedical subjects.

❖ Objective Of the Courses -

1. The training of the candidate registering for various degree 3 years and above courses are aimed to develop skill in all diagnostics/ therapeutics tests and their interpretation on the modern hospital laboratory. The degrees in various courses are of three years or above.
2. Eligibility for admission
 - a. B. P. T. and B. O. T. course

The candidate must have passed 10 +2 and should obtain 50% marks in aggregate of Physics, Chemistry and Biology (P. C. B.).

- b. All Paramedical degree courses (other than B. P. T. and B. O.T.)

The candidate must have passed 10 + 2 with at least 45% marks in aggregate of Physics, Chemistry and Biology (P.C. B.).

- c. B. M. L. T.

3. The candidate must have passed 10+2 with at least 45% marks in aggregate of Physics, Chemistry and Biology (P. C. B.) or 10 + 2 vocational (M. L. T.) courses with at least 45% marks will also be eligible.
4. In case of S. C. / S. T. / O. B. C. candidate 5% marks relaxation will be given for the admission in above said course.
5. Weightage will be given as per university rules.
6. Number of seats will be 50 in each course.
7. The minimum age for admission shall be 17 years on 31 December of academic year of admission.
8. Selection of candidate will be on the basis of the entrance examination or in the absence of entrance examination purely on merit on the basis of marks obtained in qualifying examination.
9. For degree examination, candidates who have attended 75% in all theory classes and 85% in practical can only appear in university examination.
10. Revaluation and re totaling both shall be allowed as per university rules.
11. In order to pass the examination, it is mandatory to obtain 50% marks in theory and practical examination separately. The viva and the sessional marks are to be added to the theory marks.
12. Other rules regarding conduct of examination will be as per university regulation/ordinance.
13. Permission will be given to start the courses after the permission from M P Paramedical Council (Department of Medical Education, Government of M.P.).
14. Syllabus and scheme of the examination shall be decided by the board of studies and Academic council of the university from time to time as per guidelines from M P Paramedical Council.
15. The medium of examination shall be English.
16. The examination patterns.
 - A. B. P. T. and B. O. T. (4 years and six months internship)

1. The pattern for B. P. T. and B. O. T. shall be like M. B. B. S. There will be two exams in each year. Main exam to be held in April/May and supplementary / second exam to be held in July/August.
2. Students of B. P. T. and B. O. T. who have failed in first year will not be allowed to attend the classes of second year until and unless he/she has passed in all subjects of first year. But in case of second and third year, student is allowed to attend higher classes, but he/she is eligible to appear in higher class exam only when he/she has passed all the subjects of the previous year.

B. Other Degree Courses–

There will be two examinations in each year for remaining degree courses the main and supplementary as per university rule. The main examination will be held in April / May and Supplementary examination will be held in July / August and the candidate failing in the main and subsequently in supplementary examination shall not be allowed to go in the higher classes unless clearing all the previous examination.

17. There will be two examiners including one external and internal for both theory and practical examinations.

18. The examiner who evaluates the theory copies preferably should be appointed as external for practical examination for said course.
19. The colleges must conduct sessional exams twice in an academic year (once in six months period) and send the same marks to the university one week before the commencement of university theory examination.
20. In order to be an examiner, a faculty member should have minimum three years of teaching experience and not below the rank of the Asst. professor and/demonstrator/tutor.
21. The examination papers (Theory) will be evaluated centrally at the university.
22. Various Degree course three years and above-
 1. Physiotherapy.
 2. Occupational therapy.
 3. Speech Therapy.
 4. X-Ray Radiographer.
 5. Human Nutrition.
 6. Pathology.
 7. Medical Lab technology.

N.B.- All other rules –regulations, ordinances not included in here will be applicable as per dr.c.v. Raman university Khandwa (m.p.)



SCHEME OF EXAMINATION
BACHELOR OF PHYSIOTHERAPY
BATCH 2024-2025

B. P. T. I Year Examination

S. No.	Subject	Internal Assessment		University Examination			Total
		Theory	Practical	Theory	Viva	Practical	
1	Human Anatomy	20	20	100	20	40	200
2	Human Physiology	20	20	100	20	40	200
3	Fundamentals of Physics, Biomechanics and Biomechanical Modalities	20	20	100	20	40	200
4	Fundamentals of Medical Electronics and principles of Bioelectrical Modalities	20	20	100	20	40	200
5	Psychology and Sociology	20	--	80	--	--	100
Total Max. Marks							900

N.B.- Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.

B. P. T. II Year Examination

S.No.	Subject	Internal Assessment		University Examination			Total
		Theory	Practical	Theory	Viva	Practical	
1	Pathology and Microbiology	20	--	80	--	--	100
2	Biochemistry and Pharmacology	20	--	80	--	--	100
3	Medicine including Pediatrics and Geriatrics	20	--	80	--	--	100
4	General Surgery, ENT, Ophthalmology Obstetrics and Gynecology	20	--	80	--	--	100
5	Exercise therapy including yoga	20	20	100	20	40	200
6	Electrotherapy	20	20	100	20	40	200
Total Max. Marks							800

N.B.- Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.

B. P. T. III Year Examination

S.No.	Subject	Internal Assessment		University Examination			Total
		Theory	Practical	Theory	Viva	Practical	
1	Neurology including Psychiatry and Neurosurgery	20	--	80	--	--	100
2	Orthopedics	20	--	80	--	--	100
3	Applied Biomechanics and Kinesiology	20	--	80	--	--	100
4	Physiotherapeutic in Neurology and Neurosurgery	20	20	100	20	40	200
5	Physiotherapeutic in Orthopedic Conditions	20	20	100	20	40	200
6	Physical Evaluation, Diagnosis and Prescription	20	20	100	20	40	200
Total Max. Marks							900

N.B.- Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.

B. P. T. IV Year Examination

S. No.	Subject	Internal Assessment		University Examination			Total
		Theory	Practical	Theory	Viva	Practical	
1	Community PT, Rehabilitation and Disability prevention	20	--	80	--	--	100
2	Research methodology and Biostatistics	20	--	80	--	--	100
3	Cardiothoracic diseases and surgeries	20	--	80	--	--	100
4	Physiotherapeutic in General and Cardiothoracic Conditions	20	20	100	20	40	200
5	Sports Physiotherapy	20	20	100	20	40	200
6	PT Ethics, management and Administration ** NUES	--	100	--	--	--	100
7	Project Work**NUES	---	100	--	--	--	100
Total Max. Marks							900

N.B.- Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.

** NUES= Non-university Examination Subject

Section-II
B. P. T. FIRST YEAR
STAFF PATTERN FOR I -YEAR B.P.T.

Subjects	Staff Required
Anatomy	1 M.S. Anatomy, Lecturer/ Asst. Prof.
Physiology	1 M.D. Physiology, Lecturer/ Asst. Prof.
Fundamentals of Physics, Biomechanics of Physiotherapy and Exercise Therapy	1 Asst. Professor 1 M. Sc. Physics, lecturer/Bio-Medical engineer
Medical Electronics and Sociology	1 Asst. Professor of Physiotherapy electro-therapeutic modalities 1 M.A. Sociology/Medical Social-Worker
Psychology	1 M.A. Psychologist. (Psychology)

B. P. T. I Year Examination Scheme

S.No.	Subject	Internal Assessment		University Examination			Total
		Theory	Practical	Theory	Viva	Practical	
1	Human Anatomy	20	20	100	20	40	200
2	Human Physiology	20	20	100	20	40	200
3	Fundamental of Physics, Biomechanics and Biomechanical Modalities	20	20	100	20	40	200
4	Fundamental of Medical Electronics and principles of Bioelectrical Modalities	20	20	100	20	40	200
5	Psychology and Sociology	20	--	80	--	--	100
Total Max. Marks							900

N.B.- Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.

Passing Marks: - A candidate must obtain 50% in aggregate with a minimum of 50% in theory including viva and minimum 50% in practical.

SCHEME OF EXAMINATION FOR B.P.T. I YEAR

There shall be five subjects for the first year B.P.T Examination. The subject's qualification of the examination and the pattern of examination will be as follows.

1. HUMAN ANATOMY

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Human Anatomy	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in anatomy after M.S. (Anatomy) with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

2. HUMAN PHYSIOLOGY

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Human Physiology	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in physiology after M.D. (Physiology) with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

3. FUNDAMENTALS OF PHYSICS, BIOMECHANICS AND BIOMECHANICAL MODALITIES

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Fundamentals of Physics Biomechanics and Biomechanical Modalities	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

4. FUNDAMENTALS OF MEDICAL ELECTRONICS AND PRINCIPLES OF BIOELECTRICAL MODALITIES

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Fundamental of Medical Electronics and Principles of Bioelectrical Modalities	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T.(Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

5. PSYCHOLOGY AND SOCIOLOGY

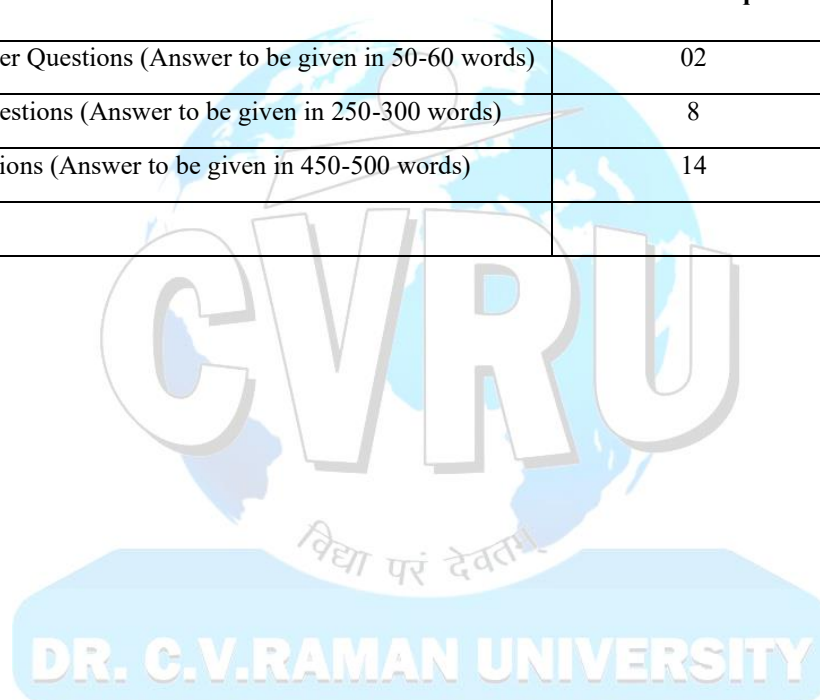
Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Psychology and Sociology	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: Psychology and Section – B: Sociology the university theory examination marks for Psychology shall be 40 and for sociology 40 marks respectively. There shall be two paper setters and two evaluators, one from Psychology and one from Sociology. Section- A, which will be set by Psychology examiner (40 marks) and Section-B, by Sociology (40 marks) examiner. Recognized teachers in psychology and sociology with five years of experience shall be on the panel of examiners 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks.

The pattern of university theory examination will be as under for 80 Max. Marks.

There will be two sections i.e., Section-A: Psychology and Section-B: Sociology of 40 Max. Marks each section and distribution of marks for questions will be as under: -

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40





**BACHLOR OF
PHYSIOTHERAPY
I YEAR**

(Effective from Academic Year 2022-23)

DR. C.V.RAMAN UNIVERSITY

BACHELOR OF PHYSIOTHERAPY (B.P.T) I YEAR

Paper-I: HUMAN ANATOMY: PBPT 101

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Human Anatomy	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T.(Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

❖ **Course Objectives: -**

1. Understanding of gross anatomy of various body parts.
2. Application of knowledge of anatomy to learn evaluation and application of physical therapy.
3. Major emphasis of learning is towards Musculo-skeletal, cardio-respiratory and nervous system.

❖ **Course Contents: -**

A. General Anatomy:

1. Introduction to Anatomy, terms and terminology.
2. Regions of Body, cavities and Systems outline.
3. Surface anatomy – Musculo-skeletal and cardiopulmonary.
4. Cell Structure and function of cell organelles (Brief outline only).
5. Connective tissue and its modification, tendons, membranes, Special connective tissue.
6. Bone structure, blood supply, growth, ossification, and classification.
7. Muscle classification, structure and functional aspect.
8. Nerve – structure, classification, microscopy with examples.
9. Neurons, classification with examples. Simple reflex arc.
10. Parts of a typical spinal curve, Dermatome.
11. Joints – classification, structures of joints, movements, range, limiting factors, stability, blood supply, nerve supply, dislocations and applied anatomy.
12. Circulatory system – major arteries and veins of the body, structure of blood vessels
13. Lymphoid system – circulation and function, lymphoid organs- their structure and functions.

B. Upper Extremity:

1. Bony architecture.
2. Joints – structure, range of movement.
3. Muscles – origin, insertion, actions, nerve supply.
4. Major nerves – course, branches and implications of nerve injuries.
5. Development of limb bones, muscles and anomalies.

6. Radiographic identification of bone and joints.

C. Lower Extremity:

1. Bony architecture.
2. Joints – structure, range of movement.
3. Muscles – origin, insertion, actions, nerve supply.
4. Major nerves – course, branches and implications of nerve injuries.
5. Development of limb bones, muscles and anomalies.
6. Radiographic identification of bone adjoints.

D. Spine:

1. Back muscles - Superficial, Deep muscles of back, their origin, insertion, action and nerve supply.
2. Vertebral column – Structure and Development, Structure and Joints of vertebra.
3. Radiographic identification of bone adjoints.

E. Thorax:

1. Thoracic cage.
2. Pleural cavities and pleura.
3. Lungs and respiratory tree.
4. Heart and great vessels.
5. Diaphragm.

F. Head and Neck:

1. Cranium.
2. Facial Muscles.
3. Structure of eyeball in brief and extra ocular muscles, visual pathway.
4. Ear and auditory pathway.
5. Triangles of Neck, boundaries and contents.
6. Tongue – parts, extrinsic and intrinsic muscles, motor and sensory nerves, gustatory pathway.
7. Pharynx.
8. Larynx.

G. CNS:

1. Central nervous system – disposition, parts and functions.
2. Cerebrum.
3. Cerebellum.
4. Midbrain and brainstem.
5. Blood supply of brain and its applied anatomy.
6. Spinal cord- anatomy, blood supply, nerve pathways.
7. Pyramidal, extra pyramidal system.
8. Thalamus, hypothalamus.
9. Ventricles of brain, Sacculation.
10. Development of nervous system and defects (Brief Description)
11. Cranial nerves – special emphasis on V, VII, X, XI, XII (course, distribution and palsies)
12. Sympathetic nervous system, its parts and components (Brief Description)
13. Parasympathetic nervous system (Brief Description).

H. Endocrine System – Pituitary, Thyroid, Parathyroid (Brief Description)

I. Embryology in brief of neuromuscular tissue.

J. Abdomen (Brief descriptions only):

- a. Boundaries, Muscles of abdominal wall.
- b. Division of Abdominal cavity.
 - i. Pouch Douglas.
 - ii. Morrisons pouch.

K. Pelvis.

1. Pelvic floor, innervations.
2. Bony Pelvis.

L. Digestive system (Liver and Pancreas, Alimentary Canal)

M. Urinary system – Kidney, Ureter, Bladder, Urethra.

N. Genital system – Male and Female.

O. Kinesiology.

1. Basic Concepts.
2. Muscular system.
3. Joints.
4. Machinery Musculoskeletal system.
5. Principles of Motion.
6. Principles of force and work.
7. Basics of the development of motor skill.
8. Principles of stability.
9. Postural principles.

❖ Practical.

Learning of surface landmarks with special emphasis on bones, joints, muscles, and nerves. The learning of anatomy is by demonstration only through dissected parts, slides, models, charts, etc. Demonstration of dissected parts (upper extremity, lower extremity, thoracic and abdominal viscera, face and brain) Demonstration of skeleton articulated and disarticulated. During the training more emphasis will be given on the study of bones, muscles, joints, nerve supply of the limbs.

❖ Practical Examination.

Students will be assessed by viva-based examination upon learning in theory, demonstration of bones, and joints, muscles, nerves and major viscera.

❖ Books Recommended for Readings:

1. Chaurasia, B D Human Anatomy: Regional and CBS, New Delhi Latest 3VOL.
2. Chaurasia, B D Human Osteology CBS, New Delhi Latest.
3. Singh, Inderbir Text Book of Anatomy: With Color Atlas Jaypee, New Delhi Latest 3VOL.
4. Singh, Inderbir Text Book of Neuroanatomy Jaypee, New Delhi Latest.
5. Singh, Inderbir Text Book of Human Histology Jaypee, New Delhi Latest.
6. Singh, Inderbir Text Book of Human Osteology Jaypee, New Delhi Latest.
7. Garg, Krishna Text Book Histology CBS, New Delhi Latest.
8. Singh, Inderbir Multiple Choice Questions in Anatomy Jaypee, New Delhi Latest.
9. Datta, A.K. Essentials of Human Anatomy: Neuroanatomy Current Book, Calcutta, Latest.
10. Datta, A.K. Essentials of Human Anatomy: Thorax and Abdomen Current Book, Calcutta, Latest.
11. Williams, Peter L Gray 's Anatomy: Anatomical Basis of Churchill Livingstone, New York, Latest.
12. McMinn, M. H. Color Atlas of Human Anatomy Mosby-Wolfe, London-Latest
13. Snell, Richard S Clinical Anatomy for Medical Students Little- Brown, Boston-Latest.
14. Field, Derek Anatomy: Palpation and Surface Markings Butterworth, London-Latest.

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BACHELOR OF PHYSIOTHERAPY (B. P. T) I YEAR

Paper-II: HUMAN PHYSIOLOGY: PBPT 102

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
HUMAN PHYSIOLOGY	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T.(Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

❖ Course Objectives.

1. To understand the Physiological functions of human body.
2. To understand the application of physiological functions and physiology of exercise in relation to physical therapy.
3. Major area of learning is cardio-respiratory, Musculo-skeletal and nervous system.

Note: Group discussions, seminars and tutorial will be on the topics covered in didactic lectures.

❖ Course Contents.

A. General Physiology.

1. Structure of cell membrane.
2. Transport across cell membrane.
3. Functional morphology of the cell.
4. Intercellular communication.
5. Homeostasis.

B. Cardiovascular System.

1. General introduction of cardiovascular systems.
2. Structure and properties of Cardiac muscle.
3. Dynamics of blood and lymph flow.
4. Anatomical, biophysical consideration of arterial, arteriolar and capillary venous level, Lymphatic circulation.
5. Cardiac cycle and Heart sounds, Mechanical events of Cardiac cycle, Cardiac output, its regulation.
6. Origin and spread of cardiac excitation.
7. Basic idea of Electrocardiogram and Interpretation of normal Electrocardiogram.
8. Cardiac output and cardiac failure.
9. Venous return.
10. Heart rate and its regulation.
11. Structure and organization of vascular tree.
12. Arterial blood pressure and pathophysiology of Hypertension.

13. Characteristic of Coronary circulation and pathophysiology of coronary artery disease.
14. Capillary circulation and physiological basis of Edema.
15. Local and systemic regulatory mechanisms of CVS, humeral and neural.
16. Patho-physiology of Shock.
17. Cerebral, coronary, splanchnic, skin, Placental and Fetal circulation.

C. Respiratory System.

1. Functional anatomy of Respiratory System, Physiological anatomy of lungs, mechanics of respiration.
2. Mechanics of breathing: Mechanism of inspiration and Expiration, intra-pleural and intra-alveolar pressures, Compliance, Surfactant, Air-way resistance and work of breathing.
3. Pulmonary circulation, Respiratory membrane and Gaseous exchange in lungs.
4. Composition of gases and Partial pressures.
5. Oxygen and Carbon-dioxide transport.
6. Other function of respiratory system.
7. Lung Volumes, Capacities and Lung function tests.
8. Neural and Chemical control of breathing.
9. Regulation of respiratory activity, non-chemical influences on respiratory activity
10. Physio-clinical aspects of Dyspnea, Apnea, Asphyxia, Hypoxia, Cyanosis, Breath holding, high and Low atmospheric pressures.

D. Cardio Respiratory Adjustments in Health and Disease.

1. Exercise, high-altitude, deep-sea diving.
2. Hypoxia, hypercapnia, hypocapnia, oxygen treatment.
3. Asthma, emphysema, artificial respiration.

E. Blood.

1. W.B.C, R.B.C, Platelets formation and functions.
2. Plasma, Blood Groups.
3. Haemostasias, Immunity.

F. Renal System.

1. Functions of Kidney, Formation of Urine, Glomerular filtration rate, clearance, Tubular function.
2. Water excretion, concentration of urine-regulation of Na, Cl, Excretion.
3. Physiology of urinary bladder, Micturition- Neurogenic bladder.

G. Digestive System.

1. Digestion and absorption of nutrients.
2. Gastrointestinal secretions and their regulation.
3. Functions of: -
 - (a) Saliva.
 - (b) Gastric juice.
 - (c) Pancreatic juice.
 - (d) Succus entericus.
 - (e) Bile.
4. Movements of G.I.T.
5. Functions of Liver and Exocrine Pancreas.

H. Nerve - Muscle and Synaptic and Junction Transmission.

1. Nerve – General Concept.
2. Nerve cell –structure.
3. Genesis of resting membrane potential and Action potential.
4. Their ionic basis, All or None phenomenon.
5. Ionic basis of nerve conduction.
6. Classification and types of nervier.
7. Mixed nerves and compound action potential.
8. Concept of nerve injury and Wallerian degeneration.

9. Muscle properties and functions.
10. Electric and Mechanical responses and their basis.
11. Concept of isometric and isotonic muscle contraction.
12. Electrical events in post-synaptic neurons.
13. Inhibition and facilitation at synapses.
14. Chemical transmission of synaptic activity.
15. Principal neurotransmitter system.
16. Neuromuscular junction, structure and events occurring during excitation.

I. Nervous System (Descriptive)

1. Organization of Nervous system.
2. Neuron and Neuralgia.
3. Synapse: Properties and Synaptic transmission.
4. Reflex arc, its components, properties, type and neurological impairments.
5. General sensations and their properties.
6. Ascending tracts of the Spinal cord and effects of their lesions.
7. Pain and physiological Analgesia.
8. Motor neurons, Descending tracts and their applied aspects.
9. Regulation of Muscle Tone by Spinal and Supra-spinal mechanism.
10. Function of Brain-stem, Cerebellum, Basal Ganglia and Motor cortex.
11. Control of Voluntary movement.
12. Regulation of posture and equilibrium, vestibular apparatus.
13. Broad functions of Thalamus, Hypothalamus, Major lobes of Cerebral cortex and Ascending Reticular.
14. Activation System.
15. Limbic System.
16. Learning, memory, speech and conditional reflexes.
 - a. Reflexes, monosynaptic, polysynaptic, withdrawal reflex.
 - b. Properties of reflexes.
 - c. Sense organ, receptors, electrical and chemical events in receptors.
 - d. Ionic basis of excitation.
 - e. Sensory pathways for touch, temperature, pain, proprioception, others.
 - f. Control of tone and posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions and clinical aspects.
 - g. Autonomic nervous system and Hypothalamus.
 - i. Functioning of Autonomic Nervous System with special reference to micturition, defecation and labore.
 - ii. Higher neural regulation of ANS.

J. Higher Functions of Nervous system.

- a. Learning and memory, neocortex,
- b. Limbic functions, sexual behavior, fear and range, motivation.

