



MALLA REDDY VISHWAVIDYAPEETH

(Deemed to be University), Hyderabad

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Department of Higher Education, Ministry of Education, Government of India.**

DEPARTMENT OF PHYSIOTHERAPY

**Malla Reddy Vishwavidyapeeth, Venkatarama Colony,
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Program

BACHELOR OF PHYSIOTHERAPY (BPT)

COURSE STRUCTURE

(As per NCAHP Competency-Based Curriculum 2025)

2026

CHAPTER 1

ABOUT MALLA REDDY VISHWAVIDYAPEETH

1.1 ABOUT UNIVERSITY

Malla Reddy Vishwavidyapeeth (MRVV) is a multidisciplinary Deemed-to-be University committed to excellence in higher education, research, innovation, healthcare, and societal development. Established with the vision of nurturing competent professionals and future leaders, the University offers a dynamic academic ecosystem that integrates scientific knowledge, technological advancement, ethical values, interdisciplinary learning, and experiential education.

The University provides academic programmes across diverse disciplines including health sciences, medical sciences, engineering, management, pharmacy, allied health sciences, agriculture, law, humanities, and emerging technologies. Through learner-centric education, advanced infrastructure, highly qualified faculty, industry collaboration, and comprehensive clinical training facilities, MRVV strives to develop graduates who are professionally competent, socially responsible, ethically grounded, and globally competitive.

Committed to Outcome-Based Education (OBE), competency-based learning, and continuous quality improvement, the University aligns its academic programmes with national educational reforms, statutory regulatory frameworks, and global best practices. Research, innovation, entrepreneurship, digital transformation, interdisciplinary collaboration, and community engagement form the foundation of its educational philosophy.

The University continually promotes an academic environment that encourages critical thinking, lifelong learning, scientific inquiry, leadership, innovation, and professional excellence, preparing graduates capable of addressing evolving healthcare and societal needs at regional, national, and international levels.

1.2 VISION OF THE UNIVERSITY

To emerge as a globally respected multidisciplinary university committed to excellence in education, research, innovation, healthcare, and societal transformation by nurturing competent, ethical, and socially responsible professionals.

1.3 MISSION OF THE UNIVERSITY

Malla Reddy Vishwavidyapeeth is committed to:

1. Deliver quality education through competency-based, outcome-oriented, and learner-centric academic programmes.
2. Promote excellence in research, innovation, entrepreneurship, and interdisciplinary collaboration.
3. Develop graduates with strong professional competence, ethical values, leadership qualities, and lifelong learning abilities.
4. Integrate scientific knowledge, technology, and clinical practice to address contemporary healthcare and societal challenges.
5. Foster community engagement, sustainable development, and national service through education and research.
6. Create an inclusive academic environment that nurtures creativity, critical thinking, professionalism, and global citizenship.

1.4 CORE INSTITUTIONAL VALUES

The University upholds the following core values that guide all academic, research, clinical, and professional activities:

- Academic Excellence

- Integrity and Ethical Practice
- Student-Centred Learning
- Clinical Competence
- Innovation and Research
- Interdisciplinary Collaboration
- Compassionate Healthcare
- Social Responsibility
- Inclusivity and Diversity
- Continuous Quality Improvement
- Environmental Sustainability
- Lifelong Learning

1.5 ABOUT THE DEPARTMENT OF PHYSIOTHERAPY

The Department of Physiotherapy at Malla Reddy Vishwavidyapeeth is dedicated to advancing excellence in physiotherapy education, clinical practice, research, innovation, and community service. The Department prepares competent physiotherapy professionals capable of delivering evidence-based, patient-centred, ethical, and technologically enabled rehabilitation services across the continuum of healthcare.

The academic curriculum is designed in accordance with the Competency-Based Curriculum prescribed by the National Commission for Allied and Healthcare Professions (NCAHP), ensuring systematic development of knowledge, clinical reasoning, psychomotor skills, professional behaviour, research competence, and lifelong learning.