K. Special Senses.

1. Functional anatomy of the Eye.
2. Optics of Vision.
3. Retinal Function.
4. Visual Pathways.
5. Mechanism of Hearing.
6. Sensation of Taste and Smell.

L. Endocrine.

1. Role of Hypothalamus as an endocrine gland.
2. Functions and hypo and hyper secretion of hormones of:
 - a. Pituitary.
 - b. Thyroid.

- c. Parathyroid.
- d. Adrenal.
- e. Endocrine part of pancreas.

M. Reproductive System.

- a. Male and female reproductive system.
- b. Spermatogenesis, Functions of Testosterone.
- c. Ovarian and Menstrual Cycle and their hormonal control.
- d. Hormones of Ovary and their function.
- e. Parturition Physiological basis of Fertilization, Implantation, Pregnancy, and Lactation.
- f. Contraception.

N. Exercise Physiology.

1. 1.Effects of acute and chronic exercises.
2. 2.Oxygen/CO₂ transport – O₂ debt.
3. Effects of Exercises on muscle strength, power, endurance, B.M.R., R.Q.- hormonal and metabolic effects respiratory and cardiac conditioning.
4. Aging.
5. Training, fatigue and recovery.
6. Fitness- related to age, gender, and body type.

O. Skin and Body Temperature regulation.

1. Functional anatomy of the Skin and its function.
2. Different mechanisms involved in body temperature regulation.
3. Physiological basis of Pyrexia and Hypothermia.

❖ Practical

1. Examination of pulse, B.P, respiratory rate, and measure study the effect of posture and exercise. Recording of arterial blood pressure – effects of change in posture and exercise on A.B. P
2. Technography
 - Effect of deglutition.
 - Effect of voluntary hyperventilation.
 - Effect of exercise.

Spirometer to measure various lung capacities and volumes, Respiratory rate, tidal volume, VC, timed VC, IRV, IC, ERV, EC on Spirometer (demonstration only)

- Spirometry: Lung volumes and capacities.
 - Mosso 's finger ergograph and bicycle ergograph.
 - Perimetry.
 - Clinical examination of:
 1. Respiratory system.
 2. Cardiovascular system.
 3. Central Nervous system.
 4. Special senses.
3. Estimate of Hemoglobin, T.R.B.C, T.W.B.C. count (demonstration only), Study of Graphs.
 4. Blood indices, Blood grouping, Bleeding and Clotting time (demonstration only)
 5. Skeletal muscles.
 - Simple muscle twitch.
 - Effect of increasing strength onsite.
 - Effect of increasing load onsite.
 - Effect of pre load and after load (Starling 'slaw).
 - Effect of temperature.
 - Effect of two successive stimuli.
 - Effect of fatigue.

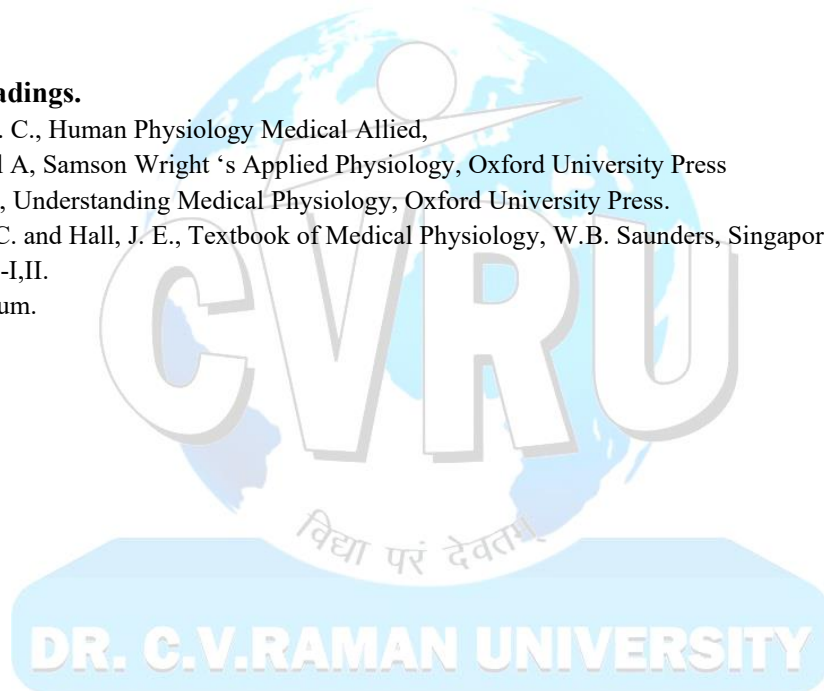
- Effect of multiple stimuli and tetanus.
6. Cardiac muscles.
- Simple myo-cardiogram.
 - Effect of temperature on the myo-cardiogram.
 - Effect of drugs.
 - All or none law.
 - Staircase phenomenon.
 - Physiology Fitness.
 - Breath holding.
 - mercury column test.
 - Cardiac efficiency test – Harvard step test – Master step test.
7. Physiology fitness.
- Breath holding mercury column test.
 - Cardiac efficiency test – Harvard step test – Master step test.

❖ **Practical Examination.**

Students will be assessed by viva based upon learning in theory. Demonstration of measurements of pulse, BP

❖ **Suggested Readings.**

1. Chatterji, C. C., Human Physiology Medical Allied,
2. Keele, Cyril A, Samson Wright 's Applied Physiology, Oxford University Press
3. Bijlani, R L, Understanding Medical Physiology, Oxford University Press.
4. Guyton, A.C. and Hall, J. E., Textbook of Medical Physiology, W.B. Saunders, Singapore.
5. A.k.jain vol-I,II.
6. Sambullingum.



BACHELOR OF PHYSIOTHERAPY (B. P. T) I YEAR

Paper-III: FUNDAMENTALS OF PHYSICS, BIOMECHANICS AND EXERCISE THERAPY: PBPT

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SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
FUNDAMENTALS OF PHYSICS, BIOMECHANICS and EXERCISE THERAPY	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T.(Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

❖ COURSE OBJECTIVES:

This course will enable the student to understand the basic principles of Physics, Biomechanics and exercise therapy, basic principles and application of soft tissue manipulation.

❖ COURSE CONTENTS:

All topics are for a brief description only

1. Mechanics - Definition of mechanics and Biomechanics.
2. Force - Definition, diagrammatic representation, classification of forces, concurrent, co-planar and co-linear forces, composition and resolution of forces, angle of pulls of muscle.
3. Momentum – principles and practical application.
4. Friction.
5. Gravity - Definition, line of gravity, Centre of gravity.
6. Equilibrium - Supporting base, types and equilibrium in static and dynamic state.
7. Levers - Definition, function, classification and application of levers in physiotherapy and order of levers with example of lever in human body.
8. Pulleys - system of pulleys, types and application.
9. Elasticity - Definition, stress, strain, HOOKE 'S Law.
10. Springs - properties of springs, springs in series and parallel, elastic materials infuse.
11. Aims and scope of various biomechanical modalities – shoulder wheel, shoulder ladder, shoulder pulleys, pronator-supinator instrument, static cycle, rowing machine, ankle exerciser, balancing board, springs, weights.
12. Normal Posture - definition and description, static and dynamic, alignments of various joints, center of gravity, planes and muscular moments, and Analysis of posture.
13. Movements - Anatomical definition and description, Movements and exercise as therapeutic modality and their effects, Physiological reaction of exercise.

14. Traction - Rationale, Technique, indications and contra-indications.
15. Normal Gait - definition and description, alignments, center of gravity during gait cycle, planes and muscle acting mechanisms, pattern, characteristics Normal gait cycle, time and distance parameters, and determinants of Gait.
16. Starting positions - Description and muscle work, Importance of fundamental and derived types, Effects and uses of individual positions.
17. Soft tissue manipulation - History, definition, types and their rationale, general effects, local effects of individual manipulation (physiological effects) and uses, contra-indications and techniques of application.

❖ PRACTICAL.

Demonstration of Biomechanical principles. Study of structure, function and application of various Biomechanical modalities – shoulder wheel, shoulder ladder, shoulder pulleys, pronator-supinator instrument, static cycle, rowing machine, ankle exerciser, balancing board, springs, weights, etc. Study of structure, function and application of suspensions, Demonstration and practice of:

- Soft tissue manipulative techniques.
- Normal gait and posture.
- Starting and derived positions.
- Spinal mechanical traction.

❖ PRACTICAL EXAMINATION.

Students will be assessed by viva based upon learning in theory, demonstrations of various biomechanical modalities, suspensions, and manipulative techniques learned.

❖ SUGGESTED READINGS:

1. Hollis, M. and Cook; P.F., Practical Exercise Therapy CBS, New Delhi, Latest Edition.
2. Gardiner, Dena; Principles of Exercise Therapy CBS, New Delhi, Latest Edition.
3. Lippert, Lynn; Clinical Kinesiology for Physical Therapy, Jaypee New Delhi, Latest Edition.
4. Pagliarulo, M.A.; Introduction to Physical Therapy Mosby, London, Latest Edition.
5. Jones, Human Movement Explained; Butterworth Heine, Latest Edition.
6. Colby Kinser therapeutic exercise. Edition 11.

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BACHELOR OF PHYSIOTHERAPY (B. P. T) I YEAR**Paper-IV: FUNDAMENTALS OF MEDICAL ELECTRONICS AND PRINCIPLES OF BIOELECTRICAL MODALITIES: PBPT 104****SCHEME OF EXAMINATION**

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Fundamentals Of Medical Electronics and Principles of Bioelectrical Modalities	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T.(Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

❖ COURSE OBJECTIVES:

This course will enable the student to understand the basic electricity, electronics, equipment's and their application in Electrotherapy.

❖ COURSE CONTENTS:

N.B.- All sections carry equal weightage. All topics are for a brief description only.

SECTION – A: Fundamentals of Medical Electronics and Magnetism.

1. DC Currents -Modern concept of electricity: fundamental electric charges (proton and electron), bond and free electrons, free electrons and current, static electric charge, charging of an object, potential and capacitance, potential difference and EMF.
2. A. C. currents: Sinusoidal wave form, frequency, wavelength, Amplitude and phase of a sine wave, Average and RMS value of a sinewave.
3. Quantity of electricity, magnitude of current, conductors and insulators, resistance of conductor and Ohm 's law, resistances in series and parallel.
4. Capacitors: Electric field around a capacitor, charging and discharging of capacitor, types of capacitors with application of each in Physiotherapy department.
5. Rheostat: series and shunt Rheostat with application of each in the Physiotherapy department.
6. Effects of electric Current: Thermal effect, chemical effect (ionization) and magnetic effect. Electric shock, Earth shock, causes and its prevention.
7. Magnetism: Magnetic - non-magnetic substances and their properties, properties of magnet, molecular theory, poles of magnet and its properties, magnetic lines of force and their properties, Electromagnetism, magnetic effects of electric current, Electromagnetic induction, Lenz 's law, Inductor and Inductance, types of inductors, reactance and impedance.

SECTION – B: Electronic Devices.

1. Thermionic Valves: Thermionic emission, Diode and Triode valves and their characteristics, Construction and application of Cathode Ray Oscilloscope.
2. Semiconductor Devices: Intrinsic and extrinsic semiconductors, advantages of diode and transistors devices.
3. Basing of Diode and their characteristics, Light Emitting Diodes, integrated circuits, Advantage of semiconductor devices over thermionic valve.
4. Electronic Circuits: Rectifiers, Wheat stone bridge and smoothing circuits, Oscillators and its types.
5. A.C. AND D.C. meters: Functions and applications of Ammeter and volt meters, Ohmmeters.
6. Introduction to Therapeutic Energies – Thermal, Mechanical, Electrical, Electromagnetic and magnetic - Definition, description, Electromagnetic spectrum, physiological effects, pathological effects and dangers
Section – C: Bioelectrical Modalities
7. Medical Instrumentation for Physical Therapy: Brief description of generation, circuit diagrams and testing
8. Low frequency currents, Direct currents
9. Medium frequency currents
10. Short wave Diathermy-continuous and pulsed
11. Microwave Diathermy
12. Ultrasound
13. Action-therapy – Infrared- Types of generators, UVR-generators, types, dosimeter and LASER- Productions and instrumentation, classification and physiological effects.

Note: Emphasis is given only to generation circuit diagram and testing of the various electrotherapy apparatus.

PRACTICAL

Demonstration of Bioelectrical principles

Demonstration of electrotherapy instruments, principles of their functioning, usage, and safety implications for human beings

PRACTICAL EXAMINATION

Students will be assessed by viva based upon learning in theory and demonstration of various components of the equipment's.

SUGGESTED READINGS:

1. Froster, A. and Palastanga, N.; Clayton 's Electrotherapy: Theory and Practice AITBS, Delhi
2. Jhon, Low and Ann, Reed; Electrotherapy Explained: Principles Butterworth Heine, Oxford
3. Nelson, R.M. and Currier, D.P.; Clinical Electrotherapy Appleton and Lange
4. Chemeron, M.H.; Physical Agents in Rehabilitation, W B Saunders, London
5. Michlovitz, S L; Thermal Agents in Rehabilitation, F A Davis, Philadelphia

BACHELOR OF PHYSIOTHERAPY (B.P.T) I YEAR
Paper-V: PSYCHOLOGY AND SOCIOLOGY: PBPT 105

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Psychology and Sociology	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: Psychology and Section – B: Sociology the university theory examination marks for Psychology shall be 40 and for sociology 40 marks respectively. There shall be two paper setters and two evaluators, one from Psychology and one from Sociology. Section- A, which will be set by Psychology examiner (40 marks) and Section-B, by Sociology (40 marks) examiner. Recognized teachers in psychology and sociology with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks.

The pattern of university theory examination will be as under for 80 Max. Marks.

There will be two sections i.e., Section-A: Psychology and Section-B: Sociology of 40 Max. Marks each section and distribution of marks for questions will be as under

No. and Type of Question	Marks for each	Total Max.
	question	Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

• **COURSE OBJECTIVES:**

This course will enable the student to understand specific psychological factors and effects in physical illness and this will help them to have a holistic approach in their dealings with patients during admission, treatment, rehabilitation and discharge.

Note: This course is to be taught by two teachers (Psychologist and Sociologist / Medical Sociologist). Each part carries equal weightage. External Question Paper for each part shall be set by two relevant subject paper setters. The examinees shall use different answer books for the two different parts. And, relevant subject teachers shall evaluate these.

• **SECTION: A- PSYCHOLOGY.**

• **COURSE CONTENTS: -**

1. What is psychology? Fields of application of psychology, influence of heredity and environment on the individual.
2. Learning – theories and principles of learning.
3. Memory, Forgetting, theories of memory and forgetting, thinking and methods to improve memory.
4. Thinking – process, problem solving, decision making and creative thinking.
5. Motivation - theories and types of Motivation.
6. Emotions - theories of Emotions and stress.
7. Attitudes – theories, attitudes and behavior, factors in attitude change.
8. Intelligence - theories of intelligence.
9. Personality, theories of personality, factors influencing personality.
10. Development and growth of behavior in infancy and childhood, adolescence, adulthood and old age.
11. Behavior - normal and abnormal.

12. Counseling - Definition, Aims and principles.
13. Psychotherapy – brief introduction to paradigms in psychopathology and therapy.
14. Psychological need of children and geriatric patients.
15. Communication – effective and faulty.
16. Emotional and behavioral disorders of childhood and adolescence- (in brief)
 - a) Disorders of under and over controlled behavior.
 - b) Eating disorders.
17. Mental deficiency.
 - a) Mental retardation.
 - b) Learning disabilities.
 - c) Autistic behavior.
18. Anxiety Disorders.
 - a) Phobias, panic disorder.
 - b) Generalized Anxiety disorder.
 - c) Obsessive Compulsive Disorder.
 - d) Post –traumatic stress disorder.
19. Somatoform and Dissociate Disorders.
 - a) Conversion Disorder.
 - b) Somatization Disorder.
 - c) Dissociate Amnesia and Dissociate Fugue.
20. Personality Disorder.
21. Patho-physiological Disorders – stress and health.
22. Severe psychological disorders – Mood disorders, psychosis.

❖ **SUGGESTED READINGS:**

1. Morgon, Clifford T; Introduction to Psychology Tata Mcg. Hill, Delhi
2. Farnald, L.D. Introduction to Psychology AITBS, Delhi
3. Korchin, Sheldon J.; Modern Clinical Psychology: Principals, CBS, New Delhi
4. McDavid, J.W. and Harari, H.; Social psychology: Individuals, Groups, Societies CBS, New Delhi
5. Davison, G.C. and Neale, J.M.; Abnormal Psychology Jhon Wiley, New York
6. Mehta, Manju; Behavioral Sciences in Medical Practice, Jaypee, New Delhi

❖ **SECTION: B- SOCIOLOGY.**

❖ **COURSE CONTENTS: -**

A-Introduction:

1. Meaning-Definition and scope of Sociology.
2. Its relation with Anthropology, Psychology, Social Psychology and ethics.
3. Methods of Sociology-case study, Social Survey, Questionnaire, interview and opinion poll methods.
4. Importance of its study with special reference to health care professionals.

B-Social Factors in Health and Disease:

1. The meaning of Social Factors.
2. The role of social factors and illness.

C-Socialization:

1. Meaning and nature of Socialization.

2. Primary, Secondary, and Anticipatory Socialization.
3. Agencies of Socialization.

D. Social Groups:

1. Concepts of social groups.
2. Influence of formal and informal groups on health and sickness.
3. The roll of primary groups and secondary groups in the hospital and rehabilitation settings.

E-Family:

1. The family - Meaning and definition, Functions.
2. Changing family Patterns.
3. Influence of family on the individual health, family, and nutrition.
4. The effects of sickness on family and psychosomatic disease and their importance to Physiotherapy.

F-Community:

1. Rural community – Meaning and features – Health hazards of rural population.
2. Urban community – Meaning and features – Health hazards of urban population.

G-Culture and Health:

1. Concept of culture.
2. Cultures endeavor.
3. Cultural meaning of sickness.
4. Culture and health disorders.

H-Social Change:

1. Meaning of social changes and Factors of social change.
2. Human adaptation and social change.
3. Social change and stress.
4. Social and deviance.
5. Social change and health Program.
6. The role of social planning in the improvement of health and in rehabilitation.

I-Social problems of disabled: Consequences of the following social problems in relation to sickness and Disability, remedies to prevent these problems.

1. Population explosion.
2. Poverty and unemployment.
3. Beggary.
4. Juvenile delinquency.
5. Prostitution.
6. Alcoholism.
7. Problems of women unemployment.

J-Social security: Social security and social legislation in relation to the Disabled.

K-Social worker: Meaning of social work, the role of a medical social worker.

Suggested readings

1. Bhusan, Vidya and Sachdeva, D.R.; Introduction to Sociology Kitab Mahal, New Delhi.
2. Turner, J. H.; Structure of Sociological Theory, Jaipur Publication.
3. Anand Kumar Indian Society and Culture Vivek, New Delhi.



**BACHLOR OF
PHYSIOTHERAPY
II YEAR**

(Effective from Academic Year 2022-23)

DR. C.V.RAMAN UNIVERSITY

B.P. T- II YEAR**STAFF PATTERN FOR II YEAR B.P.T**

Subjects	Staff Required
Pathology	1 M.D. Pathology, Lecturer/ Asst. Prof.
Microbiology	1 M.D. Microbiology, Lecturer/ Asst. Prof.
Biochemistry	1 M.D. Biochemistry, Lecturer/ Asst. Prof.
Pharmacology	1M.D. Pharmacology, Lecturer/Asst. Prof.
General Medicine	1 M.D. Medicine, Lecturer/ Asst. Prof. including Pediatrics and Geriatrics
General Surgery	1 M.S. Surgery, Lecturer/ Asst. Prof.
Obstetrics and Gynecology	1M.S. Obstetrics and Gynecology, Lecturer/ Asst. Prof.
Exercise therapy	1 Asst. Professor of Physiotherapy. 1 Asst. Professor of Physiotherapy/ Yoga therapy.
Electrotherapy	1 Asst. Professor of Physiotherapy.

S.No.	Subject	Internal Assessment		University Examination			Total
		Theory	Practical	Theory	Viva	Practical	
1	Pathology and Microbiology	20	--	80	--	--	100
2	Biochemistry and Pharmacology	20	--	80	--	--	100
3	Medicine including Pediatrics and Geriatrics	20	--	80	--	--	100
4	General Surgery, Obstetrics and Gynecology	20	--	80	--	--	100
5	Exercise therapy including yoga	20	20	100	20	40	200
6	Electrotherapy	20	20	100	20	40	200
Total Max. Marks							800

N.B.- Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.

SCHEME OF EXAMINATION FOR B.P. T- II YEAR

There shall be Six subjects for the Second year B.P.T- Examination.

The subjects Qualification of the examination and the pattern of examination will be as follows.

1. PATHOLOGY AND MICROBIOLOGY.

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Pathology and Microbiology	20	--	80	--	--	100

The University examination shall be of 80 marks with Section –

A: Pathology and Section – B: Microbiology the university theory examination marks for Pathology shall be 40 and for Microbiology 40 marks respectively. There shall be two paper setters and two evaluators, one from Pathology and one from Microbiology. Section- A, which will be set by Pathology examiner (40 marks) and Section-B, by Microbiology (40 marks) examiner. Recognized teachers in pathology and microbiology with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks.

Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks. The pattern of university theory examination will be as under for 80 Max. Marks.

There will be two sections i.e., Section-A: Pathology and Section-B: Microbiology of 40 Max. Marks each section and distribution of marks for questions will be as under.

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

2. BIOCHEMISTRY AND PHARMACOLOGY.

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Biochemistry and Pharmacology	20	--	80	--	--	100

The University examination shall be of 80 marks with Section –

A: Biochemistry and Section – B: Pharmacology the university theory examination marks for Biochemistry shall be 40 and for Pharmacology 40 marks respectively. There shall be two paper setters and two evaluators, one from Biochemistry and one from Pharmacology. Section- A, which will be set by Biochemistry examiner (40 marks) and Section-B, by Pharmacology (40 marks) examiner. Recognized teachers in Biochemistry and Pharmacology with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks.

Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks.

The pattern of university theory examination will be as under for 80 Max. Marks.

There will be two sections i.e. Section-A: Biochemistry and Section-B: Pharmacology of 40 Max. Marks each section and distribution of marks for questions will be as under.

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

3. MEDICINE INCLUDING PEDIATRICS AND GERIATRICS.

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Medicine including Pediatrics and Geriatrics	20	--	80	--	--	100

There shall be one paper setter external or internal for theory examination. Recognized teachers in Medicine after M.D. (Medicine) with five years of teaching experience shall be on the panel of examiner, 50% shall be minimum passing marks. Internal assessment will be of 20 marks. The pattern of university theory examination will be as under for 80 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
5 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
4 Short Answer Questions (Answer to be given in 250-300 words)	10	40
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		80

4. GENERAL SURGERY, OBSTETRICS AND GYNECOLOGY.

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
General Surgery, Obstetrics and Gynecology	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: General Surgery and Section – B: Obstetrics and Gynecology, the university theory examination marks for General Surgery shall be 40 and for Obstetrics and Gynecology 40 marks respectively. There shall be two paper setters and two evaluators, one from General Surgery and one from Obstetrics and Gynecology. Section- A, which will be set by General Surgery examiner (40 marks) and Section-B, by Obstetrics and Gynecology (40 marks) examiner. Recognized teachers in General Surgery and Obstetrics and Gynecology with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks.

The pattern of university theory examination will be as under for 80 Max. Marks.

There will be two sections i.e., Section-A: General Surgery and Section-B: Obstetrics and Gynecology of 40 Max. Marks each section and distribution of marks for questions will be as under

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

5. EXERCISE THERAPY INCLUDING YOGA

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Exercise therapy including yoga	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

6. ELECTROTHERAPY.

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Electrotherapy	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

BACHELOR OF PHYSIOTHERAPY (B.P.T)-II YEAR**Paper-I: PATHOLOGY AND MICROBIOLOGY: PBPT 201****SCHEME OF EXAMINATION**

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Pathology and Microbiology	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: Pathology and Section – B: Microbiology the university theory examination marks for Pathology shall be 40 and for Microbiology 40 marks respectively. There shall be two paper setters and two evaluators, one from Pathology and one from Microbiology. Section- A, which will be set by Pathology examiner (40 marks) and Section-B, by Microbiology (40 marks) examiner. Recognized teachers in pathology and microbiology with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks. The pattern of university theory examination will be as under for 80 Max. Marks.

There will be two sections i.e., Section-A: Pathology and Section-B: Microbiology of 40 Max. Marks each section and distribution of marks for questions will be as under.

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

❖ Course Objectives

- Rationale for understanding of the subject for Physiotherapy students.
- Brief concept of pathological basis of disease and infectious disease prevention.

SECTION- A: PATHOLOGY**❖ Course Contents.**

1. Aims and objectives of study of pathology.
2. Concept of Diseases, Classification of Lesions.
3. Brief outline of cell injury, degeneration, necrosis and gangrene.
4. Brief concepts of inflammation and Repair, Degeneration, Necrosis and Gangrenes. Inflammation: Definition, vascular and cellular phenomenon, differences between transudate and exudate, granuloma.
5. Deficiency Diseases vitamin A, vitamin B, vitamin C, vitamin D.
6. Vascular disturbances: Oedema, Thrombosis, Embolism, Hemorrhage and Shock.
7. Blood Disorder: Anemia, Leukemia, Hemorrhagic disorders.
8. Neoplasia: Brief overview of Tumors, Definition, Classification, Etiology and spread of tumors, Benign versus Malignant tumors.
9. In brief about:
 - A. Respiratory system diseases- Etio-pathogenesis, gross pathology of conditions - aging, Pneumonia, Bronchitis, Bronchiectasis, COPD, Asthma, Emphysema, Pulmonary Tuberculosis, Lung cancers, Restrictive Lung disease and Occupational Lung diseases.
 - B. Cardiovascular system: – Etio-pathogenesis, gross pathology of conditions- aging, IHD, myocardial infarction, CCF, HT, Rheumatic heart disease, Congenital heart disease, Arteriosclerosis, Thrombo-angiitis, Vasomotor-Raynaud 's, venous thrombosis, Gangrene, Lymphedema.

C. Alimentary system – Peptic ulcer, Carcinoma of stomach.

-Ulcerative lesions of Intestine.

a) Liver – Hepatitis, Cirrhosis and Hepatoma.

b) Pancreas – Pancreatitis, Carcinoma of Pancreas, Diabetes.

10. Details about:

a. CNS and PNS: Etio-pathogenesis, gross pathology of conditions - Aging, Meningitis, Encephalitis, Parkinson's, Amyotrophic lateral sclerosis, Ataxias, Multiple Sclerosis, stroke, Neuropathies (Charcot Marie Tooth's disease, Compression and entrapments, diabetic, G.B syndrome), Poliomyelitis and post-polio syndrome, Myasthenia Gravis, brief outline of C.N.S. Tumors and peripheral nerve lesions.

b. Musculoskeletal system (Bones and Joints): Etio-pathogenesis, gross pathology of conditions - osteocalcin, Osteoporosis, Osteomyelitis, Osteoarthritis, rheumatoid arthritis, Gout, spondyloarthropathy, Osteonecrosis, bone tumors, Myofascial pain syndrome. Biological responses to trauma, bone and soft tissue immobilization.

c. Muscle – Poliomyelitis, Myopathies, Volkman 's ischemic contracture.

d. Skin – Scleroderma, Psoriasis, Autoimmune disorders.

10. In brief about:

(a) Urinary system – Nephrotic syndrome, Nephritis, Glomerulonephritis.

(b) Prostate –Prostatitis, BPH, Carcinoma of Prostate.

(c) Endocrine – Thyroid, Thyroiditis, Thyroid Tumors.

(d) Salivary gland – Salivary glandulous.

Note: - No Questions should be asked from practical demonstration in theory paper. Practical(8hrs.)

1. Normal total and differential WBC count, Hemoglobin, RBC.

2. Demonstration of slides:

- Anemia.
- Leukemia.
- Acute inflammation –Appendix.
- Chronic inflammation – Non –specific.
- Tuberculosis of lymph Node – specific inflammation.
- Leprosy – Skin and Aerobically.
- Squamous cell carcinoma –skin.
- Osteogenic sarcoma – Bone tumor.
- Osteoblastoma – Bone tumor.
- Ewings – Bone tumor.
- Multiple Myeloma – Bone tumor.

SECTION- B: MICROBIOLOGY.

❖ Course Contents:

I. General Microbiology.

1. Introduction and historical background.
2. Classification of Microorganisms.
3. Morphology of bacteria.
4. Sterilization and disinfection.
5. Immunity – Antigens and Antibodies, General overview of antigen antibody reaction and practical applications.

II. Systemic Microbiology.

1. Gram Positive cocci – Staph, Stretto, Pneumococci.
2. Gram-negative cocci –Gonococci and Meningococci.

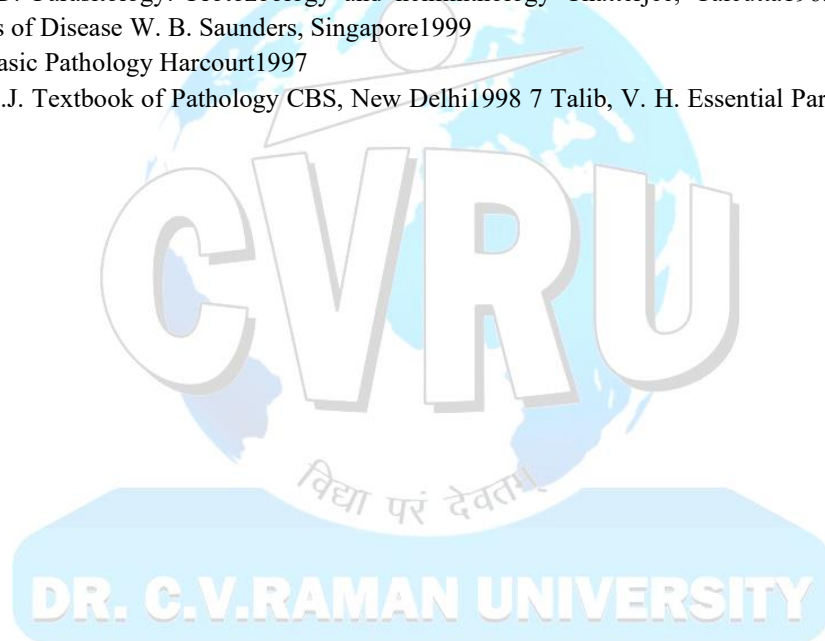
3. Gram positive bacilli – Tubercule bacilli, Lepra bacilli, Clostridium tetani, Clostridium Perrigins.
4. Gram negative bacilli – Salmonella, Coliforms, pseudomonas, proteus etc.
5. Anaerobic non – sporing cocci and bacilli.
6. Virology – General introduction, brief description of polio virus, Rubella Hepatitis-B and AIDS (diagnosis, prevention and treatment).
7. Spirochetes- Syphilis (congenital and acquired). 13.Malaria
8. Mycology – Actinomycosis, Madura mycosis, Mucosal Candidiasis
9. Applied microbiology as relevant to diseases of bones, joints, Muscles, Skin, Infection and Bums.

III. Demonstration.

1. Demonstration of collection of clinical specimens.
2. Demonstration of morphology and culture of organisms.
3. Demonstration of simple Gram 's and Ziehl- Neelsen staining.
4. Sterilization and Disinfection techniques.
5. Demonstration of serological tests for syphilis, Hepatitis.

❖ Suggested Readings:

1. Chakraborty, P. Textbook of Microbiology NCB, Calcutta1999
2. Ananth Narayan, R. Text Book of Microbiology Orient Longman, Madras1986
3. Chatterjee, K. D. Parasitology: Protozoology and helminthology Chatterjee, Calcutta1965 4 Cotran, Ramzi S Pathologic Basis of Disease W. B. Saunders, Singapore1999
4. Vinay Kumar Basic Pathology Harcourt1997
5. Nagalotimath, S.J. Textbook of Pathology CBS, New Delhi1998 7 Talib, V. H. Essential Parasitology Mehta, New Delhi2001.



BACHELOR OF PHYSIOTHERAPY (B.P. T): II YEAR

Paper-II: BIOCHEMISTRY AND PHARMACOLOGY:

PBPT 202

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Biochemistry and Pharmacology	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: Biochemistry and Section – B: Pharmacology the university theory examination marks for Biochemistry shall be 40 and for Pharmacology 40 marks respectively. There shall be two paper setters and two evaluators, one from Biochemistry and one from Pharmacology. Section- A, which will be set by Biochemistry examiner (40 marks) and Section-B, by Pharmacology (40 marks) examiner. Recognized teachers in Biochemistry and Pharmacology with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks.

The pattern of university theory examination will be as under for 80 Max. Marks.

There will be two sections i.e., Section-A: Biochemistry and Section-B: Pharmacology of 40 Max. Marks each section and distribution of marks for questions will be as under.

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

SECTION: A- BIOCHEMISTRY

Theory: - No. of Teaching Hrs. 60

To understand biochemical basis of life sciences.

After 60 hours lecture and demonstration in Biochemistry this course shall provide the student with basic Biochemistry knowledge with special emphasis on clinical understanding of biochemistry processes. Students shall be able to relate these processes with underlying mechanism of physiotherapeutic.

Note: A brief description of metabolic pathways mentioned herein is indicated. Details and structures are to be avoided.

❖ Course Contents:

I. Basic Biophysics: Concept of Acid base, buffer, Henderson- Hasselbach equation, brief knowledge of biophysical process such as Osmosis. Viscosity, Surface tension, Dialysis with special emphasis on their biomedical implication. A brief study of Radio-isotopes and their clinical applications.

II. General Biochemistry with Biomedical functions.

1. Nutrition: Basic principles of nutrition; Carbohydrates, Proteins and Lipid caloric requirement and balance diet.
2. Carbohydrates: Definition, classification with examples and general functions.
3. Metabolism - Glycolysis, T.C.A Glycogen metabolism, Blood Sugar regulation, Diabetes and diabetic keto-acidosis.

4. Lipids: Definition, classifications and general functions. Essential fatty acids, cholesterol, Blood lipids. Brief review of lipoproteins. Metabolism-Oxidation of fatty acids, cholesterol synthesis, and fatty liver.
5. Proteins: Definition, classification, and Bio-medical Importance.
6. Study of hemoglobin and immunoglobulins with functions.
7. Plasma Proteins and functions. Metabolism: General reactions of amino acids. Formation and fate of ammonia - Urea cycle.
8. Nucleic Acids: Brief overview of the structure of RNA and DNA including Nucleosides and Nucleotides. Study of few biologically important nucleotides.
9. Tissue chemistry: Chemistry of connective tissue, bone and teeth. Composition function and chemical mediators of nerve structure of muscle tissue. General Biochemistry of muscle contraction and relaxation.
10. Enzymes: Definition, classification with examples. Factors affecting enzyme action. Brief study of enzyme inhibition. Clinical importance of enzymes.
11. Vitamins: Definition, classification and functions. Dietary source, Daily requirement and deficiency disorders.

III. Bioenergetics:

Study of Plasma Membrane, Review of laws of thermodynamics as applicable to biological systems. Concept of free energy charge. High-energy compounds and Respiratory chain.

IV. General Metabolism:

(Note: A brief outline of metabolic pathway herein is indicated. Details and Structure are to be avoided).

1. Carbohydrate metabolism: Glycolysis, TCA, Glycogen metabolism, blood sugar regulation, Diabetes and Diabetic Ketoacidosis.
2. Lipids Metabolism: Beta-oxidation of Fatty acids, Fatty acid synthesis, cholesterol synthesis, Ketosis and Fatty liver.
3. Protein Metabolism: General reaction of Amino acids, Formation and fate of Ammonia, Urea cycle.
4. Purine and Pyrimidine: Only catabolism of Purine to be Stressed in detail with special emphasis on Gout. General breakdown of Pyrimidine and associated disorders.

V. Water and Electrolyte Balance:

General outline of fluid compartments of the body with their water and electrolyte content and balance, Dehydration.

❖ Book References: -

1. Textbook of Biochemistry by West and Todd.
2. Textbook of Medical Biochemistry by Chatterjee and Shinde.
3. Principles of Biochemistry by A. Leininger.
4. Textbook of Biochemistry by A.C. Deb.
5. Ahuja, Lakshmi CBS Quick Review in Biochemistry CBS, New Delhi.
6. Chatterji, M N Text Book of Medical Biochemistry Jaypee, Bangalore.
7. Deb, A.C. Fundamentals of Biochemistry, Calcutta.
8. Leininger, A.L. Principles of Biochemistry CBS, Delhi.

SECTION: B – PHARMACOLOGY

❖ Course Objective: -

The objective of the course in Pharmacology is that after 40 hours of lectures and demonstration, the students shall be able to understand and correlate the biochemical process involved with drugs in human body and their clinical importance especially in physiotherapeutic, in addition, the students shall be able to fulfill with 75% accuracy (as measured by written, oral, practical and internal evaluation) the following objectives of the courses.

- a) To understand pharmaco-kinetics, pharmaco-dynamics.
- b) Usage of common drugs with (indications, contraindications, side effects).
- c) To understand the drug actions that may affect the physical therapy treatment.
- d) Course is not prescription oriented.

❖ Course Contents: -

I. General Pharmacology (Brief description only)

1. Definition of drug, Pharmacokinetics and Pharmacodynamics.
2. Broad categories of adverse drug reactions.
3. Alcohols.
4. Analgesics and Antipyretics, anti-inflammatory drugs.
5. Sedatives.
6. Stimulants.
7. Drugs acting on muscles- Muscle relaxants, Muscle stimulants.
8. Anti-parkinsonism agents.
9. Drugs modifying.
10. Hypolipidemia.
11. Anticoagulants.
12. Thyroxin and Anit thyroid drugs.
13. Anti-diabetics.
14. Glucocorticoids.
15. Calcium, Phosphorus, Calcitonin and Parathormone.
16. Narrow spectrum antibiotics.
17. Broad-spectrum antibiotics.
18. Anti-cancer drugs.
19. Drugs acting on respiratory systems: Respiratory stimulants and respiratory depressants, Bronchodilators, Expectorants. Anti-Asthmatics, Anti-tussive.
20. Vitamins.
21. Ovarian hormones, Anabolic steroids, Estrogen, Progesterone, Androgen.
22. Locally acting drugs: Anodies, Local anesthetic drugs, Counter-irritants Rubefacient, Soothing agent, Anti-microbial.

Books Suggested

1. Pharmacology by Satoskar.
2. Clinical Pharmacology by Lawrence.
3. Textbook of Pharmacology by B.N. Ghose.
4. Tripathi, K.D. Essential of Medical Pharmacology New Delhi.

BACHELOR OF PHYSIOTHERAPY (B.P.T)- II YEAR

Paper-III: MEDICINE INCLUDING PEDIATRICS

AND GERIATRICS: PBPT 203

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Medicine including Pediatrics and Geriatrics	20	--	80	--	--	100

There shall be one paper setter external or internal for theory examination. Recognized teachers in Medicine after M.D. (Medicine) with five years of teaching experience shall be on the panel of examiner, 50% shall be the minimum passing marks. Internal assessment will be of 20 marks. The pattern of university theory examination will be as under for 80 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
5 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
4 Short Answer Questions (Answer to be given in 250-300 words)	10	40
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		80

- ❖ **Description:** -This course follows the basic course on Anatomy, Physiology, Psychology, Sociology, Pathology and Microbiology and provides knowledge about relevant aspects of General Medicine with emphasis on physiotherapeutic.
- ❖ **Course Objective:** - The objective of this course is that students at the end of course shall have a broad understanding about common medical diseases, which they would be handling as a physiotherapist. They should have a brief idea about Etiology, pathology, Type and Degree of Disability the patient will have as a result of the disease, so that he/she as a physiotherapist with physician should help the patient to achieve cure and/or ameliorate his/her illness and sufferings.

To understand a Pediatrics patient and its special needs in relation to physical therapy.

- ❖ **Course contents: -**

- A. **Infections.**

Outline briefly the Etiology, symptoms and brief management of the following disease. Bacterial – Tetanus, Typhoid.

Viral – Herpes simplex, Herpes Zoster, Measles, Hepatitis –B. and HIV. Protozoal – Filariasis, Malaria, Amoebiasis.

- B. **Diseases of blood.**

Define and describe clinical aspects of Nutritional Anemias.

Brief description of Bleeding Disorder with emphasis to Hemophilia. Lymphadenopathy and splenomegaly. Leukemia – acute and chronic.

- C. **Diseases of Liver.**

Jaundice

Viral Hepatitis.

Cirrhosis of Liver

- D. **GIT Diseases (Brief description)**

1. Peptic Ulcer

2. Diarrhea and Dysentery.

- E. **Renal Diseases.**

1. Brief description of acute and Chronic renal Failure.

Urinary Tract Infection.

Acute Nephritis, Nephrotic Syndrome.

F. Nutritional and Metabolic Disease.

1. Balanced normal diet.
2. Protein Calorie Malnutrition
3. Avitaminosis of both water and fat-soluble vitamins.
4. Diabetes mellitus – Definition, Classification and complications, brief description of management of diabetes mellitus.
5. Obesity – Etiology and management.
6. Hyper and Hypo-thyroidism.
7. Calcium Homeostasis.
8. Gigantism and Acromegaly.

G. Diseases of Bones, Joints and Connective tissue.

- 1) Brief introduction to understanding of Auto immune diseases.
- 2) Rheumatic fever and Rheumatoid arthritis – Aetio pathogenesis, Clinical features, complications, diagnosis and briefly outline the management.
- 3) Brief description of Systemic Lupus Erythematosus.
- 4) Polyarteritis Nodosa, Dermatomyositis, Scleroderma.
- 5) Osteoarthritis – Aetiopathogenesis, clinical feature, diagnosis, complication and management.

H. Genetics and Diseases.

1. Common inherited disorders.
2. Prevention of genetic disorders.

I. Miscellaneous.

1. Allergy
2. Drug reactions.

J. Dermatology.

1. Common skin infections.
2. Psoriasis.
3. Leprosy- aetio pathogenesis, clinical features and treatment.
4. Venereal diseases – Syphilis, HIV etc., brief description and prevention (lecture demonstration only).

K. Radiology.

(Both in normal and Pathological conditions).
Radiology of Bone and joints. Radiology of chest including Heart.

L. Geriatrics.

Physiology of ageing, manifestations of diseases in old people and general principles of management.
Common Geriatric Disorders and their management, Implications of aging in physical therapy. lung disease, Pleurisy and Pulmonary embolism

DR. C.V.RAMAN UNIVERSITY
PEDIATRICS

Total No. of Hrs.- 20

1. Normal Growth and development of child – motor, mental, language and social from birth to 12 years including physical, social, adaptive development.
2. Pathological presentations of growth and development disorders.
3. Common infectious diseases in children: Brief description of following infectious diseases along with outline of management: Tetanus, diphtheria, Mycobacterial, measles, chicken pox, gastroenteritis, HIV, and Malaria.
4. Immunization programs – WHO schedule, different vaccinations, rationale; special consideration to various disease eradication programs like Pulse-Polio.
5. Child and nutrition - Nutritional requirements, malnutrition syndrome, Vitamins (A, B, C, D and K) and Minerals (iron, calcium phosphorus, iodine) deficiencies in children and management in brief.
6. Clinical presentation, management and prevention of the following: - Cerebral palsy, Poliomyelitis, Muscular dystrophy.
7. Childhood rheumatism-types, clinical presentation, and management in brief.
8. Acute CNS infections: clinical presentation, complications and management of bacterial and tubercular infections in brief.
9. Clinical presentation, management and prevention of the following respiratory conditions: URI, LRI, bronchiolitis, asthma, TB (in brief)

10. Clinical presentation, management and prevention of the following cardiac conditions: Rheumatic heart disease, SABA, Congenital heart disease - ASD, VSD, PDA (in brief)

❖ **Practical**

Students shall be posted for one month in general Medicine ward. They shall do clinical checking and ward work to acquaint themselves to General Medicine and pediatrics.

❖ **Book References**

1. Davidson Principles and Practice of Medicine (Churchill Livingstone)
2. Chamberlain, E.N. and Ogilvie, C. Symptoms and signs in Clinical Medicine Jhon Wright.
3. Swash, Michael Hutchison 's Clinical Methods W B Saunders, London.
4. Ghai, O. P. Essential Pediatrics Interpoint, New Delhi.
5. Haslett, C. Davidson 's Principal and Practice of Medicine Churchill Livingstone, London.
6. Golwalla, Aspi F. Medicine for Student NBD, Mumbai.
7. Behrman, R. Nelson 's Text Book of Pediatrics W B Saunders, London.
8. Kasper, D.L Harrison 's Principles of Internal Medicine Mc-Graw Hill, New York.



BACHELOR OF PHYSIOTHERAPY (B.P. T)-II YEAR

Paper-IV: GENERAL SURGERY, OBSTETRICS AND

GYNECOLOGY: PBPT 204

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
General Surgery, Obstetrics and Gynecology	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: General Surgery and Section – B: Obstetrics and Gynecology, the university theory examination marks for General Surgery shall be 40 and for Obstetrics and Gynecology 40 marks respectively. There shall be two paper setters and two evaluators, one from General Surgery and one from Obstetrics and Gynecology. Section- A, which will be set by General Surgery examiner (40 marks) and Section-B, by Obstetrics and Gynecology (40 marks) examiner. Recognized teachers in General Surgery and Obstetrics and Gynecology with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks.

The pattern of university theory examination will be as under for 80 Max. Marks.

There will be two sections i.e., Section-A: General Surgery and Section-B: Obstetrics and Gynecology of 40 Max. Marks each section and distribution of marks for questions will be as under.

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

❖ Course Description: -

This course follows the basic course on Anatomy, Physiology, Psychology, Sociology, Pathology and Microbiology and provides knowledge about relevant aspects of general surgery, Plastic surgery, Pediatrics, E.N.T. Ophthalmology, Obstetrics and Gynecology and Radiology with emphasis on physiotherapeutic.

❖ Course Objectives: -

The objective of this course is that students at the end of course shall have a broad understanding about common surgical diseases, which they would be handling as a physiotherapist. They should have a brief idea about etiology, pathology and type and degree of disability the patient will have as a result of the disease, so that he/she as a Physiotherapist with surgeon should help the patient to achieve cure and/or ameliorate his/her illness and sufferings.

SECTION: A- GENERAL SURGERY
(INCLUDING E.N.T AND OPHTHALMOLOGY)

Theory:110 Hrs.

Practical:40 Hrs.

❖ **Course Contents: -**

1. **Introduction:** Description of events frequently accompanying general Anesthesia, Blood transfusion and physiological response of the body.
2. Wounds, scars, ulcers, boils, carbuncles.
3. Principles of pre- and post-operative physical examination, investigations, postoperative complications and their management.
4. **Abdominal surgery:** Incisions, complications and management of following: Nephrectomy, Appendicectomy, Herniorrhaphy, Mastectomy, Thyroidectomy, Colostomy, Adrenalectomy, Cystectomy, Hysterectomy, Prostatectomy, Cholecystectomy, ileostomy, Incisional hernia and its prevention.
5. **Burns:** Causes, Classification, Medical management and precautions in the acute stage, complications of burns and their management.
6. **Plastic Surgery:**
 - a) Principles of plastic surgery, post-operative management and complications.
 - b) Sinuplasty.
 - c) Principles of cosmetic surgery.
 - d) Skin grafting.
 - e) Surgery of Hand with emphasis on management of traumatic and leprosy hand.
 - f) Burns and plastic surgery management.
7. **Ophthalmology:** Etiology, symptomatology and treatment of visual defects emphasis on Errors of Refraction, Squint,
8. Conjunctivitis, Trachoma, Corneal ulcers, iritis, Cataract, Retinitis, Detachment of retina and Glaucoma (lecture demonstration only-10 Hrs.)
9. **E.N.T:** - Etiology, symptomatology and treatment of sinusitis, Rhinitis, Acute and Chronic Otitis, Otosclerosis, Mastoidectomy and loss of hearing. (Lecture demonstration only-10Hrs.)

❖ **Book References**

1. Surgery by Nan.
2. Surgery by Baily and Love.
3. Short Practice of Surgery by Rain ang Rite life.
4. Russell, R.C.G. Short practice In Surgery Arnold, London.
5. Gupta, R. L. Text Book of Surgery Jaypee, New Delhi.

SECTION: B- OBSTETRICS AND GYNECOLOGY

Total teaching Hrs.: - 40 Hrs.

❖ **Course objectives: -**

To understand common gynecological conditions and procedures (in brief)

To understand implications of gynecological conditions and procedures on physical therapy.

❖ **Course Contents: -**

1. Brief Anatomy and physiology of female reproductive system.
2. Basic principles of clinical examination, investigation, diagnosis, prognosis of female reproductive system disorders.
3. Menstruation and its disorders.
4. Physiological changes during pregnancy.
5. Antenatal care and diagnosis of pregnancy including high-risk pregnancy.
6. Labour, stage of labour, normal and abnormal labour, Delivery and management of neonate.

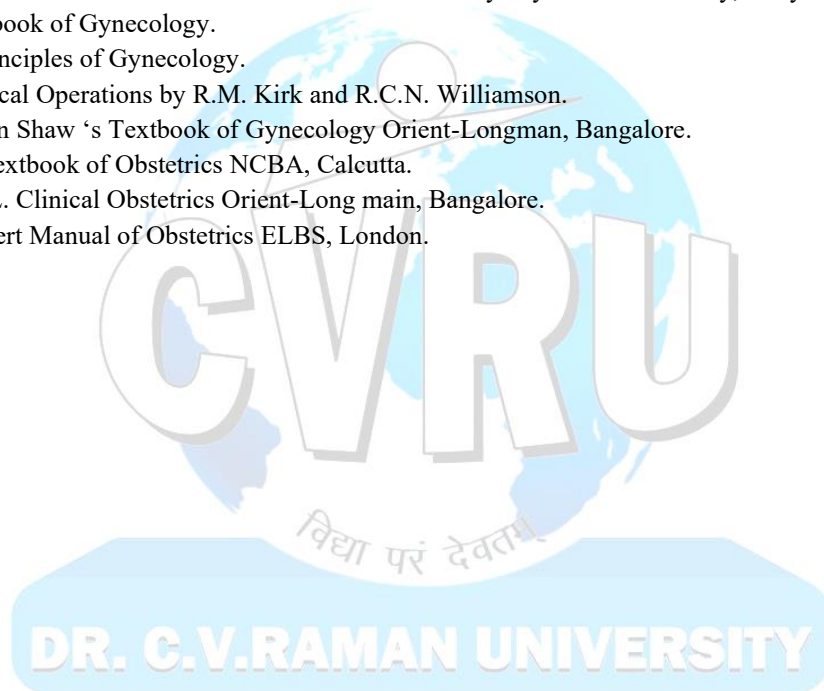
7. Puerperium and postnatal care, social obstetrics- maternal and perinatal mortality.
8. Pelvic pain and its management: Musculo-skeletal problems in an obstetric patient, management
9. Importance Gynecological condition, a short review of PID, Tumors, malignancies, infertility, Endometriosis, Ectopic pregnancy, Vesicular mole.
10. Prenatal and post-natal care
11. Prolapse Uterus, causes of incontinence of urine, type and management.
12. Pelvic inflammatory diseases.
13. Abortion and birth control.
14. Surgical consideration in obstetrics and gynecology.

❖ **Practical: -**

Students shall be posted for one month in General Surgery, plastic and burns, obstetrics and Gynecology and Radiology units. They will do clinical checking and ward work to acquaint themselves to General Surgical and Obs. and Gyn. conditions.

❖ **Suggested Readings: -**

1. Gynecology and Obstetrics in the Health care of a Woman by Seymoul. L. Romney, Mary Jane Gray, J. A. Merrill.
2. Shaw 's Textbook of Gynecology.
3. Jeffcoat 's Principles of Gynecology.
4. General Surgical Operations by R.M. Kirk and R.C.N. Williamson.
5. Howkins, John Shaw 's Textbook of Gynecology Orient-Longman, Bangalore.
6. Datta, D.C. Textbook of Obstetrics NCBA, Calcutta.
7. Mudaliar, A.L. Clinical Obstetrics Orient-Long main, Bangalore.
8. Percival, Robert Manual of Obstetrics ELBS, London.



BACHELOR OF PHYSIOTHERAPY (B.P. T)- II YEAR

Paper-V: EXERCISE THERAPY INCLUDING YOGA: PBPT 205

Total no. of teaching Hrs.-200 Theory: -120Hrs.& Practical: -80 hrs.**SCHEME OF EXAMINATION**

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Exercise therapy including yoga	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

❖ COURSE DESCRIPTION: -

In these courses, the student shall learn principles, techniques and effects of exercise as a therapeutic modality in the restoration of physical function.

❖ COURSES OBJECTIVE: -

To understand the principles of exercise therapy and its application as a treatment modality. The objectives of this course are that after 200 hours of lectures, demonstrations, practical and clinical, the students shall be able to list the indications and contraindications of various types of exercise and demonstrate the different techniques and describe their effects. In addition, the students shall be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation) the following objective of the course.

❖ COURSE CONTENTS: -

1. Introduction to Exercise Therapy.
2. Exercise and physiology of body.
3. Psychogenic and Pharmacological aspects of exercise.
4. Classification of movements in details:
- ❖ **Active voluntary movements:** Free, assisted and resisted.
 - Indication, contraindications, advantages and techniques of various types of active exercises.
 - Clinical methods of strengthening of various muscle groups.
- ❖ **Involuntary movements** - Passive movements: Definition, types- Relaxed, forced and stretching type.
 - Indications, contraindications, advantages and Techniques of various passive movements.
5. **Voluntary Movements:** - Free exercises, assisted exercises, Resisted exercise.
 - A. **Free exercises** – Classification technique effects of free exercise on various systems
 - B. **Resisted exercises** – technique and types of resistance, SET system (heavy resisted exercise, Oxford method, Delorme method, McQueen 'method)
6. **Relaxed passive movement-** Definition, Classification of relaxed passive movements, Technique, effects and uses of relaxed passive movements.

7. **Muscle strength** – Anatomy and Physiology of muscle tissue, Causes of muscle weakness/paralysis, Prevention of muscle weakness/paralysis. Type of muscle work and contractions, Torque of muscle work, Muscle assessment M.R.C. grading, Principles of muscle strengthening/re-education, early re-education of a paralyzed muscle etc., Strengthening technique, Endurance training, Therapeutic Gymnasium.
8. **Manual Muscle Testing:** Concept, introduction, significance and limitations. Grade systems, Techniques of Muscle testing. Emphasis on skills to grade upper, lower limb, neck and trunk muscles including trick movements.
9. **Joint movement**-Classification of joint movements, Causes for restrictions of joint movement, prevention of restriction of joint range of motion. principles of mobilization of joint, increasing its range of motion, technique of mobilization of stiff joint. Accessory movements- glides, traction and approximation, Mobilization of peripheral, spinal joints, techniques and grading in detail.
10. **Manipulation therapy:** Introduction, Principles of therapy, Indications and Contraindication (no clinical application of these techniques).
11. **Goniometry:** - Measurement of various joints range in normal and disease condition. Different techniques of goniometry. Limb length measurements.
12. **Passive stretching-** Aims, Principles, Indications, Techniques and contraindications.
13. **Relaxation:** Description of fatigue and spasm and factors. General causes, signs and symptoms of fatigue. Principle to obtain relaxation in various positions, effects and uses, Techniques of Relaxation- local and General with indication.
14. Neuromuscular coordination and P.N.F: Basic theory of proprioceptive –neuromuscular facilitation techniques, Functional Re-education Exercises.
15. **Re-education of muscles:**
 - Concept, technique, spatial and temporal summation.
 - Various reduction techniques and facilitating methods.
 - Progressive strengthening of various muscle groups in Grade-I-Grade IV.
 - Muscle strengthening technique – PNF - Principles of PNF, indications, contra indications, techniques, limb patterns
16. **Co-ordination:** Balance – Static and Dynamic, Definition of coordinated movements, incoordinated movements, Factors for coordinated movements, causes of incoordination, Discoordination: LMNL and UMNL, cerebellar lesion, loss of kinesthetic sense (Tabes dorsalis, leprosy, syringomyelia). Principles of re-education of coordinated movements, techniques of coordinated exercises, Reeducation of balance and coordination: PNF and Frenkel's exercises.
17. **Suspension Therapy:** Principles of suspension, Type of suspension, Therapeutic effects and uses of suspension therapy, their application either to mobilize a joint or to increase muscle power.
18. **Hydrostatics and Hydrodynamics:** History, Properties of water, Specific gravity, Hydrostatic pressure, Archimedes principle, Buoyancy-law of floatation, Effect of buoyancy on movements performed in water, Equilibrium of a floating body, Bernoulli's theorem, Physiological effects of exercise in water
19. **Hydrotherapy:** Indication, contraindication, benefits, dangers and precautions
 - Hydrotherapy regimes of exercises, Hydrotherapy exercise for all age groups
 - Types of pools and baths
20. Soft tissue manipulations Techniques of application, Kneading and picking up, rolling (back) Clapping, Tapping, Friction.
21. Isometric exercise and Isotonic exercise.
22. Exercises of the shoulder and hip and evaluation.
23. Exercise of hand, foot and evaluation.
24. Exercise of the knee and elbow and evaluation.
25. Spinal exercises including neck exercises.
26. Gait analysis, Pathological gaits, Gait training.
27. **Walking aids and crutch walking:** - Description of crutch - components, classification
 - Good crutch, measurements, Crutch use- Preparation, Training, counseling.
 - Crutch gaits- types, and significance. Crutch complications- Palsy, dependencies.
28. Types of paraplegic gaits.
29. Oedema: Types and treatment.
30. **Group Therapy:** Indication, contraindication, types.
31. **Yogasanas and Pranayama:**
 - Physiology and therapeutic principles of yoga, Yogasanas and their scientific studies

- Concept of total yoga discipline, Yogasana for physical culture, relaxation and medication.
- Psycho-physiological aspects yoga procedures, psychological aspects of yoga, Psycho-social aspects of yoga, Yogasanas for physical fitness, relaxation, flexibility and meditation.
- Therapeutic application of yoga- Application of Yogasana in flexibility, cardio-respiratory rehabilitation, Neuro motor learning.
- Yoga a holistic approach

❖ **EXERCISE THERAPY INCLUDING YOGA: PRACTICAL**

• **PRACTICAL: -**

Demonstration and learning of active and passive movements of Limbs and spine Demonstration and practice of Manual Muscle testing, Goniometry Demonstration and practice of muscle stretching techniques.

Demonstration and practice of muscle strengthening techniques Demonstration and practice of muscle reeducation techniques Demonstration and practice of coordination exercises (Frankel 's) Demonstration and practice of relaxation techniques.

Demonstration and practice of all types of soft tissue manipulation, mobilization of peripheral joints, various types of manipulations demonstrated and practiced to Upper limbs, Lower Limbs, Neck and Face appropriately Demonstration of normal and pathological gaits and crutch walking.

Demonstration and practice of suspension techniques Demonstration and Practice of Functional Re-education Technique. Demonstration and Practice of various Yogasana and Pranayama

❖ **Practical Examination: -**

Students will be assessed by viva and practical demonstrations based upon learning in theory and practical classes.

❖ **Suggested Books for Readings: -**

1. Hollis, M. and Cook, P.F. Practical Exercise Therapy Blackwell, Oxford
2. 2 Gardiner, Dena M. Principles of Exercise Therapy CBS, New Delhi
3. Lippert, Lynn Clinical Kinesiology for Physical Therapy Jaypee, New Delhi
4. Paliarulo, M. A. Introduction to Physical Therapy Mosby, London
5. Jones and Barker, Human Movement Explained Butter worth- Heine
6. Thomson, Ann Tidy 's Physiotherapy Varghese, Mumbai
7. Hislop, H.J. and Montgomery, J. Daniels and Worthingham 'Muscle Testing: Techniques of Manual Examination W.B. Saunders, Philadelphia
8. Norkin Measurement of Joint Motion
9. Kisner, C. and Kolby, L.A. Therapeutic Exercise Foundation and Technique Jaypee, New Delhi
10. Holey, E. and Cook, E. Therapeutic Massage Harcourt, Singapore
11. Bates, Andrea and Hanson, Norm Aquatic Exercise Therapy W.B. Saunders, Philadelphia
12. Kendal, F.P. Muscles Testing and Function Lippincott, New York
13. Campion, M. R. Hydrotherapy: principles and Practice Butterworth, Oxford
14. Perry, Jan F Kinesiology Workbook F A Davis, Philadelphia
15. Adler, S.S. PNF in Practice Springer, New York
16. Aids to P.T. by J.M. Lee.
17. Therapeutic Exercise by Basmajian.
18. Aliimco all Volumes.
19. Science and medicine of exercise and sports by Warren R. Johnson.
20. Basic Athletic training by Cramer.
21. Anatomy and physiology of yogic practice by M.M. Gone.
22. The yogi philosophy of physical wellbeing by Yogi Tamacharaka.
23. Yoga stretching and relaxation for sports men by Capt. M. Rajan.

BACHELOR OF PHYSIOTHERAPY (B.P.T): II YEAR

Paper-VI: ELECTROTHERAPY: PBPT 206

Total no. of teaching Hrs.-200 Theory: -120Hrs.& Practical: -80 hrs.

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Electrotherapy	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

❖ Course Description: -

In this course the student shall learn the principles, techniques and effects of electrotherapy as a therapeutic modality in the restoration of physical function.

❖ Course Objective: -

The objective of this course is that after 200 hours of lectures, demonstration, practical and clinics, the students shall be able to list the indications and contraindications of various types of electrotherapies, modalities and demonstrate the different techniques and describe their effect. In addition, the students shall be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation) the following objective of the course-

- To list indications and contraindications of various Modalities.
- To understand different techniques of applications, their justification and effects.
- Demonstration of individual techniques of applications of various modalities.

❖ Course Contents: -

A. LOW FREQUENCY CURRENTS:

I. Nerve Muscle Physiology - Resting potential, Action potential, propagation of action potential, in myelinated and unmyelinated nerve fiber, Motor unit, and Synapse and Synaptic transmission of Impulse. Effect of negative and positive electrodes on nerve and accommodation of the nerve.

II. Faradic Current - Definition, Characteristic of original Faradic current, modified faradic plane faradic current interrupted faradic current and surged faradic current, parameters, indication, effect on denervated muscles, innervated muscles, technique of application, group muscles stimulation, individual muscle stimulation, faradic bath, faradic under pressure, pelvic floor muscle reeducation, therapeutic effect of faradic current, contraindication and dangers.

III. Galvanic Current – Classification of Galvanic current.

- IV. Plain galvanic current.
- V. Interrupted galvanic current.
- VI. **Plain Galvanic Current:** - Parameters of plain Galvanic current, principle of Iontophoresis technique of Iontophoresis (Bath method, bath and pad method, pad method) Common drugs used in Iontophoresis with its polarity, therapeutic effect, contraindication and dangers of plain galvanic current.
- VII. **Interrupted Galvanic current (Interrupted direct current I.D.C.)** - Definition of IDC, parameters, wave form, duration and amplitude of the pulse effect of strength and duration on muscles and nerves technique of stimulation of individual muscles and group muscles, therapeutic effect, contraindication and dangers and precaution of IDC.
- VIII. **Electro-Diagnosis-**
 - S.D. Curve
 - Chronaxie and Rheobase
 - Nerve Conduction
 - EMG
 - Nerve Conduction Velocity Measurement (outline only).
- IV. **TENS:** - Definition, parameters and wave form, pain gate theory of pain modulation, techniques of application, therapeutic effect and contraindication.

B. MEDIUM FREQUENCY CURRENTS.

Definitions, effects, indications, techniques of application, contraindications Interferential therapy:

- Physiological, therapeutic effects and dangers, Indications and contraindications
- Technique and method of applications, Dosimetry.

C. HIGH FREQUENCY CURRENT.

- I. **Short Wave Diathermy:** - Introduction, Principle of application (Capacitor field methods and conductive field methods) preparation of patient, Therapeutic effects, contraindication and dangers of SWD.
- II. **Methods of application**-capacitor and induction electrode, precautions and Potential harmful effects of treatment, Dosimetry.
Pulsed S.W.D.: -Definition, Characteristic, Principles of Treatment, Therapeutic effects, Indications, Technique of application, Contraindications and dangers.
- III. **Microwave Diathermy:** - Definition, characteristic of wave, properties of microwave, technique of application, Therapeutic effects, contraindication, and dangers, , precautions and potential harmful effects, Dosimetry.

D. ACTINOTHERAPY.

- I. **Infra-Red:** - Introduction, Classification, penetration depth, Techniques of application, Dangers and Contraindications.
- II. **Ultraviolet Radiation** :- Introduction, classification of ultraviolet rays, penetration depth, effect of ultraviolet, Physiological and therapeutic effects- photosensitization, test dose calculation, technique of application, (contact methods non-contact methods) Physiological and Therapeutic effect, Indications and contraindications , Potential harmful effects and dangers, Methods of application, Sensitizes, Filters, Dosage, wavelength, penetration, tolerance, Treatment / Application condition wise. Comparison between UVR and IR Therapy.
- III. **LASER:-**(Infrared and red-light laser, helium/neon laser and semiconductor laser) Definition, principle of application, (contact methods non-contact methods) technique of application, Therapeutic effect and potential harmful effects, dose calculation, indications, contraindications and dangers.

E. ULTRASONIC THERAPY.

Introduction and Characteristics of the wave parameters, coupling media, Therapeutic effects, Indications, Contraindication and Dangers, Testing of Apparatus, and Techniques of application and dose.

F. THERMAL THERAPY MODALITIES.

- Therapeutic effects and uses, Techniques and applications
- Indications, contraindications, precautions and Potential harmful effects of various heat modalities:
 - I. Paraffin wax bath therapy - Introduction, Preparation of wax, preparation of patient, Method of application, Therapeutic Effects, Indications and Contraindications.
 - II. Hydro collator packs (Heating pad, and Moist heat): - Introduction, methods of application, indication, contraindication.
 - III. Whirlpool and moist heat Heating pads
 - IV. Hot air chambers, fluid therapy.
 - V. Cryotherapy: - Introduction, Physical Principles, Physiological and Therapeutic effects, Techniques of Application, Indications, precautions and Potential harmful effects of treatment, Contraindications and dangers, Dosimetry.

G. ULTRASONIC THERAPY.

- Physiological and therapeutic effects and potential harmful effects.
- Indications, contraindications, methods of application and precautions, Dosimetry

H. BIO FEEDBACK:

Introduction, principles of Bio feedback, therapeutic effects of Bio Feedback, Indication and Contraindications, Techniques of Treatment.

I. ADVANCED ELECTROTHERAPY:

- Computerization of electrotherapy modalities.
- Programming of parameter of treatment.
- Appropriate Selection and combination of parameters in therapy.
- Combined Therapy-Microwave with traction, Ultrasonic therapy with stimulation, IFT or TENS-Principles, uses, indications.
- Testing of above apparatus.

❖ ELECTROTHERAPY PRACTICAL.

Practical: - No. of hrs. (80)

- Techniques of application of above treatment modalities (Demonstration and Practice)
- Demonstration of Electrical Modalities functioning and Usage
- Demonstration and practice of various motor point stimulations.
- Demonstration and practice of therapeutic application of different low frequency currents.
- Demonstration and practice of Electro diagnosis (demonstration and Practice of following electro diagnostic Measures)
- F.G. Test, SD curves plotting, Chronaxie and Rheobase, Reaction of degeneration.
- Demonstration and practice of therapeutic application of the following modalities:

Short-wave diathermy, Ultrasound, infra-red, Wax bath, Hydro collator, Electric muscle stimulator, Interferential currents, TENS, Ultraviolet, Microwave, Lasers, and Electrical Traction. Note: All the demonstrations are done on normal persons.

❖ PRACTICAL EXAMINATION: -

Students will be assessed by viva and practical demonstrations based upon learning in Theory and Practical.

❖ Suggested Readings Books: -

1. Froster, A. and Pulsating, N. Clayton 's Electrotherapy: Theory and Practice AITBS, Delhi.
2. Jhon, Low and Ann, Reed Electrotherapy Explained: Principles Butterworth Heine, Oxford.
3. Nelson, R.M. and Currier, D.P. Clinical Electrotherapy Appleton and Lange.
4. Chemerin, M.H. Physical Agents in Rehabilitation W B Saunders, London.
5. Myslovitz, S L Thermal Agents in Rehabilitation F A Davis, Philadelphia.
6. B.K. Nanda, Electrotherapy, Jaypee Publication, New Delhi.
7. Jagmohan Singh- Electrotherapy, Jaypee Publication, New Delhi.



**BACHLOR OF
PHYSIOTHERAPY
III YEAR**

(Effective from Academic Year 2022-23)

DR. C.V.RAMAN UNIVERSITY

B.P. T- III YEAR

STAFF PATTERN FOR III YEAR B.P.T

Subjects	Staff Required
Neurology	1 M.D. Neurology/ Medicine, Lecturer/ Asst. Prof.
Psychiatry	1 M.D. Psychiatry, Lecturer/ Asst. Prof.
Neurosurgery	1 M.S. Neurosurgery/ Surgery, Lecturer/ Asst. Prof.
Orthopedics	1 M.S. Orthopedics, Lecturer/ Asst. Prof.
Biomechanics	1 MPT/ MSc.PT, Asst. Prof.
Of Physiotherapy/ Lecturer Prosthetic and Orthotic engineering	
Kinesiology (Neurology), Associate/ and Neurosurgery Physiotherapy Physiotherapeutic in Orthopedic Prof. of Conditions Physical Evaluation	1 MPT/ MSc.PT, Asst. Prof. of Physiotherapy Physiotherapeutic in (Neurology), Associate/ Asst. Prof. of Neurology 1 MPT/ MSc.PT 1 MPT/ MSc.PT (Orthopedics), Associate/ Asst. Physiotherapy 1 Associate/ Asst. Professor of Physiotherapy, Diagnosis and Prescription

Third Year B.P.T-Scheme of Examination

S.No.	Subject	Internal Assessment		University Examination			Total
		Theory	Practical	Theory	Viva	Practical	
1	Neurology including Psychiatry and Neurosurgery	20	--	80	--	--	100
2	Orthopedics	20	--	80	--	--	100
3	Applied Biomechanics and Kinesiology	20	--	80	--	--	100

4	Physiotherapeutic in Neurology and Neurosurgery	20	20	100	20	40	200
5	Physiotherapeutic in Orthopedic Conditions	20	20	100	20	40	200
6	Physical Evaluation, Diagnosis and Prescription	20	20	100	20	40	200
Total Max. Marks							900

N.B.- Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.



SCHEME OF EXAMINATION FOR III YEAR B.P.T

There shall be six subjects for the Third Year B.P. Th. Examination. The subjects Qualification of the examination and the pattern of examination will be as follows.

1. NEUROLOGY INCLUDING PSYCHIATRY AND NEUROSURGERY

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Neurology including Psychiatry and Neurosurgery	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: Neurology including Psychiatry and Section – B: Neurosurgery the university theory examination marks for Neurology including Psychiatry shall be 40 and for Neurosurgery 40 marks respectively. There shall be two paper setters and two evaluators, one from Medicine and one from Surgery. Section- A, which will be set by Medicine examiner (40 marks) and Section-B, by Surgery (40 marks) examiner. Recognized teachers in Medicine and Surgery with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks.

The pattern of university theory examination will be as under for 80 Max. Marks. There will be two sections i.e., Section-A: Neurology including Psychiatry and Section-B: Neurosurgery of 40 Max. Marks each section and distribution of marks for questions will be as under: -

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

2. ORTHOPEDICS

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Orthopedics	20	--	80	--	--	100

There shall be one paper setter external or internal for theory examination. Recognized teachers in Orthopedics after M.S. (Orthopedics) with five years of teaching experience shall be on the panel of examiner, 50% shall be the minimum passing marks. Internal assessment will be of 20 marks. The pattern of university theory examination will be as under for 80 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
04 Short Answer Questions (Answer to be given in 250-300 words)	10	40
02 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		80

3. APPLIED BIOMECHANICS AND KINESIOLOGY.

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Applied Biomechanics and Kinesiology	20	--	80	--	--	100

There shall be one paper setter external or internal for theory examination. Recognized teacher in Physiotherapy/ Prosthetic and Orthotic engineering after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience / MPO with five years of teaching experience shall be on the panel of examiner, 50% shall be the minimum passing marks. Internal assessment will be of 20 marks. The pattern of university theory examination will be as under for 80 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
04 Short Answer Questions (Answer to be given in 250-300 words)	10	40
02 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		80

4. PHYSIOTHERAPEUTIC IN NEUROLOGY AND NEUROSURGERY.

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Physiotherapeutic in Neurology and Neurosurgery	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each	Total Max.
	question	Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

5. PHYSIOTHERAPEUTIC IN ORTHOPEDIC CONDITIONS.

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Physiotherapeutic in orthopedic Conditions	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively. The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

6. PHYSICAL EVALUATION, DIAGNOSIS AND PRESCRIPTION.

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Physical Evaluation, Diagnosis and Prescription	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively. The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20

No. and Type of Question	Marks for each question	Total Max. Marks
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100



BACHELOR OF PHYSIOTHERAPY (B.P.T)- III YEAR

Paper –I: NEUROLOGY INCLUDING PSYCHIATRY AND NEUROSURGERY: PBPT 301.

Total no. of teaching hrs.-100

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Neurology including Psychiatry and Neurosurgery	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: Neurology including Psychiatry and Section – B: Neurosurgery the university theory examination marks for Neurology including Psychiatry shall be 40 and for Neurosurgery 40 marks respectively. There shall be two paper setters and two evaluators, one from Medicine and one from Surgery. Section- A, which will be set by Medicine examiner (40 marks) and Section-B, by Surgery (40 marks) examiner. Recognized teachers in Medicine and Surgery with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks.

The pattern of university theory examination will be as under for 80 Max. Marks. There will be two sections i.e., Section-A: Neurology including Psychiatry and Section-B: Neurosurgery of 40 Max. Marks each section and distribution of marks for questions will be as under: -

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

❖ Course Description: -

Following the basic science and clinical science courses, this course introduces the student to the neurological and psychological conditions which commonly cause disability Particular effort is made in this course to avoid burdening the student with any details pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by neurological pathology on the individual.

❖ Course Objectives: -

1. To understand clinical manifestations of Neurological and Psychological disorders.
2. The rationale and implications of psychological disorders on disability
3. To understand the management of neural and psychological disorders
4. In addition, the students shall be able to fulfill with 75% accuracy (as measured by written, or a land practical internal evaluation) the following objectives of the course.

❖ Course Contents: -

SECTION – A: NEUROLOGY

1. **Nervous system:** Disorders of Neurological functions in the light of Anatomy and Physiology (Brief description only)

- A. Basic Neurophysiology, functional anatomy, tracts, pyramidal and extrapyramidal/cerebellar systems of brain and spinal cord/nerves, Major Nerve Tracts, Motor System, Sensory System, Autonomic System, Communication and CSF.
- B. **Reflexes:** - Physiology of reflexes, genesis of spasticity, rigidity, postural reflex.
- C. **Bladder and Bowel Control:** - Innervations, anatomy, physiology, pathology
2. Clinical assessment of a neurological patient: Principles of clinical examination and diagnosis, higher mental function, assessment of brain and spinal cord function, Differential diagnosis and Prognosis of Neurological disorders, history taking/over view from perspective of clinical examination.
 3. Investigation: Principles, methods, views, type of following investigative procedure- Skull Xray, CT, MRI, Evoked potential, lumbar puncture, CSF examination, EMG, NCV.
 4. General manifestations of nervous system disease and management
 5. Brief Description of Headache, migraine, raised intra-cranial pressure
 6. Cranial Nerves and special senses with major emphasis on V, VII, X, XI, and XII
 7. **Inflammatory conditions (brief description)**–meningitis (bacterial, tubercular), viral encephalitis, Poliomyelitis, syphilis, rabies
- D. **Disorders of cerebral circulation**–
1. Stroke: - Etiopathology, clinical features pertaining to artery involved, types, management.
 2. Hypertensive encephalopathy.
- 8. Demyelinating diseases (brief description)** - acute disseminated encephalomyelitis, multiple sclerosis
- 9.Movement disorders/ Extra pyramidal syndromes** - Parkinson 's disease, Chorea, Athetosis, Dystonia, Hemiballismus, Spasmodic Torticollis, Tremors and Writer 's Cramps, Cerebellar Ataxia, Friedreich's Ataxia
- 10.Convulsive disorders (brief description)** - epilepsy (GM, PM, Psychomotor), tetany
- 11.Developmental and degenerative syndromes** – cerebral palsy, kernicterus, hereditary ataxias, motor neuron disease, Peroneal muscular atrophy
- 12.Disorders of Spinal cord and Cauda Equina**- spinal cord injury, paraplegia, quadriplegia, spina-bifida, transverse myelitis, non-compressive myelopathies, Neurogenic bladder and bowel.
- 13.Metabolic and intoxication disorders (brief description)** - Alcoholism, Drug addiction, heavy metals poisoning (lead, mercury, copper), Organo-phosphorous poisoning, electric shock, tetanus, botulism
- 14.Peripheral nerve disorders** – traumatic/ compression or entrapment neuropathy, polyneuritis, AIDP, CIDP, GB syndrome, diabetic polyneuropathy and spinal radiculopathies. Special emphasis on brachial and lumbo-sacral plexuses and major nerves – radial, ulnar, median, femoral, and sciatic nerve.
- 15.Muscle disorders** – Dystrophies (classification clinical features. Beckers muscular dystrophy, Duchenne muscular dystrophy), Progressive muscular dystrophy, polymyositis, myasthenia gravis, floppy infant syndrome, overview of other muscle disorders like channelopathies, cramps.
- 16.Autonomic nervous system (brief description)**– clinical features of autonomic disorders, autonomic dysreflexia, autonomic nervous system and pain.
- 17.Pediatric neurology:** Neural development, etiology, pathophysiology, classification, clinical sign and symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders- Cerebral palsy, hydrocephalus, Arnold Chiari malformation, basilar impression, Klippel-Feil syndrome, achondroplasias, cerebral malformations, Autism, Dandy walker syndrome and Down syndrome.
- C. **Motor Neuron disease:** Etiology, pathophysiology, classification, clinical sign and symptoms, investigations, differential diagnosis, medical management and complications of following disorders. Amyotrophic Lateral Sclerosis, Spinal muscular atrophy, Bulbar palsy, neuromyotonic.
- D. **Multiple Sclerosis:** Etiology, pathophysiology, classification, clinical sign and symptoms, investigations, differential diagnosis, medical management, and complications.
- E. **Dementia**

❖ **Practical:** -

Students shall be posted for 10 hrs. in Neurology units. They shall do clinical checking and ward work to acquaint themselves to neurological and medical conditions

PSYCHIATRY

(Total no. Hrs-20)

Brief Outline Only: -

- A) Principles of psychiatric examination.
- B) Modalities of psychiatric treatment.
- C) Psychiatric illness and physical therapy link.
- D) Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses - Anxiety neurosis, Depression, Obsessive compulsive neurosis, Psychosis, Manic-depressive psychosis, Drug induced psychosis, Post-traumatic stress disorder, Psychosomatic reactions: Stress and Health; theories of Stress – Illness Link, Organic brain syndrome, Dementia, Drug dependence and alcoholism, Somatoform and Dissociate Disorders – conversion reactions, Somatization, Dissociate Amnesia, and Dissociate Fugue, Multiple Personality and Depersonalization disorder.
- E) Child psychiatry: Brief descriptions of manifestations, and management of childhood disorders - attention deficit syndrome, and behavioral disorders.
- F) Geriatric Psychiatry.
- G) Mental deficiency- (descriptive): Mental retardation, Learning disabilities, Autistic behavior.

❖ Suggested Reading Books: -

1. Bannister, R. Brain and Bannister Clinical Neurology Oxford university press, oxford 2002.
2. 2 Chamberlain, E.N. Symptoms and Signs in Clinical Medicine John Wright, Bristol 1974.
3. Friedman, H.H. Problem-Oriented Medical Diagnosis Little Browne, Boston 1979 3V.
4. 4 Swash, Michael Hutchison 's Clinical Method W B Saunders, London 2000.
5. Rees, Lingford New Short Text Book Of psychiatry Arnold, New Delhi 1988.
6. Walton, John Brain 's Disease of the Nervous System Oxford university press, Delhi 1998.
7. Haerer, A.F. Neurological Examination Lippincott, Philedelphia 1999.
8. Ahuja, Neeraj Short Text Book Of psychiatry Jaypee, New Delhi 1999.
9. Haslett, C. Davidson 's Principal and Practice of Medicine Churchill Livingstone, London 1999.
10. Kasper, D.L Harrison's Principles of Internal Medicine Mc-Graw Hill, New York 20052 V.

SECTION: B-NEUROSURGERY

Total no. of teaching hrs:40

- A. **Neurophysiology:** Reviews in brief the neurophysiologic basis of tone and Disorders of tone and Posture, Bladder control, Muscle conduction, Movement and Pain.
- B. **Clinical Features and Management:** Briefly outline the clinical features and management of the following neurological disorders.
 1. **Congenital and Childhood disorders.**
 - Hydrocephalus.
 - Simplified.
 2. **Trauma** - Broad localization, first aid and management.
 3. **Head Injury:** Etiology, pathophysiology, classification, clinical sign and symptoms, investigations, medical management, Surgical management and complications.
 4. **Intra-cranial disorders** – clinical features, complications and management of brain abscess, space occupying lesion, hydrocephalus, vascular malformation
 5. **Brain tumors and Spinal tumors:** classification, clinical sign and symptoms, investigations, differential diagnosis, medical and surgical management.
 6. **Intracranial tumors:** Broad Classification, Signs and Symptoms.
 7. **Vertebral column injuries** – classification, clinical features, complications and management. 6.Spinal Cord injury and Diseases of the Spinal Cord:

- a) Craniovertebral junction anomalies.
- b) Syringomyelia.
- c) Cervical and lumbar disc disease
- d) Tumor's.
- e) Spinal arachnoiditis.

8. Peripheral Nerve Disorders:

- a) Peripheral nerve injuries: Localization and Management
- b) Entrapment Neuropathies.

9. pre-operative assessment, Indications and Contraindications for Neurosurgery.

10. Introduction and brief description of indication and complications of following neurosurgeries: Craniotomies, cranioplasty, stereotactic surgery, deep brain stimulation, burr hole, shunting, laminectomy, hemilaminectomy, rhizotomy, microvascular decompression surgery, Endarterectomy, embolization, pituitary surgery, ablative surgery- Thalamotomy and pallidotomy, Neural implantation.

11. Infections of brain and Spinal Cord: pathophysiology, classification, clinical sign and symptoms, investigations, differential diagnosis, medical management, surgical management and complications.

12. Management of Pain, Electrical Stimulation of Brain and Spinal cord.

❖ Practical: -

Clinical assessment of neurological function to be taught through bedside or demonstration in clinics, of the following:

- Basic history taking to determine whether the brain, spinal cord or peripheral nerve is involved.
 - Assessment of higher mental function such as Orientation, Memory, Attention, Speech and Language.
1. Assessment of Cranial nerves.
 2. Assessment of Motor system.
 3. Assessment of Sensory function, Touch, Pain and Position.
 4. Assessment of Tone-Spasticity, Rigidity and Hypotonia.
 5. Assessment of Cerebral function.
 6. Assessment of Higher cortical function -Apraxia.
 7. Assessment of Gait Abnormalities.

Students shall be posted for 10 hrs. in Neurosurgery units. They shall do clinical checking and ward work to acquaint themselves to neurological and surgical conditions.

BACHELOR OF PHYSIOTHERAPY (B.P. Th)- III YEAR

Paper-II: ORTHOPEDICS: PBPT 302

Total No. Of Teaching Hrs-130 Theory:100 hrs. & Practical:30 Hrs.

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Orthopedics	20	--	80	--	--	100

There shall be one paper setter external or internal for theory examination. Recognized teachers in Orthopedics after M.S. (Orthopedics) with five years of teaching experience shall be on the panel of examiner, 50% shall be the minimum passing marks. Internal assessment will be of 20 marks. The pattern of university theory examination will be as under for 80 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
04 Short Answer Questions (Answer to be given in 250-300 words)	10	40
02 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		80

❖ Course Description: -

This specially marks the students to understand the common traumatic and orthopedic conditions, which commonly cause disability. The syllabus is made keeping in mind to avoid details of diagnosis and pathology.

❖ Course Objective: -

1. To understand an orthopedic patient, common orthopedic conditions and procedures.
2. To understand applications of physical therapy in various orthopedic conditions.
3. To understand the implications of various orthopedic conditions, and procedures on physical therapy.
4. At the end of syllabus and instructional course and demonstrations, the student shall be able to understand orthopedic conditions causing disability and manage them by physiotherapy point of view.
5. In addition, the students shall be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation) the following objective of the course.

❖ Course Contents: -

1. **Introduction to Orthopedics:** Terminology, types of common etiology, clinical examination, Common investigation, Outline of management – Operative and non-Operative.
2. **Fractures and Dislocations:** Briefly mention Types of fracture and dislocations, symptoms and signs of above injuries and their principles of management and Complications, Fracture healing (Normal and pathological) Calcium-phosphorus metabolism normal and pathological states
3. **Prevention and treatment of common complications:** Fracture disease, Volkman's ischaemic contracture, Sudeck's osteo dystrophy, Myositis ossificans, Ligament injuries, Shoulder-hand syndrome etc.
4. **Spinal column:** fractures, management and complications of Spinal injuries spinal deformities like Scoliosis, Kyphosis, and Lordosis etc.
5. **Injuries of upper limb and lower limb,** enumerate major fracture and joint injuries, brief description of principle of management and complications.
6. **Congenital anomalies and other deformities:**
Brief descriptions of following congenital conditions along with the outline of treatment: Congenital Hip Dysplasia, Congenital Talipes Equinovarus / Calcaneo valgus, Arthrogyposis, Multiplex Congenita, Congenital Torticollis, Scoliosis, Acromelia, phocomelia, Amelia, Spina Bifida: all types, clinical presentation, sequel and management

7. **Development diseases of skeleton:** (Brief description only) Osteogenesis imperfecta, heterotopic ossification, Osteochondritis, Perthes 'disease.
8. **Neuromuscular diseases:** Volkmann 's Ischemic contracture, obstetrical paralysis, and peroneal muscular atrophy, Poliomyelitis: common deformities due to PPRP and their orthopedic aspects and management.
9. **Spinal deformities:** clinical features, diagnosis and Conservative management of Scoliosis, Kyphosis, and traumatic deformities
10. **Bone and Joint infections:** Etiology, clinical feature, management and complications of Septic arthritis, Bacterial infections, Osteomyelitis, Tuberculosis and leprosy, Pott 's paraplegia
11. **Neuro-vascular diseases** (Brief Description): orthopedic aspects and treatment of – Nerve injuries (major nerves), Plexus injuries
12. **Arthritis and Rheumatic Diseases:** Outline of Pathology, Clinical features, evaluation and conservative management of various categories of arthritis: - Rheumatoid arthritis, Juvenile Ch. Arthritis, Reiter 's disease, Polymyalgia rheumatica, Gout, osteoarthritis, and Ankylosing spondylitis, Neuropathic- joints, haemophilic arthropathy, Avascular necrosis.
13. **Sprain and Strains:** Common sites of sprains and muscle strains, their clinical manifestations and treatment.
14. **Bony and Soft tissue injuries:** Injury and repair, Clinical presentation, evaluation and general principles of rehabilitation management (Brief Description)
15. **Upper Limbs:** Clinical presentation, evaluation and conservative management of rotator cuff injuries, adhesive capsulitis, bursitis, biceps tendonitis, shoulder dislocation, Frozen shoulder and other painful conditions of shoulder , snapping and winged scapula, tennis and golfer elbow, olecranon bursitis , soft tissue injuries, sprains and strains, Arthritic conditions, tenosynovitis, Carpal tunnel syndrome, deformities Dupuytren's contracture, VIC, reflex sympathetic dystrophy, common fractures and dislocations.
16. **Lower Limb:** Clinical presentation, evaluation and conservative management of Arthritic conditions, soft tissue injuries, sprains and strains, achillis tendonitis, bursitis, Painful heel conditions, Tendinitis, plantar fasciitis, deformities, reflex sympathetic dystrophy, neuropathic Joints, common fractures and dislocations.
17. **Spine:** clinical presentation, evaluation and conservative management of – Low backache, disc prolapse, cord compression, spondylosis, Ankylosing spondylosis, Spondylolisthesis and Spinal Fractures.
18. **Inflammatory and degenerative conditions:** Causes, clinical features, complications, deformities, radiological features, management – conservative and surgical management for the following conditions: Osteoarthritis, rheumatoid arthritis, ankylosing spondylitis, Gouty arthritis, Psoriatic arthritis, hemophilic arthritis, Charcot 's joints.
19. **Amputations** - Justification, outline of surgical approaches, incisions, procedures, Classification, indications, contraindications, complications, pre-operative, operative and post operative management.
20. **Principles of operative Managements:** Orthopedic surgeries, Indications, classification, types, principle of management of the following surgeries: Arthrodesis, Arthroplasty (partial and total replacement), Osteotomy, external fixators, Spinal strabilization surgeries, Tendon operations, Arthroscopy, total joint replacements, limbre-attachments.
21. **Bone and Joint Tumors:** Classification, clinical features and management of Osteoma, Osteosarcoma, Osteoblastoma, Ewings tumor, Multiple myeloma and Secondaries.

❖ **Practical: -**

Students do clinical checking, ward work, hospital posting for a period of one month to acquaint themselves with traumatology and orthopedic conditions.

❖ **Suggested Readings: -**

1. Outline of fracture by Adams.
2. Outline of Orthopedics by Adams.
3. Orthopedics and Traumatology by Natarajan.
4. Aplay 's Orthopedics.
5. Joshi, J. and Kotwal, P. Essential of Orthopedics and Applied Physiotherapy Elsevier, New Delhi.
6. Terke, Samuel L. Orthopedics: principles and their application Lippencott, New York.
7. Magee, David J. Orthopedic and Physical Assessment Saunders, Philadelphia.
8. Maheshwari, J Essential Orthopedics.
9. Solomon, Louis Apley 's Systems of Orthopedics and Fracture Arnold, London.
10. McRae, R. and Esser, Max Practical Fracture Treatment Churchill Living stone, London.

BACHELOR OF PHYSIOTHERAPY (B.P.T)- III YEAR

Paper-III: APPLIED BIO-MECHANICS AND

KINESIOLOGY: PBPT 303

Total No. Of Teaching Hrs-100

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Applied Biomechanics and Kinesiology	20	--	80	--	--	100

There shall be one paper setter external or internal for theory examination. Recognized teacher in Physiotherapy/ Prosthetic and Orthotic engineering after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience / MPO with five years of teaching experience shall be on the panel of examiner, 50% shall be the minimum passing marks. Internal assessment will be of 20 marks. The pattern of university theory examination will be as under for 80 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
04 Short Answer Questions (Answer to be given in 250-300 words)	10	40
02 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		80

❖ Course Description: -

The course supplements the knowledge of anatomy and enable the student to have a better understanding of the principles of biomechanics and their application in musculoskeletal rehabilitation and dysfunction, kinesiological analysis and bioengineering appliances, manufacture and uses.

❖ Course Objective: -

1. To understand the Musculoskeletal surgical anatomy normal and pathological deviations
2. After 100 hours of lectures, demonstrations, and practical, the student shall be able to demonstrate an understanding of the principles of biomechanics, kinesiology and their applications in health, disease and bioengineering.
3. In addition, the student shall be able to fulfill with 75% accuracy (as measured in written and oral evaluation) the following objectives of the course.

APPLIED BIO-MECHANICS: 60 Hrs.

❖ Course Contents

1. **Introduction:** Definition and Aim of Biomechanics, Scope and Importance of Biomechanics in Physiotherapy and Bioengineering.
2. **Kinematics and Kinetics:** Definition, Descriptors of motion, Types of motion, and Axes and planes. Definition of force, Statics and Dynamics, Inertia, Classification of forces, Composition and Resolution of forces: Linear, Concurrent and Parallel force system, Muscle force, Friction force, Torque, Anatomic Pulley and its role in movement.

3. **Gravity:** Definition, Center of Gravity and Center of Mass, Location of Center of Mass, Line of Gravity, Stability and Equilibrium, Linear and Angular Equilibrium.
 4. **Biomechanics of Bone, collagenous tissue and muscle:** Structure, function and Mechanics in health and in disease, injury, immobilization, exercise and overuse.
 5. **Biomechanics of Spine:** Structure, Function and Mechanics in health and in disease.
 6. **Biomechanics of Upper Extremity:** Structure, Function and Mechanics in health and in disease.
 7. **Biomechanics of Lower Extremity:** Structure, Function and Mechanics in health and in disease.
 8. **Biomechanics of Locomotion and Gait Deviations:** Origin of human movements and significance, Forms of human movements, their characteristics and factors affecting them.
 9. **Biomechanics of Activities of Daily Living, Work Analysis.**
 10. **Posture:** Definition, Biomechanics of Good Posture, Biomechanics of postural deviations, effect of age, disease, occupation and pregnancy on good posture.
- A. Joint structure and function**
1. Types of joints.
 2. Joint functions.
- B. Kinesiology:**
1. Origin of human movement and its significances.
 2. Analysis of movement – kinetics and kinematics.
 3. Body links and motion parts.
- C. General effects of injury and disease on joint functioning.**
1. Brief surgical anatomy (structural components, and alignment)
 2. Joint range of motion, axis and plane of motion.
 3. Joint movements, mobility and stability, restrictions and limitations, end feels.
 4. Abnormal deviations in joints in disease and injury of the following joint complexes: Shoulder joint complex.
 5. Elbow joint complex.
 6. Wrist and hand complex Hip joint complex.
 7. Knee joint complex Ankle-foot complex Vertebral column.
 8. Weight distribution (lower limb joints)
- D. Abnormal Posture:**
1. Definition and description.
 2. Analysis of postures (anterior, lateral and posterior), alignment of joints in different postural deviations.
 3. Abnormal postures – biomechanical analysis and effects.
 4. Principles of Postural correction.
- F. Pathological Gait:**
1. Phases of gait – biomechanical analysis.
 2. Time and distance parameters – biomechanical significance.
 3. Joint motion – chains of movement.
 4. Effects of pain, deformity, weakness in pathological gaits.
 5. Management of pathological gaits.

❖ **Suggested Readings: -**

1. Norkin, C.C. and Levangie P.K. Joint Structure and Function: Comprehensive Ara Jaypee, New Delhi 1998.
2. Magee, David J. Orthopedic and Physical Assessment Saunders, Philadelphia 2002 3 Donatelli, R.A. Biomechanics of the Foot and Ankle Davis, Philadelphia 1996.
3. Mow, Van C. and Hayes, W.C. Basic Orthopedic Biomechanics Lippincott, New York 1997 5 Norkin, C.C. and White, J. Measurement of Joint Motion Jaypee, New Delhi 1995

4. Kapandgi, I.A. Physiology of Joints Churchill- Livingstone 19983V.
5. Tritschler, Katbleen Practical Measurement and Assessment Lippincott, New York 2000 8 Leveau, Biomechanics of Human Motion.



BACHELOR OF PHYSIOTHERAPY (B.P.T)- III YEAR

Paper-IV: PHYSIOTHERAPEUTIC IN NEUROLOGY AND NEUROSURGERY: PBPT 304

Total no. of teaching hrs.-200 Theory: -110hrs. & Practical: -90hrs

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Physiotherapeutic in Neurology and Neurosurgery	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

❖ Course Description: -

This course serves to integrate the knowledge gained by the student in normal neurology with the skills gained in exercise therapy and Electrotherapy enabling them to apply these in clinical situations of dysfunction due to pathology in the nervous system.

❖ Course Objective: -

1. To identify various neurological dysfunction, Disability due to neurological dysfunction clinically
2. To set treatment goals and apply therapeutic skills in different neurological conditions to restore neurological function.
3. In addition, the student shall be able to fulfill with 75% accuracy (as assured by written oral and practical internal evaluation) the following objectives of the course.

❖ Course Contents: -

1. Review of Neuroanatomy and Physiology.
2. Symptomatology of Neurological disorders, Role of investigations in differential diagnosis, diagnosis and clinical examination of C.N.S. functions including cranial nuclei,
3. Principles of examination of higher function and applicability in training.
4. Physiotherapy evaluation of a neurological patient, electro diagnostic procedures, interpretations and prognosis in different neurological conditions.
5. Developmental disorders of C NS.
6. Early detection of brain damaged child, Risk babies, Neuropediatric examination.
7. Developmental programs and Delayed milestones.
8. Neuro-developmental screening test.
9. Minimum Brain Damage.
10. Sensory, Motor, Functional Psycho-social behaviors of a child.
11. Developmental physiotherapy programs (Neurodevelopmental approaches), reeducation and retraining techniques in neurological conditions, approaches like: Bobath's, Rood's, PNF, Vojta techniques, biofeedback, Brunnstorm, Motor Relearning programming.

12. Primitive patterns and abnormal motor behavior due to brain damage, its control and training with reference to gait and hand function.
13. Assessment and principles of therapeutic management of following neurological conditions: Stroke, meningitis, encephalitis, basal ganglion diseases, Parkinson 's disease, Cerebral palsy, Ataxia, Cerebellar Ataxia, Friedreich 's Ataxia, Brain tumors
14. Traumatic brain injury: Types and Mechanisms of head injury, Clinical features, potential complications, Physiotherapy principles of immediate and postoperative therapeutic management
15. Assessment and Treatment techniques of: - Motor Neuron Disease, Disseminated sclerosis, Transverse myelitis, Spinal tumors, Poliomyelitis, Syringomyelia, spina bifida, Subacute combined degeneration of spinal cord.
16. Spinal cord injury: review of anatomy and physiology, Physiotherapy Assessment of Spinal cord injury, Principles of Physiotherapy at various stages of Spinal cord injury, Rehabilitation goals and ADL training.
17. Assessment and treatment of neuropathies.
18. Peripheral nerve injuries, surgical resection and repair: Classification and types, Functional assessment, investigation, diagnosis and prognosis, Physiotherapeutic management.
19. Assessment and treatment of Myopathies including neuromuscular junction disorders.
20. Neurosurgery: Post surgical Physical therapy in neurosurgical procedures – craniotomy, shunts, SOL resection, surgical treatment of spasticity, cervical cord decompression

Note: - Practical Physiotherapy technique applicable for neurological rehabilitation for the for the above conditions (90 Hrs.)

❖ Suggested Readings: -

1. Cash 's Textbook of Neurology for Physiotherapist by John Cash.
2. Key issue in Neurological Physiotherapy by Ada/Canning.
3. Elements of Pediatric Physiotherapy by Eckersy.
4. Tidy 's Physiotherapy.
5. Hislop, H.J. and Montgomery, J. Daniels and Wort Hingham 's Muscle Testing: Techniques of Manual Examination W.B. Saunders, Philadelphia2002.
6. Bobath, Berta Adult Hemiplegia: Evaluation and treatment Butterworth, Oxford1990.
7. Shepherd, R.B. Physiotherapy in Pediatrics Butterworth- Heinemann, Oxford1995.
8. Downie, P.A. Cash 's Textbook of Neurology for Physiotherapy Jaypee, New Deli1993.
9. Swaner, K.A. and LaVigne, J.M. Brunnstom 's Movement Therapy in Hemi Lippincott, New York1992.
10. Burns, Y.R. and Macdonald J. Physiotherapy and the Growing Child Harcourt, Singapore1998.
11. Bromley, Ida Tetraplegia and Paraplegia Churchill-Livingston, London1998.
12. Voss, Dorothy Proprioceptive Neuromuscular Facilitation Lippincott, New York1989.
13. Adler, S.S. PNF in Practice Springer, New York2003
14. Carr, J.H. and Shepherd, R.B. Stroke Rehabilitation Butterworth- Heinemann, Singapore2003.
15. Carr, J.H. and Shepherd, R.B Neurological Rehabilitation Butterworth, Oxford1998.
16. Kottke, F.J. and Lehman J.F. Handbook of Physical, Medicine and Rehabilitation W B Saunders, London1990.
17. Umphred, Dracy A, Neurological Rehabilitation Mosby, London2001.

BACHELOR OF PHYSIOTHERAPY (B.P.T)- III YEAR

Paper-V: PHYSIOTHERAPEUTIC IN ORTHOPEDIC CONDITIONS: PBPT 305

Total No. of Teaching Hrs.-200 Theory: -120 Hrs.& Practical: -80 Hrs.

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Physiotherapeutic in Orthopedic Conditions	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively. The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

❖ Course Description: -

This course serves to integrate the knowledge gained by the students in clinical Orthopedics with the skills gained in Exercise therapy, Electrotherapy and Physical evaluation, thus enabling them to apply these in clinical situations of dysfunction due to musculoskeletal pathology.

❖ Course Objective: -

- To identify various Musculoskeletal dysfunction clinically.
- To set goals and apply therapeutic skills in different orthopedic conditions to restore musculoskeletal function.
- In addition, the student shall be able to fulfill with 75% accuracy (as measured by written, oral and practical internal evaluation), the following objectives of the course.

❖ Course Contents: -

- Traumatology and Orthopedics:** - Classification of fractures, causes and types, Signs and symptoms, Complications, Healing and factors affecting, Principles of fracture management. Principles of Physiotherapy management, management of complication. Dislocation - Common sites, signs and symptoms.
- Principles of Physiotherapy evaluation and Management** of an orthopedic patient.
- General principles of physiotherapy in fracture management** including complications at different stages, Post fracture - assessment and PT management.
- Specific fractures and their complete physiotherapy assessment and management.**
 - Upper Limb:** Scapula, Clavicle, Humerus, Ulna and Radius, Colle 's fracture and Crush injuries of Hand.
 - Lower Limb:** Fracture of Pelvis, Neck of Femur, Shaft of Femur, Patella, Tibia and Fibula, Pott's Fracture, Fractures of Tarsal and Metatarsal bones.
 - Management of Fracture of Spine** with or without neurological deficit.
- Soft Tissue injuries:** Assessment and therapeutic management of Sprains, strains, ligament and cartilage tear (Tear of semilunar cartilage and cruciate ligament of knee)/rupture, Synovitis, Capsulitis, Volkman's ischemic contracture. Rotator cuff tendinitis, Ankle sprains, Tennis elbow, Golfer 's Elbow, Retrocalcaneal bursitis.
- Assessment, treatment and management of Degenerative and infective Conditions:** - Osteoarthritis of major joints. Spondylosis, spondylitis, spondylolisthesis, Spondylolisthesis, Prolapsed intervertebral disc, Lumbar cord

decompression, peri-arthritis, Rotator cuff lesion of shoulder, Tuberculosis of spine, Bone and Major joints, Perthes disease, Avascular bony necrosis at hip joint, Rheumatoid arthritis, Ankylosing spondylitis,

7. Deformities.

a. Congenital: Torticollis and Cervical rib, thoracic outlet syndrome, C.T.E.V., Pescavus and Pes Planus and Other common deformities.

b. Acquired: Scoliosis, Kyphosis, Lordosis, Coxavara, Genu Valgum, Genu varum and Genurecurvatum.

8. General principles of physiotherapy assessment and management in dislocations including complications with special consideration in shoulder dislocation, Hip dislocation.

9. Orthopedics Surgery: General principles of assessment, physiotherapy management in surgical conditions like – Osteotomy, Joint Replacements, ORIF, Arthroplasty, Arthrodesis, Illizarov 's technique, Tendon transfers, soft tissue releases and soft tissue repair, Tendon transplant, Grafting, Arthroscopy, spinal Stabilization, reattachment of limbs, operation in C.P. and Polio.

10. Amputations: Levels of Amputation of upper and lower extremity, pre and postoperative evaluation and principles of management, stump bandaging, Pre and Post Prosthesis fitting assessment and management (check-out of Prosthesis Training) Complications of Amputations and their management.

11. Manipulation therapy - General assessment, indications, contra indications, Principles and Techniques of Therapy and Factors considered in therapy. Brief introduction to schools of manual therapy (Maitland, Kaltenborne, Cyriax, Mulligan, Mackenzie)

❖ **Practical: -**

Various physiotherapy modalities and treatment techniques for the above-mentioned conditions to be demonstrated and practiced by the students. (70 hrs.)

❖ **Suggested Readings: -**

1. Cash 's textbook of Orthopedics and Rheumatology.
2. Physiotherapy in Rheumatology.
3. Physiotherapy in disorders of brain.
4. Clinical Orthopedics for Physical Therapy - by Campbell.
5. Tidy 's Physiotherapy.
6. Clinical Orthopedics for Physical Therapy - by Richardson 's and Sadowsky.
7. Smith, Laura K Brunnstrom 's Clinical Kinesiology Jaypee, New Delhi.
8. Buckley, John Exercise on Prescription Butterworth-Heinemann, Boston.
9. Downie, Patricia A. Cash 's Textbook of Orthopedics and Rheumatology Jaypee, New Delhi.
10. Donatelli, R. A. and Wooden, M.J. Orthopedic Physical Therapy Churchill- Livingstone, New York.
11. Tidswell, Marian Orthopedic Physiotherapy Mosby, London.
12. Jones and Barker, Human Movement Explained Butter worth-Heine.
13. Jacobs, Karen Ergonomics for Therapist Butter worth- Heine, Boston.
14. Maitland, G.D. Maitland 's Vertebral Manipulation Butter worth- Heine, Oxford.
15. Nachemson, A.L. and Jonsson, E. Neck and Back pain: Scientific Evidence Lippincott, New York.
16. Donatelli, R.A. Physical Therapy of Shoulder Churchill, New York.
17. Walker, J.M. and Helewa, A. Physical Therapy in Arthritis W B Saunders, London.
18. Engstrom, B. and Van de Ven C. Therapy for Amputees Churchill, London.
19. Calliet, Rene Knee Pain and Disability Jaypee, New Delhi.
20. Calliet, Rene Shoulder Pain Jaypee, New Delhi.
21. Calliet, Rene Low Back pain syndrome Jaypee, New Delhi.
22. Calliet, Rene Neck and arm pain Jaypee, New Delhi.
23. Calliet, Rene Foot and Ankle Pain Jaypee, New Delhi.
24. Calliet, Rene Soft tissue Pain and disability Jaypee, New Delhi.

BACHELOR OF PHYSIOTHERAPY (B.P. Th.) III YEAR

Paper-VI: PHYSICAL EVALUATION, DIAGNOSIS AND PRESCRIPTION: PBPT 306

Total no. of teaching hrs.-200 theory: -120hrs.& practical: -80hrs

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Physical Evaluation, Diagnosis and Prescription	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Physiotherapy after M.P.T. (Physiotherapy) or B.P.T. with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively. The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

❖ Course Description: -

This course serves to integrate the knowledge gained by the students in both basic and Clinical Medical science subjects and physiotherapy subjects, thus enabling them to apply these in evaluation of functions and measurements in general and in clinical situations of dysfunctions of systems in order to reach a state of diagnosing the physical problems presented by the patients.

The student shall also learn principles, techniques and effects of exercise as a therapeutic modality in the restoration of physical function.

❖ Courses Objective: -

1. Student shall be able to acquire the concept of evaluation of functions and measurements in general and in disorders of different systems.
2. Able to diagnose and measure the physical problems presented by the patients.
3. In addition, the student shall be able to fulfill with 75% accuracy (as Measured by written, oral, Practical and Internal Evaluation)

❖ Course Contents: -**A. General principles of Human development and maturation**

1. Aspects: physical, motor, sensory, cognitive, emotional, cultural, social.
2. Factors influencing human development and growth: Biological, environmental, inherited.
3. Principles of maturation - in general and anatomical directional pattern cephalon – caudal, proximo – distal center – lateral, mass to specific pattern, gross to fine motor development.
4. Reflex maturation tests.
5. Development in specific fields: Oromotor development, sensory development, neurodevelopment of hand function.

B. Electrodiagnosis

1. Bioelectricity-Physiology of generation and propagation of action potential, volume conduction
2. Therapeutic current-as a tool for electrodiagnosis
3. Physiological principles, use of alternating and direct currents in electro-diagnosis such as sensory and Pain threshold, Pain tolerance, -Short and long pulse test, S.D. curves, Chronaxie and Rheobase, accommodation ratio
4. Surface and Needle Electromyography, Nerve conduction velocity Test (Motor and Sensory), Reflex Study, late responses and F' Waves, Cerebral Evoked Potential, Analysis in Normal and Pathological conditions.
5. E.M.G. instrumentation, basic components, panel diagram, types of electrodes.
6. Principles of Electro- myography, motor unit –Normal characteristics-activity at rest, recruitment/frequency pattern at minimal activity, Interference pattern.

C. Assessment of Neurological dysfunctions: -

1. Higher functions, cranial nerves, sensations and sensory organization, body image, Muscle tone, Voluntary movement and voluntary control tests (isolated and skilled), Abnormal movements -Clonus, Tremor, Chorea, Athetosis , Reflexes: superficial and deep, Primitive Reflexes, muscle strength, Myotomes and Dermatomes, Upper motor and lower motor neuron lesions , Nerve entrapments, Test for disorder of program (i.e. cerebellum basal ganglia lesions) and co- ordination tests balance, posture, gait, Neural control of bladder.
2. Perceptual motor dysfunction.
3. Investigative Methods in Modern Medicine like EEG, MRI, CT scan
4. Scales: FRT, Berg 's Balance, modified Ashworth, Glasgow Coma, TUG, FIM.
5. Functional Diagnosis using International Classification of Function, Disability and Health (I.C.F)
6. Interpretation of electro diagnostic findings, routine biochemical investigations.

D. Assessment of Musculoskeletal Dysfunction.

1. Postures and postural disorder, Tightness, deformity, ROM joint mobility, muscle strength and endurance, muscle girth, pelvic inclination, limb length, segmental Measurement of body part (femur, tibia etc.), trick movement, special tests, Angle of scoliotic curve, Gait analysis in pathological conditions and measurement of gait parameters.
2. Functional diagnosis using ICF.
3. Interpretation of X-ray of extremities and spine, routine bio-chemical investigations, CT scan, MRI.

E. Assessment of cardiopulmonary dysfunction.

1. Posture (recumbent, erect orthopneic)
2. Vital parameters, breathing pattern and breath hold (rate, rhythm, use of accessory muscle) Chest deformity, Cough, Sputum, Tactile and vocal fremitus, Mobility of thoracic spine and rib cage, Percussion, chest expansion measurements, breath holding test, breath sounds, rate of perceived exertion (RPE), peak flow rate, Measurement of lungs volumes and lung capacities, blood gas level.
3. Heart rate, blood pressure, heart sounds, pulse rate (volume and pressure)
4. Exercise Tolerance: six minutes' walk test, theoretical bases of Bruce 's protocol, step test.
5. Ankle Brachial Index, tests for peripheral arterial and venous circulation.
6. Cardiac Efficiency Tests: ECHO, Ultra-sonography, Clinical Monitoring, Stress ECG, Treadmill and Ergometry.
7. Functional diagnosis using ICF
8. Interpretation of X-ray chest, routine bio-chemical investigations, ABG, PFT, ECG (normal values)

F. Assessment of pelvic floor muscle strength and function: -

1. Digital evaluation of Vagina, Perineometer, Pad Test.

G. Assessment of pain.

1. Intensity and quality.
2. Objective assessment and documentation: VAS, Numerical Rating Scale, Other scales.

H. Assessment of Hand.

1. Sensations, mobility of joints, strength.
2. Special tests.
3. Hand function: Precision and power grips.

I. Assessment of Obesity Classification.

1. Assessment – BMI, Waist circumference, Waist – Hip ratio.

J. Functional Evaluation.

1. Mobility in bed- Transfer, Ambulation.
2. Personal care – Eating, Dressing, Washing, Bathing.
3. House hold Jobs.
4. Work and Recreation.

K. Disability Evaluation: - Gait and Gait parameters, percentage of disability, temporary or permanent

L. Introduction to Quality-of-Life Questionnaire

M. Principles of prescription writing and prescription writing of Therapeutic Modalities.

N. Biophysical Measurements and Ergonomics

O. Work Physiology and Exercise prescription: Ergonomics considerations for Exercise, Work Physiology Considerations, Exercise Analysis and planning (orthopedic, sport, neurological, cardiothoracic conditions related to physiotherapy).

❖ **Practical: -**

Skills to be practiced in following condition: -

1. Pediatric conditions.
2. Neurology conditions.
3. Cardio respiratory conditions.
4. Orthopedics conditions.
5. Sports conditions.
6. Electro diagnosis and biophysical diagnosis.

Case presentation with Physical and Functional diagnosis in medical – surgical conditions.

❖ **Recommended Text Books: -**

1. Pediatric developmental therapy - Sophie Levitt.
2. Orthopedics physical examination by Magee.
3. Physical Rehabilitation Assessment and Treatment - O 'Sullivan Schmitz.
4. Electrotherapy explained - Low and Reed.
5. Clayton 's electrotherapy (6th and 9thEd.)
6. Clinical Electro Therapy -Nelson-Currier.
7. Clinical Electromyography -Mishra.
8. Cash 's textbook of chest, heart, vascular disorder for physiotherapist.
9. Physiotherapy for respiratory and cardiac problems - Webber and Pryor.
10. Cash 's textbook of General Medicine and surgical conditions for physiotherapists.
11. Clinical Electromyography -Kimura.
12. Orthopedic Physical therapy -Donnatelli.
13. Exercise and Heart -Wenger.
14. Exercise Physiology - Mc 'Ardle.
15. Orthopedic examination -Hoppen field.
16. Cardiorespiratory physiotherapy - Elizabeth Dean.
17. Text Book of Physical Diagnosis — by Mark M. Swartz.
18. Rehabilitation medicine — by Joel A. Delisa.
19. Differential Diagnosis in Physical Therapy — Goodman and Snyder.
20. Manual of Exercise Testing — CRDET
21. Clinical Electromyography — by Basmajian.
21. Rehabilitation Medicine –Rusk.
22. Tidy 's Physiotherapy.
23. Cash 's Text Book for Physiotherapist (all volumes).
24. Physical Rehabilitation Assessment and Treatment by Susan O 'Sullivan.



**BACHLOR OF
PHYSIOTHERAPY
IV YEAR**

(Effective from Academic Year 2022-23)

DR. C.V.RAMAN UNIVERSITY

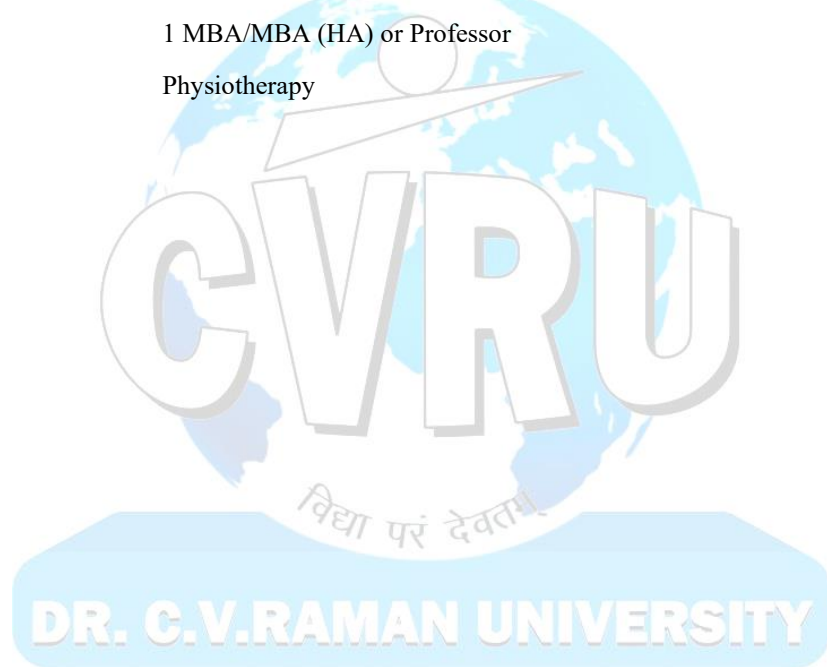
B.P.T. IV YEAR

STAFF PATTERN FOR IV YEAR B.P.T

Subjects

Staff Required

Community PT	1 M.D. Community Medicine /MPT - Lecturer/ Asst. Prof. Rehabilitation and
Disability prevention	1 MPT/MSc-PT, Professor/Assoc. Professor
Research Methodology	1 MPT/MSc-PT, Assoc. Professor/ Asst. Prof.
Biostatistics	1 MSc- Statistics, Asst. Professor
Cardiothoracic diseases	1 M.D. Medicine - Lecturer/ Asst. Prof.
Cardiothoracic surgeries	1 M.S. Surgery - Lecturer/ Asst. Prof. Physiotherapeutic in General Conditions MPT/MSc-PT, Professor/Assoc. Professor PT in Cardiothoracic Conditions 1 MPT/MSc-PT, Assoc./Asst. Professor
Sports Physiotherapy	1 MPT/ MSc.PT (Sports)/ MSPT, Asst. Prof.
PT Ethics	1 MPT/MSc-PT, Professor/Assoc. Professor Management and
Administration	1 MBA/MBA (HA) or Professor Physiotherapy



IV Year B.P.T. Examination

S.No.	Subject	Internal Assessment		University Examination			Total
		Theory	Practical	Theory	Viva	Practical	
1	Community PT, Rehabilitation and Disability prevention	20	--	80	--	--	100
2	Research Methodology and Biostatistics	20	--	80	--	--	100
3	Cardiothoracic diseases and surgeries	20	--	80	--	--	100
4	Physiotherapeutic in General and Cardiothoracic Conditions	20	20	100	20	40	200
5	Sports Physiotherapy	20	20	100	20	40	200
6	PT Ethics, Management and Administration ** NUES	--	100	--	--	--	100
7	Project Work**NUES	---	100	--	--	--	100
Total Max. Marks							900

N.B.- Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.

** NUES= Non-university Examination Subject.

SCHEME OF EXAMINATION FOR FOURTH YEAR B.P.T

There shall be six subjects for the Fourth Year B.P. Th. Examination out of which for five subjects' university examination will be arrange by the university and for one subject —PT Ethics, Management and Administration ** NUESI institute will provide Internal Assessment –practical marks to university during submission of internal assessment marks, in this subject there will be no university examination.

The subjects Qualification of the examination and the pattern of examination will be as follows.

1. COMMUNITY PT, REHABILITATION AND DISABILITY PREVENTION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Community PT, Rehabilitation and Disability prevention	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: Community PT and Section – B: Rehabilitation and Disability prevention the university theory examination marks for Community PT shall be 40 marks and for Rehabilitation and Disability prevention 40 marks respectively. There shall be two paper setters and two evaluators, one from MD Community Medicine/ MPT - Asst. Prof. and one from MPT/MSc-PT, Professor/Assoc. Professor. Section- A, which will be set by MD Community Medicine/ MPT - Asst. Prof. (40 marks) and Section-B, by MPT/MSc-PT, Professor/Assoc. Professor (40 marks) examiner. Recognized teachers in Medicine and Surgery with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks. The pattern of university theory examination will be as under for 80 Max. Marks. There will be two sections i.e.

Section-A: Community PT and Section-B: Rehabilitation and Disability of 40 Max. Marks each section and distribution of marks for questions will be as under: -

No. and Type of Question	Marks for each	Total Max.
	question	Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

2. RESEARCH METHODOLOGY AND BIOSTATISTICS

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Research Methodology and Biostatistics	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: Research Methodology and Section – B: Biostatistics the university theory examination marks for Research Methodology shall be 40 marks and for Biostatistics 40 marks respectively. There shall be two paper setters and two evaluators, one from MPT/MSc-PT, Assoc. Professor/ Asst. Prof. and one from MSc- Statistics, Asst. Professor. Section- A, will be set by MPT/MSc-PT, Assoc. Professor/ Asst. Prof. (40 marks) and Section-B, by MSc- Statistics, Asst. Professor (40 marks) examiner. Recognized teachers in MPT/MSc-PT, Assoc.

Professor/ Asst. Prof. and MSc- Statistics, Asst. Professor with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks. The pattern of university theory examination will be as under for 80 Max. Marks. There will be two sections i.e., Section-A: Research Methodology and Section-B: Biostatistics of 40 Max. Marks each section and distribution of marks for questions will be as under: -

No. and Type of Question	Marks for each	Total Max.
	question	Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

3. CARDIOTHORACIC DISEASES AND SURGERIES

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Cardiothoracic diseases and surgeries	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: Cardiothoracic diseases and Section – B: Cardiothoracic surgeries, the university theory examination marks for Cardiothoracic diseases shall be 40 and for Cardiothoracic surgeries 40 marks respectively. There shall be two paper setters and two evaluators, one from M.D. Medicine - Lecturer/ Asst. Prof. and one from M.S. Surgery - Lecturer/ Asst. Prof. Section- A, which will be set by M.D. Medicine - Lecturer/ Asst. Prof. (40 marks) and Section-B, by M.S. Surgery - Lecturer/ Asst. Prof. (40 marks) examiner. Recognized teachers in M.D. Medicine - Lecturer/ Asst. Prof. and M.S. Surgery - Lecturer/ Asst. Prof. with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks. The pattern of university theory examination will be as under for 80 Max. Marks. There will be two sections i.e., Section-A: Cardiothoracic diseases and Section-B: Cardiothoracic surgeries of 40 Max. Marks each section and distribution of marks for questions will be as under: -

No. and Type of Question	Marks for each	Total Max.
	question	Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

4. PHYSIOTHERAPEUTIC IN GENERAL AND CARDIOTHORACIC CONDITIONS.

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Physiotherapeutic in General and Cardiothoracic Conditions	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers MPT/MSc-PT, Assoc./Asst. Professor with more than five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each	Total Max.
	question	Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

5. SPORTS PHYSIOTHERAPY

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Sports Physiotherapy	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers MPT/MSc-PT, Assoc./Asst. Professor with more than five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

6. PT Ethics, Management and Administrations

University examination respectively. The pattern of university theory examination will be as under for 100 Max. Marks.

N.B.- Viva marks will be added in theory marks along with internal assessment theory; candidate have to get min. 50% marks in theory and viva collectively for passing the examination.

** NUES= Non-university Examination Subject.

BACHELOR OF PHYSIOTHERAPY (B.P.T)- IV YEAR

Paper –I: COMMUNITY PT, REHABILITATION AND DISABILITY PREVENTION: PBPT 401

Total no. of teaching hrs.-160

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Community PT, Rehabilitation and Disability prevention	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: Community PT and Section – B: Rehabilitation and Disability prevention the university theory examination marks for Community PT shall be 40 marks and for Rehabilitation and Disability prevention 40 marks respectively. There shall be two paper setters and two evaluators, one from MD Community Medicine/ MPT - Asst. Prof. and one from MPT/MSc-PT, Professor/Assoc. Professor. Section- A, which will be set by MD Community Medicine/ MPT - Asst. Prof. (40 marks) and Section-B, by MPT/MSc-PT, Professor/Assoc. Professor (40 marks) examiner. Recognized teachers in Medicine and Surgery with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks. The pattern of university theory examination will be as under for 80 Max. Marks. There will be two sections i.e.

Section-A: Community PT and Section-B: Rehabilitation and Disability of 40 Max. Marks each section and distribution of marks for questions will be as under: -

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

❖ Course Description: -

This course provides knowledge about health care delivery programs in Rural and urban areas and role of Physiotherapy in both Rural and Urban set ups with special emphasis to various community awareness programs and preventive aspects of health disorders causing disability. Enables the student to understand the effects of the environment and the community dynamics on the health of the individual with special emphasis on disability limitation specific protection and rehabilitation.

❖ Course Objective: -

The objective of this course is that after 60 hours of lectures, demonstrations, practical, clinics and filed visits, the student will be the students will be able to understand the various community awareness programs and health disorders causing disability and the role of physiotherapy in community awareness and prevention of health disorders causing disability. In addition, the student will be able to fulfill with 75% accuracy (as measured by written, oral and practical evaluation), the following objectives of the course.

❖ Course Contents: -

Community PT and Community Medicine

1. General Concepts of health and diseases with reference to natural history of disease with pre-pathogenic and pathogenic phase. The role of socio-economic and cultural environment in health and disease. Epidemiology and scope. Role of Epidemiological investigation in public health.
2. Public Health Administration — Overall view of the health administration setup at Central State and Local self-government levels. Role of Non-Government Organizations in public health care delivery system.
3. The National Health Programs — Highlighting the role of social, economic and cultural factors in the implementation of the National Programs, Primary Health Care, objectives and implementation.
4. Health Problems of vulnerable groups — Pregnant and Lactating women Infants and Pre-school children, Occupational groups (see below) and Geriatrics.
5. Occupational Health: Definition, scope, occupational diseases, prevention of occupational diseases and hazards. Role of ES
6. In occupational health of industrial workers.
7. Social security and other measures for the protection of occupational hazards, accidents and diseases. Details of Factory Act, Environmental safety and Compensation acts, ES. .5. Acts.
8. Family Welfare Program — Objectives of National Family Welfare Program and Family Planning Methods. A general idea of advantages and disadvantages of methods Reproductive Child Health Services, Concept, of plan d pregnancies, population dynamics.
9. Mental Health — Community aspects of Mental Health: Role of Physiotherapists. Therapist in Mental Health Problems such as Cerebral Palsy, Mental retardation.
10. Communicable diseases — Diseases transmission concepts, an overall view of communicable diseases (Malaria, Filaria, Tuberculosis, Leprosy, Poliomyelitis, and Viral Encephalitis etc.) classified according to principal mode of transmission, Role of Insects and other Vectors in disease transmission. Control and prevention of communicable diseases, universal immunization program, Programs such as ARI, Diarrhea and Polio Control Programs.
11. International Health Agencies and National NGOs.
12. Non-communicable diseases, Blindness, Accidents, Cancer, IHD, Hypertension, Stroke (CVA).
13. Vital and health statistics — Basic concepts, Morbidity and Mortality rates, Period, Age and Cause of specific death rates and role of these rates as indicators of health and diseases.

▪ **COMMUNITY .PT**

Community PT, Rehabilitation and Disability Prevention Theory.

1. Introduction of Rehabilitation and History.
2. Epidemiology of disability (Impairment, disability, phases of disability process, etc.).
3. Principles of Rehabilitation and concept of team approach with rolls of each individual participant.
4. Organization of Rehabilitation unit.
5. Disability prevention evaluation and principles of Rehabilitation Management.
6. Role of Physiotherapy in Rehabilitation (Preventive, treatment and restoration)
7. Brief outline of Communication disorder and its implications on Rehabilitation process.
8. Brief outline of psychosocial and vocational aspects of Rehabilitation.
9. Introduction to Occupational therapy.
10. Activities of daily living, functional assessment and training for functional independence.
11. Brief outline of basic community medicine with special reference to community-based Rehabilitation, infrastructure and role of CBR
12. Assessment of disability in rural and urban setups. Health care delivery system and preventive measures with specific reference to disabling conditions. Community education program.
13. Application of Physiotherapy skills at community level with special reference to the need at rural level.
14. Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies – National level and International NGO 's, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockefeller, Ford foundation, CARE, REDCROSS.
15. National District Level Rehabilitation Program: Primary rehabilitation unit, regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker.

16. Role of Physiotherapy in CBR: Screening for disabilities, Prescribing exercise program, Prescribing and devising low cost locally available assistive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation program for various neuro-musculoskeletal and cardiothoracic disabilities.

❖ **Orthotics and Prosthetics.**

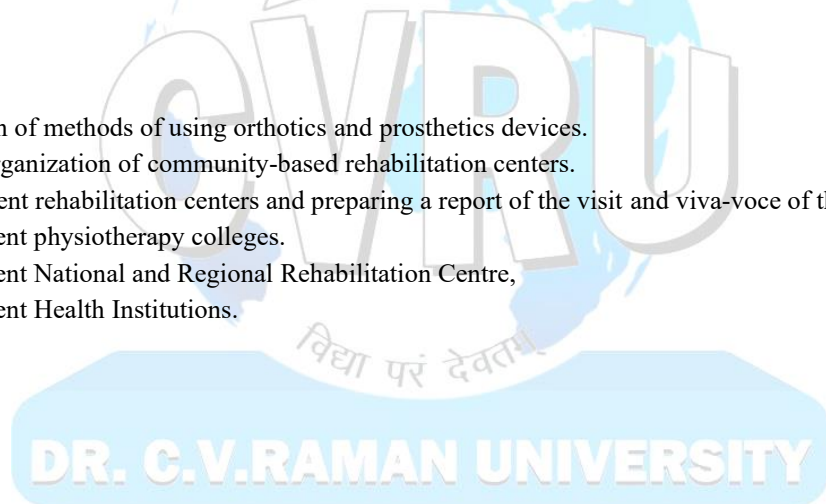
1. Introduction to surgical anatomy and various pathological deviations with respect to brace fitting.
2. Rationale of prescribing Prosthetic and Orthotic devices.
3. Types of Prosthetic and Orthotic devices: Spinal, Lower limb, and Upper limb. 4. Checkout, usage advice, precautions, and follow-up.
4. Walking aids and wheel chairs: prescription, usage advice, and follow-up. PRACTICAL.

❖ **Book Reference.**

1. Textbook of Preventive and Social Medicine by Dr J E Park.
2. Rehabilitation medicine -- by Joel A. Delisa.
3. Text book of physical diagnosis --- by Mark. MS warts.
4. Physical Rehabilitation ---- by Susan B O'Sullivan, Thomas J Schmitz, George Fluke.
5. Essentials of Physical Medicine and Rehabilitation: Musculoskeletal Disorders, Pain, and Rehabilitation –by Walter R. Frontera MD PhD (Author), Julie K. Silver MD(Author), Thomas D. Rizzo Jr. MD(Author)
6. Delisa's Physical Medicine and Rehabilitation: Principles and Practice – by Walter R. Frontera.
7. Parks Text Book of Preventive and Social Medicine -by K. Park.
8. Textbook of Community Medicine –by Bhalwar (Author)

❖ **Field Visits**

1. Demonstration of methods of using orthotics and prosthetics devices.
2. Methods of organization of community-based rehabilitation centers.
3. Visit of different rehabilitation centers and preparing a report of the visit and viva-voce of the aforesaid report
4. Visit to different physiotherapy colleges.
5. Visit to different National and Regional Rehabilitation Centre,
6. Visit to different Health Institutions.



BACHELOR OF PHYSIOTHERAPY (B.P.T)- IV YEAR

Paper –II: RESEARCH METHODOLOGY AND BIOSTATISTICS: PBPT 402

Total no. of teaching Hrs.-100

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Research Methodology and Biostatistics	20	--	80	--	--	100

The University examination shall be of 80 marks with Section – A: Research Methodology and Section – B: Biostatistics the university theory examination marks for Research Methodology shall be 40 marks and for Biostatistics 40 marks respectively. There shall be two paper setters and two evaluators, one from MPT/MSc-PT, Assoc. Professor/ Asst. Prof. and one from MSc- Statistics, Asst. Professor. Section- A, will be set by MPT/MSc-PT, Assoc. Professor/ Asst. Prof. (40 marks) and Section-B, by MSc- Statistics, Asst. Professor (40 marks) examiner. Recognized teachers in MPT/MSc-PT, Assoc. Professor/ Asst. Prof. and MSc- Statistics, Asst. Professor with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks.

The pattern of university theory examination will be as under for 80 Max. Marks. There will be two sections i.e., Section-A: Research Methodology and Section-B: Biostatistics of 40 Max. Marks each section and distribution of marks for questions will be as under: -

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

❖ Objectives: -

In physiotherapy, research methodology and biostatistics play crucial roles. Research methodology helps design and conduct studies to gather evidence-based information, enhancing treatment protocols and patient outcomes. Biostatistics enables the analysis of data, ensuring the reliability and validity of research findings in physiotherapy. Together, they contribute to advancing the field by providing a scientific foundation for effective interventions and improved patient care

❖ Course Contents: -

1) Research Methodology and Biostatistics Research Methodology

1. Introduction to Research methodology: Meaning of research, objectives of research, Motivation in research, Types of research and research approaches, Research methods vs. methodology, Criteria for good research.
2. Research problem: Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem.
3. Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design.
4. Measurement and scaling techniques: Measurement in research Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification, important scaling techniques.

5. Methods of data collection: collection of primary data, collection data through questionnaires and schedules, Difference between questionnaires and schedules.
6. Computer technology: Introduction to Computers, computer application in research computers and researcher.

■ **BIostatISTICS**

1. Introduction: Meaning, definition, characteristics of statistics. Importance of the study of statistics, Branches of statistics, Statistics and health science, Parameters and Estimates, Variables and their types, Measurement scales.
2. Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve.
3. Measures of Central Tendency: Need for measures of central Tendency, Definition and calculation of Mean – ungrouped and grouped, interpretation and calculation of Median-ungrouped and grouped, Meaning and calculation of Mode, Geometric mean and Harmonic mean, Guidelines for the use of various measures of central tendency.
4. Measures of Dispersion: Range, mean deviation, standard deviation and variance.
5. Probability and Standard Distributions: Meaning of probability of standard distribution, the binominal distribution, the normal distribution, Divergence from normality – skewness, kurtosis.
6. Correlation and regression: Significance, correlation coefficient, linear regression and regression equation.
7. Testing of Hypotheses, Level of significance, Degrees of freedom.
8. Chi-square test, test of Goodness of fit and student-test.
9. Analysis of variance and covariance: Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Co variance (ANACOVA)
10. Sampling: Definition, Types- simple, random, stratified, cluster and double sampling. Need for sampling - Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling designs errors.

❖ **Book References: -**

(Subjects - Research Methodology and Biostatistics)

1. Bailey, N.T.J. -Statistical methods in Biology. The English universities press, London
2. Bajpai, S.R.- Methods of Social Survey and Research, Kitab Ghar, Kanpur.
3. Colton - Statistics in medicine, Little Brown Company, Boston
4. Gupta, S.P -Statistical methods. Sultan Chand and Sons Publishers, New Delhi.
5. Goulden C.H.- Methods of Statistical Analysis. Asia Publishing House, New Delhi.
6. Mohsin S.M.- Research Methods in Behavioral Sciences: Orient Publications. New Delhi.
7. Mahajan - Methods in Biostatistics, Jay Pee Brothers. Medical Publishers (P) Ltd. N. Delhi.
8. Hicks- Research for Physiotherapists, Churchill Livingstone, London.
9. Meenakshi. - First Course in Methodology of Research. Kalia Prakashan, Patiala.
10. Kumar, R.- Research Methodology. Pearson Education, Australia.
11. Snedecor, G.W -Statistical Methods, Allied Pacific Pvt. Ltd., London
12. Singh, I.- Elementary Statistics for Medical Workers. Jaypee Brothers Medical Publishers (P) Ltd. New Delhi.

BACHELOR OF PHYSIOTHERAPY (B.P.T)- IV YEAR

Paper –III: CARDIOTHORACIC DISEASES
AND SURGERIES: PBPT 403

Total no. of teaching hrs.-100

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Cardiothoracic diseases and surgeries	20	--	80	--	--	100

The University examination shall be of 80 marks with Section–A: Cardiothoracic diseases and Section–Cardiothoracic surgeries, the university theory examination marks for Cardiothoracic diseases shall be 40 and for Cardiothoracic surgeries 40 marks respectively. There shall be two paper setters and two evaluators, one from M.D. Medicine - Lecturer/ Asst. Prof. and one from M.S. Surgery - Lecturer/ Asst. Prof. Section- A, which will be set by M.D. Medicine - Lecturer/ Asst. Prof. (40 marks) and Section-B, by M.S. Surgery - Lecturer/ Asst. Prof. (40 marks) examiner. Recognized teachers in M.D. Medicine - Lecturer/ Asst. Prof. and M.S. Surgery - Lecturer/ Asst. Prof. with five years of experience shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 10 marks in each subject. Total internal assessment will be 20 Marks. The pattern of university theory examination will be as under for 80 Max. Marks. There will be two sections i.e., Section-A: Cardiothoracic diseases and Section-B: Cardiothoracic surgeries of 40 Max. Marks each section and distribution of marks for questions will be as under: -

No. and Type of Question	Marks for each question	Total Max. Marks
05 Very Short Answer Questions (Answer to be given in 50-60 words)	02	10
02 Short Answer Questions (Answer to be given in 250-300 words)	8	16
01 Essay Type Questions (Answer to be given in 450-500 words)	14	14
		40

❖ Objectives: -

- 1. Comprehend Cardiac Anatomy and Physiology:** Understand the structure and function of the cardiovascular system, including the heart, blood vessels, and related physiological processes.
- 2. Analyze Cardiovascular Pathophysiology:** Gain insight into common cardiac diseases, their etiology, pathophysiology, and the associated clinical manifestations.
- 3. Evaluate Diagnostic Methods:** Familiarize with various diagnostic procedures and tests used in assessing cardiac conditions, including ECG interpretation, echocardiography, stress testing, and imaging techniques.
- 4. Understand Medical Management:** Explore pharmacological interventions, medications, and treatment modalities used in the management of cardiac disorders.
- 5. Explore Surgical Interventions:** Learn about different cardiac surgical procedures, their indications, pre-operative and post-operative care, and rehabilitation protocols.
- 6. Develop Rehabilitation Protocols:** Comprehend the role of physiotherapy in cardiac rehabilitation, designing exercise programs, and implementing strategies for patients recovering from cardiac surgery or managing cardiac conditions.
- 7. Interdisciplinary Collaboration:** Appreciate the significance of interdisciplinary teamwork and effective communication among healthcare professionals in managing cardiac patients.
- 8. Ethical and Professional Conduct:** Understand and adhere to ethical standards, patient confidentiality, and professional conduct when dealing with cardiac patients and their families.
- 9. Critical Thinking and Problem-Solving Skills:** Develop critical thinking abilities to analyze complex cardiac cases, formulate appropriate intervention plans, and adapt strategies based on patient responses and progress.
- 10. Demonstrate Practical Skills:** Acquire hands-on skills in performing relevant assessments, interpreting diagnostic tests, and implementing physiotherapeutic interventions in cardiac care settings.

- 11. Research and Evidence-Based Practice:** Recognize the importance of evidence-based practice, stay updated with current research, and apply research findings in clinical decision-making.

❖ **Course Contents: -**

THEORY: -

1. Brief idea of Anatomy and Physiology of Cardio- respiratory systems.
2. Outline A etiopathogenesis of Cardio-respiratory disorders, Investigations, Diagnostic, Differential diagnosis and principles of management.
3. Cardio - Vascular System
 - i. Cardiac failure - Definition, Causes, Symptoms and Signs and Brief management of Cardiac failure.
 - ii. Rheumatic Fever - Definition, Brief description of Aetiology, Clinical features, Complication and Treatment.
 - iii. Congenital Heart Diseases: Classification and brief outline of diseases like ASD, VSD, PDA, Fallots's Tetralogy with complication.
 - iv. Ischemic Heart Disease - Aetiopathogenesis, Classification. Symptoms, Diagnosis and Medical and Surgical treatment.
 - v. Hypertension - Definition, Classification, Symptomatology, Complications and Treatment.
 - vi. Infective Endocarditic - Brief aetiopathogenesis, clinical features, Diagnosis and Treatment.
 - vii. Brief description of Deep Vein Thrombosis and Pulmonary embolism.
 - viii. Vascular Disease: Atherosclerosis, Burger's disease, Phlebitisetc.

RESPIRATORY SYSTEM: -

(Respiratory diseases including diseases of chest wall)

1. Chronic Bronchitis and Emphysema, Definition.
2. Clinical features, and investigation, complication and treatment.
Bronchial asthma - Definition, Aetiopathogenesis, clinical features, Diagnosis and Treatment.
3. Pneumonia - Definition, Classification, clinical features, Complications and Treatment.
4. Tuberculosis - Aetiopathogenesis, clinical test of pulmonary tuberculosis, Diagnosis Complication and Treatment.
5. Lung abscess and Bronchiectasis - Definition, clinical features, Diagnosis and Treatment.
6. Chest wall deformities- Describe various deformities of chest wall, its effect and pulmonary diseases associated with it.
7. Occupational Lung Diseases - Clinical features, Diagnosis and Treatment.
8. Respiratory failure - Classification, Causes and Treatment.

CARDIOTHORACIC SURGERY THEORY: -

1. **Introduction**-types of incision, pre and post operative assessment, management and complications of cardio thoracic surgery and their management.
2. **Cardiac Surgery**-Outline indication, contra indication, site of incision, pre and post Operative management and complications of the following:
 - a. Valvotomy and Valve Replacement.
 - b. Open heart surgery/ cardiac by-pass surgery
 - c. Surgery of pericardium
 - d. Heart transplantation
 - e. Pacemaker
 - f. Coronary angioplasty
 - g. Balloon angioplasty and vascular surgery (Outline surgery and artery and veins)

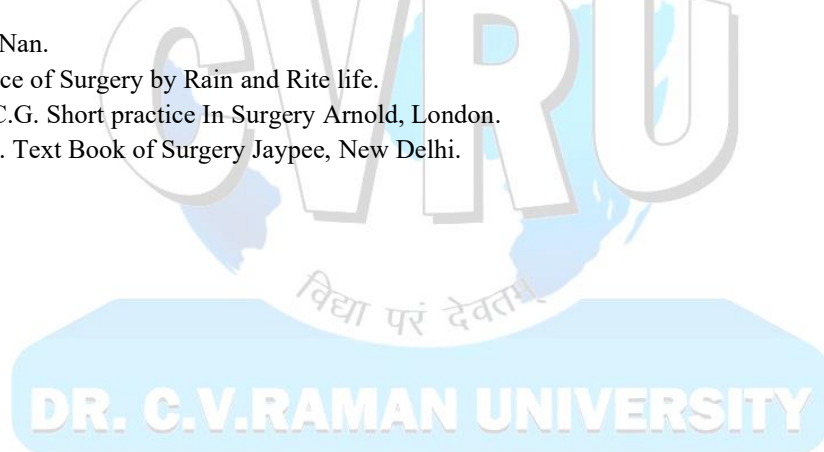
3. Thoracic Surgery

- i. Outline clinical features and management of the following; fracture of ribs, Flail chest, stove in chest, Pneumothorax, Hemothorax, Lung contusion and Laceration and injury to vessels and bronchus.
- ii. Outline indications, contradiction, site of incision, pre and post operative management and complication of following- Lobectomy, Pneumonectomy, segmentectomy, pleuro-pneumonectomy, Thoracoplasty, decoration, Tracheostomy.
- iii. Outline clinical features and management of carcinoma of lung.
- iv. Describe in detail the following procedure: management of endotracheal tubes, tracheal Suction, Weaning the patient from ventilator, Extubation and Post-extubation care.
- v. Describe the principles of cardio-pulmonary Resuscitation, cardiac Massage, Artificial respiration, defibrillators and their use.

Book References

(SUBJECTS - CARDIO - THORACIC DISEASES AND SURGERY)

1. Cardiothoracic Surgery: Recent Advances and Techniques- by Daniel Willson.
2. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine - By Douglas P. Zipes, Peter Libby.
3. Textbook of Interventional Cardiology Hardcover – by Eric J. Topol MD and Paul S. Teirstein MD.
4. Textbook of Pulmonary and Critical Care Medicine (vol 1 and vol 2) by SK Jindal.
5. Principles of Respiratory Medicine – by Farokh Erach, Zarir Farokh Udwadia, Anirudh Kohli Udwadia.
6. Davidson's Principles and Practice of Medicine, International Edition.
7. Murray and Nadel's Textbook of Respiratory Medicine – by Robert J. Mason MD.
8. Bailey and Love's Short Practice of Surgery text book
9. Oxford Textbook of Fundamentals of Surgery- by William E. G. Thomas, Malcolm W. R. Reed, Michael G. WAY.
10. Surgery by Nan.
11. Short Practice of Surgery by Rain and Rite life.
12. Russell, R.C.G. Short practice In Surgery Arnold, London.
13. Gupta, R. L. Text Book of Surgery Jaypee, New Delhi.



BACHELOR OF PHYSIOTHERAPY (B.P.T)- IV YEAR

Paper –IV: PHYSIOTHERAPEUTIC IN GENERAL AND CARDIOTHORACIC CONDITIONS:
PBPT 404

Total No. of Teaching Hrs. – 100

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Physiotherapeutic in General and Cardiothoracic Conditions	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers MPT/MSc-PT, Assoc./Asst. Professor with more than five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively.

The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

❖ **Objectives: -**

1. Understanding Cardiothoracic Conditions: Gain comprehensive knowledge of various cardiovascular and thoracic conditions, including heart diseases, respiratory disorders, and post-operative thoracic procedures.
2. Assessment Skills: Develop proficiency in conducting thorough assessments, including cardiopulmonary assessments, chest physiotherapy examinations, and functional evaluations specific to cardiothoracic conditions.
3. Treatment Modalities: Learn various physiotherapeutic interventions such as breathing exercises, airway clearance techniques, pulmonary rehabilitation, exercise prescription, and mobilization strategies tailored for patients with cardiothoracic conditions.
4. Clinical Decision-making: Enhance critical thinking and decision-making abilities to create individualized treatment plans based on assessment findings and patient needs.
5. Rehabilitation and Prevention: Understand the role of physiotherapy in the rehabilitation phase post-cardiac surgeries, thoracic procedures, or during chronic cardiorespiratory conditions. Also, focus on preventive strategies and lifestyle modifications to improve cardiovascular health.
6. Interdisciplinary Collaboration: Learn to work effectively within a healthcare team, collaborating with physicians, nurses, and other allied health professionals to provide comprehensive care to patients with cardiothoracic conditions.
7. Patient Education: Develop skills in educating patients and their families about the condition, treatment options, lifestyle modifications, and self-management strategies to enhance compliance and long-term health.
8. Ethical and Professional Conduct: Emphasize ethical considerations, professional conduct, and adherence to clinical guidelines and standards while working with patients with cardiothoracic conditions.

❖ **Course contents: -****1) PHYSIOTHERAPY IN CARDIO-RESPIRATORY AND GENERAL CONDITIONS****Theory**

1. Anatomical and Physiological differences between the Adult and Pediatric lung.
2. Bedside assessment of the patient-Adult and Pediatric.

3. Investigations and tests – Exercise tolerance Testing – Cardiac and Pulmonary, Radiography, PFT, ABG, ECG, Hematological and Biochemical Tests.
4. Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP, IPPB.
5. 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
6. Physiotherapy techniques to clear secretions – Hydration, Humidification and Nebulization, Mobilization and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning.
7. 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, Inhaled Nebulizers.
8. Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars U.V.R and other electro therapeutics for healing of wounds, prevention of Hyper granulated Scars Keloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues.
9. Physiotherapy in dermatology -Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhidrosis. Care of anesthetic hand and foot; Evaluation, planning and management of leprosy-prescription, fitting and training with prosthetic and orthotic devices.
10. Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit.
11. Physiotherapy in Obstructive lung conditions.
12. Physiotherapy in Restrictive lung conditions.
13. Management of breathlessness.
14. Pulmonary Rehabilitation.
15. Physiotherapy following Lung surgeries.
16. Respiratory failure – Oxygen Therapy and Mechanical Ventilation. Introduction to ICU: ICU monitoring – Apparatus, Airways and Tubes used in the ICU -Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU.
17. Burns management - Role of physiotherapy in the management of burns, post grafted cases- Mobilization and Musculo- skeletal restorative exercises following burns.
18. Physiotherapy management following cardiac surgeries.
19. Cardiac Rehabilitation.
20. Physiotherapy management following Peripheral Vascular Disease (PVD).
21. Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax.
22. Management of Amputations following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes
23. Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases
24. Home program and education of family members in patientcare.
25. Physiotherapy in Obstetrics – Antenatal Care, Antenatal Education, Postnatal Care. Electrotherapy and Exercise Therapy measures for the re-education of Ano-Urethral sphincter.
26. Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity.
27. Geriatrics: Problems in old age, role of physiotherapy in elderly

❖ **Practical: -**

Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of physiotherapy in cardio – respiratory, OBG, Skin, and other medical conditions. 2. Student must maintain a logbook. The duly completed logbook should be submitted during practical examination.

❖ **Book References: -**

(Subject: Physiotherapeutic in General and Cardiothoracic Conditions)

1. Cash 's text book of general medicine and surgical conditions for physiotherapist
2. Cash 's text book of chest, heart and vascular disorder for physiotherapist.
3. The Brompton guide to chest physiotherapist – D.U GASKED (completed)
4. Physiotherapy of pediatrics – shepherd.
5. Elements of pediatric physiotherapy by pamel Meckersly

6. Essential of cardiac – pulmonary physical therapy by Hillegas
7. Cardiac pulmonary symptoms in physical therapy practice Cohens 'and Michael
8. Chest physiotherapy in Intensive care Unit by Mackenzie.
9. Physiotherapy in Respiratory care, Latest Edn, By Alexander Hough, Nelson Thornes.
10. Cardiovascular pulmonary essentials: applying the preferred physical therapist practice patterns. 2007, Marllyn Moffat, Slack
11. Fundamentals of Lung and Heart Sounds with CD Rom, Willkins Robert L, Hodgkin John E Lopez Brad: Mosby.



BACHELOR OF PHYSIOTHERAPY (B.P.T)- IV YEAR

Paper –V: SPORTS PHYSIOTHERAPY: PBPT 405

Total no. of teaching hrs.-100

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
Sports Physiotherapy	20	20	100	20	40	200

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers MPT/MSc-PT, Assoc./Asst. Professor with more than five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively. The pattern of university theory examination will be as under for 100 Max. Marks.

No. and Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (Answer to be given in 50-60 words)	02	20
5 Short Answer Questions (Answer to be given in 250-300 words)	10	50
2 Essay Type Questions (Answer to be given in 450-500 words)	15	30
		100

❖ Objectives: -

Understanding the anatomy and physiology related to sports injuries. Learning specialized assessment methods for sports-related conditions. Exploring various treatment modalities like exercise prescription, manual therapy, and therapeutic modalities such as ultrasound, TENS, etc. Gaining knowledge about injury prevention strategies and sports-specific rehabilitation protocols. Developing skills in designing tailored exercise programs for athletes to enhance performance and prevent injuries. These courses aim to equip students with the knowledge and skills needed to effectively manage and treat sports-related injuries and help athletes recover and preformat their best.

❖ Course contents: -

A) PHYSIOTHERAPY IN SPORTS THEORY: -

1. Pre-exercise evaluation
2. Diet and nutrition Measurement of fitness components and sports skills - Measurement of muscular strength, Measurement of muscular endurance, Measurement of flexibility, Determination exercise endurance.
3. Physiological effects of exercise on body systems - Muscular system, Endocrine system, Cardio-respiratory system, Nervous system.
4. Sports injuries - Spine – PIVD, Kissing spine, cervical whiplash injuries, facet joint syndrome, SI joint dysfunction, Hip – muscle strain, piriformis syndrome, ITB syndrome, osteitis pubis, Knee – menisci, cruciate, collateral, osteochondritis, chondromalacia patellae, biceps femoris tendonitis, swimmers knee, patella-femoral pain syndrome, Leg and ankle – shin splint, achillis tendonitis and rupture, TA bursitis, ankle sprain, plantar fasciitis, turf toe syndrome, Head and face – maxillofacial injuries, helmet compression syndrome.
5. Sports injuries Shoulder – instability, rotator cuff injury, biceps tendonitis and rupture, pectoralis major rupture, scapular dyskinesis and acromio-clavicular joint injuries, Elbow – tennis elbow, golfer 's elbow, Wrist and hand – carpal tunnel syndrome, gamekeeper 's thumb.
6. Principles of injury prevention.
7. Principles of training and Rehabilitation in sports injuries.
8. Sports in Special age groups: Female athletic triad, younger athlete- Musculoskeletal problems, management, children with chronic illness and nutrition. Older athlete- Physiological changes with aging, benefits, risks of exercise in elderly, exercise prescription guidelines for elderly.

❖ **Practical: -**

1. Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of sports physiotherapy.
2. Student must maintain a logbook. The duly completed logbook should be submitted during practical examination.

❖ **Book References: -**

(Subjects - Physiotherapy in Sports)

1. Morris B. Mellion: Office Sports Medicine, Hanley and Belfus.
2. Richard B. Birrer: Sports Medicine for the primary care Physician, CRC Press.
3. Torg, Welsh and Shephard: Current Therapy in Sports Medicine III -Mosby.
4. Zulunga et al: Sports Physiotherapy, W.B. Saunders.
5. Brukner and Khan: Clinical Sports Medicine, McGraw-Hill.
6. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.
7. Gould: Orthopedic Sports Physical Therapy, Mosby.
8. C. Norris: Sports Injuries – Diagnosis and Management for Physio the rapists, Heinmann.
9. D. Kulund: The Injured Athlete, Lippincott.
10. Nicholas Hershman: Vol. I The Upper Extremity in Sports. Medicine.
Vol. II The Lower Extremity and Spine in Sports.
Medicine.
Vol. III The Lower Extremity and Spine in Sports Medicine. Mosby.
11. Lee and Dress: Orthopedic Sports Medicine - W. B Saunders.
12. K. Park: Preventive and Social Medicine - Banarsi Dass Bhanot -Jabalpur.
13. Fu and Stone: Sports Injuries: Mechanism, Prevention and Treatment, Williams and Wilkins.
14. Scuderi, McCann, Bruno: Sports Medicine – Principles of Primary Care, Mosby.
15. Lars Peterson and Per Renstron: Sports Injuries – Their prevention and treatment, Dunitz.
16. clinical sports medicine 3rd edition (English, paperback, peter brukner, karim khan.
17. text book of orthopedic physical assessment by Magee, david.
18. Modern principles of athletic training by corl. e. klafs and physiotherapist.
19. sports injuries: diagnosis and management for physiotherapist.
20. The children, s sports injuries by david kennedy.
21. Dynamics of clinical rehabilitative exercise by order.
22. Basic athletic training by Cramer.

DR. C.V.RAMAN UNIVERSITY

BACHELOR OF PHYSIOTHERAPY (B.P.T)- IV YEAR

PAPER – VI: PT ETHICS, MANAGEMENT AND ADMINISTRATION: PBPT 406

Total no. of teaching hrs.-100

SCHEME OF EXAMINATION

Subject	Internal Assessment		University Examination			Total
	Theory	Practical	Theory	Viva	Practical	
PT Ethics, management and Administration	20	--	80	--	--	100

❖ Objectives: -

This course is aimed to enable the candidate to acquire the knowledge of ethical code of professional practice, its moral and legal aspects, rules of IAP, WHO, and WCPT.

Objectives often include fostering ethical awareness, understanding patient rights, confidentiality, informed consent, and navigating ethical dilemmas commonly encountered in clinical settings. The course aims to equip students with a solid ethical framework to guide their professional conduct and decision-making as future physiotherapists.

❖ Contents: -

PT. ETHICS

A. History of physiotherapy.

1. Ethical principles in healthcare.
2. Ethical principles related to physiotherapy, scope of practice, enforcing standards in health profession-promoting quality care.
3. Professional ethics in research, education and patient care delivery.
4. Informed consent issues.
5. Medical ethics and economics in clinical decision-making.
6. Rules of professional conduct: physiotherapy as a profession relationship with patients' relationship with health care institutions relationship with colleagues and peers' relationship with medical and other professional Concepts of morally ethics, and legally rules of professional conduct and their medico legal and moral implication. the need of council act for physiotherapy constitution and functions of the Indian association of physiotherapist Functioning of the world federations of physical therapy (WCPT) and its various branches. Rule of WHO and WCPT
7. Confidentiality and responsibility, malpractice and negligence, provision of services and, advertising, legal aspects: consumer protection act, legal responsibility of physiotherapist for their action in professional context and understanding liability and obligations in case of medico-legal action.
8. Major ethical principles applied to clinical practice in healthcare.
9. Rules of professional conduct and scope of practice.
10. Personal and professional standards and accreditation.
11. Laws and legal concepts – protection from malpractice claims consumer protection act.
12. Liability and documentation.

B. Management and Administration: -

1. Planning health care services
2. Promoting and building a new hospital
3. Technology advances and high-quality patientcare
4. Hospital facilities, staff and services
5. Equipment planning and financial planning.
6. Hospital organization, operational plan and functional plan.

7. Design development, planning and purchase.
8. Organization and management of hospital.
9. Planning and administrative services.
10. Hospital information system.
11. Human resources management.
12. Financial management.
13. Nursing service administration.
14. Public relations and marketing.
15. Medical and ancillary services.
16. Planning and designing supportive services and hospital services.
17. Safety and security of the institution.
18. Disaster management and preparedness plan.
19. Management studies related in local health care organization management and structure. planning delivery with quality assurance and finding of service delivery.
20. Information technology in professional practical.
21. Time management and carrier development in physiotherapy.
22. Administration principles based on the goals and function for large hospital setups, domiciliary service, private clinics and academic setups.
23. Faculty planning – academic and clinical setups.
24. Methods of maintaining records and documentation.
25. Budget planning for physiotherapy services in various setups.
26. Performance analysis physical structure reporting system (man power, status, function) quantity and quality of service turnover cost benefits and revenue contribution.
27. Public relation and marketing reaching media marketing of physiotherapy practice and strengthening of brand identity with consumer and other health care professionals.

❖ **Book References: -**

(Subject: PT Ethics, Management and Administration)

1. Managerial and supervisory principles for physical therapists by-hardcover, nosse larryj.
2. hospital administration and management: a comprehensive guide by Gupta joy deep das.
3. Textbook of medical administration and leadership by: Loh, Erwin, long, Paulw., Spurgeon, Peter.
4. Essentials of community physiotherapy and ethics by prof. (dr.) Rajendra Rajput.
5. Physical therapy ethics book by Donald I. Gabard and mike martin.
6. ethical decision-making in therapy practice book by Julius Sim.

BACHELOR OF PHYSIOTHERAPY (B.P. Th)- IV YEAR

Paper –VII: PT Project Work**NUES

7	Project Work**NUES	---	100	--	--	--	100
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Seminar-25 marks (5x5)

Case Presentation -25 (5x5)

Dissertation Work- 50 marks

20 marks – Presentation

20 marks dissertation work

10-marks viva

BACHELOR OF PHYSIOTHERAPY (B.P. T)- IV YEAR

PROJECT WORK: PBPT407

Paper –VII: PT. PROJECT WORK

❖ Course Objective: -

The student will be doing specific case studies allotted by their teacher/guide. Subject is for Case Presentations and evaluations. Minimum 5- 10 cases are to be documented for discussion.

❖ Examination: -

There will be no university examination. Students will be assessed on the basis of Viva on his/her project work and the awards so secured by them will be sent to university.

❖ PHYSIOTHERAPY INTERNSHIP GUIDELINES: -

- Candidates seeking entry to the internship period must have passed all examinations in all subjects (i.e., He/She must have secured total credits of the Program).
- Duration: 6 months inclusive of posting in rural setup/CBR/similar setup.
- During the internship candidate shall have to work full time average 7 hours per day (each working day) for 6 Calendar months (total Credit hours –1260).
- Each candidate is allowed maximum of 6 holidays during entire Internship Program and in case of any exigencies during which the candidate remains absent for a period more than 6 days, he/she will have to work for the extra days during which the candidate has remained absent.
- Assessment: The interns/candidate shall maintain the record of work, which will be verified and certified by the Head of the Department under whom he/she works. Apart from scrutiny of the record of work, the Head of the Department shall undertake assessment and evaluation of training in attendance, discipline, knowledge, skills and attitude for the duration of training. The assessment report of the candidate shall be sent to the Parent institution.
- Based on the record of work and date of evaluation the Director/Principal shall issue _Certificate of Satisfactory Completion 'of training following which the University shall award the Bachelor of Physiotherapy Degree or declare the candidate eligible for the same.
- In the event of unsatisfactory report, the said intern shall have to repeat the internship for the period to be decided by the Head of the Institution concerned.
- Intern will abide by all the rules and regulations of Institution/Hospital where they are posted.
- Intern shall be responsible for proper use of equipment's of the Institute/Hospital where they are posted. He/She shall be liable to pay for damages caused to the equipment's resulting from improper use by him/her.
- Internship duration can be extended by the Principal / Director on the grounds:
 - i. Remaining absent in excess of the permitted 6 days leave period, which is due: An intern will compensate by working extra for each day leave taken.

- ii. Unsatisfactory performance during the period: If there are unsatisfactory reports in terms of performance of the intern, submitted by the Department In-charge, the said intern shall have to repeat the internship for a period at least two months further.
- iii. Case of indiscipline at any level: A Discipline and Action Committee will be formed in the college / Institution convened by Internship coordinator/HOD PT and headed by Director/Principal. In case of any lack of discipline, breach of trust or indulgence in any criminal activity on the part of the interns when reported by the concerned departments of Hospitals/Institutions where the interns have been posted, the defaulting Intern shall be called back immediately and subjected to disciplinary proceedings by the Disciplinary Action Committee.

iv. Punishments:

- a. Suspension of Internship for a period of 3-4 weeks for the reasons to be recorded. Following this disciplinary suspension, internship can be resumed only after submission of an appropriate undertaking/guarantee/surety. Period of suspension shall be considered as Break in Internship. Disciplinary Action Committee shall decide the period of suspension and resumption of Internship for a specified period.
- b. Rustication and Termination: In case of a serious complaint of indiscipline or breach of trust against intern or any criminal activity done by intern according to the law of the country, he/she may be rusticated along with termination of Internship. Hon 'ble Court of Law can resume the Internship in this case only on the abrogation of criminal charges against him.
- Institution shall have to satisfy themselves that satisfactory infrastructure facilities of Physiotherapy exist in the Institute / Hospital where the internship training has to be undertaken. Following parameters / guidelines have been suggested:
 - a. It is mandatory for the Institution conducting BPT Program to have its own Physiotherapy clinic fully furnished with all the necessary equipment's as per the curriculum of the Program.
 - b. The Institutes and the Hospitals should have the Physiotherapy section with all the necessary infrastructure facilities.
 - c. Senior Physiotherapist with sufficient clinical experience should manage the physiotherapy department in the Institutes/Hospitals.
 - d. Institute Director / principal can at his discretion grant NOC to the students to do the Internship at the place of his choice provided, the concerned Hospital fully satisfies the above criteria. 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 he intends to do his Internship.

❖ EVALUATION OF STUDENTS UNDER PRACTICAL/ INTERNSHIP

S. No.	Description	Satisfactory/ Unsatisfactory
1	Attendance	
2	Discipline and general behavior in the Department	
3	Approach to patients	
4	Inquisitiveness regarding the subject	
5	Knowledge about evaluation of conditions	
6	Knowledge about various therapeutic modalities	
7	Knowledge about actual application of therapeutic skills	