The Department integrates foundational sciences, advanced clinical education, supervised patient care, simulation-based learning, interdisciplinary collaboration, research methodology, and evidence-based practice to produce graduates who can contribute effectively to healthcare systems nationally and internationally.

Strong emphasis is placed on innovation, critical thinking, clinical decision-making, leadership, digital healthcare, and translational research while fostering compassion, professionalism, ethical practice, and social accountability. Through collaborations with teaching hospitals, rehabilitation centres, sports organizations, community health programmes, and research institutions, the Department strives to create future-ready physiotherapists capable of addressing evolving healthcare needs.

1.6 VISION OF THE DEPARTMENT OF PHYSIOTHERAPY

To be a nationally recognized centre of excellence in physiotherapy education, clinical practice, research, innovation, and rehabilitation sciences, producing competent, ethical, compassionate, and globally competitive physiotherapy professionals committed to improving human movement, functional independence, and quality of life.

1.7 MISSION OF THE DEPARTMENT OF PHYSIOTHERAPY

The Department of Physiotherapy is committed to:

1. Deliver competency-based physiotherapy education aligned with national and international standards.
2. Promote evidence-based clinical practice through comprehensive academic and supervised clinical training.
3. Foster excellence in research, innovation, digital health, and rehabilitation sciences.
4. Develop clinical leaders with professional ethics, communication skills, and lifelong learning attitudes.
5. Encourage interdisciplinary collaboration, community engagement, preventive healthcare, and public health initiatives.
6. Prepare graduates capable of addressing contemporary healthcare challenges through clinical excellence, scientific inquiry, leadership, entrepreneurship, and social responsibility.

CHAPTER 2**BACHELOR OF PHYSIOTHERAPY (BPT) PROGRAMME REGULATIONS****2.1 INTRODUCTION**

The Bachelor of Physiotherapy (BPT) programme is an undergraduate professional programme designed to prepare competent entry-level physiotherapists with the knowledge, skills, professional attitudes, clinical reasoning abilities, and ethical values required to provide safe, effective, evidence-based, and patient-centred physiotherapy services.

The programme is developed in accordance with the competency-based curriculum framework prescribed by the National Commission for Allied and Healthcare Professions (NCAHP). Contemporary physiotherapy requires a strong scientific foundation and the ability to integrate theoretical knowledge with clinical decision-making, practical skills, patient management, communication, and professional responsibility. The programme therefore prepares students to synthesize, evaluate, and apply knowledge effectively in clinical, rehabilitation, community, and other healthcare settings.

The curriculum provides progressive learning experiences in foundational sciences, movement sciences, physiotherapy sciences, clinical sciences, therapeutic interventions, rehabilitation, evidence-based practice, research, professional development, and supervised clinical education.

The BPT programme aims to develop graduates who are technically and clinically competent, capable of appropriate clinical decision-making, competent in patient assessment and physiotherapy management, aware of the importance of quality assurance, able to understand and apply the principles of evidence-based practice, function effectively as members of multidisciplinary healthcare teams, and participate in scholarly and research-related activities relevant to physiotherapy practice.

On successful completion of the programme, the graduate shall be prepared to function as an entry-level physiotherapy practitioner capable of providing quality care to individuals and populations with the objective of optimizing movement, function, participation, health, functional independence, and quality of life.

The programme emphasizes the progressive development of competencies required to examine, assess, evaluate, plan, implement, monitor, and document physiotherapy management for individuals with diseases, disorders, injuries, trauma, impairments, activity limitations, and participation restrictions. It also emphasizes health promotion, prevention, ethical and professional practice, effective communication, evidence-informed decision-making, interdisciplinary collaboration, leadership, resource management, and quality assurance.

The BPT programme at Malla Reddy Vishwavidyapeeth integrates classroom learning, practical and skill-based training, clinical education, self-directed learning, technology-enabled learning, and compulsory rotatory internship training. Through this integrated educational approach, the programme seeks to produce competent, ethical, compassionate, reflective, evidence-informed, and professionally responsible physiotherapy graduates capable of contributing effectively to healthcare, rehabilitation, prevention, and community services.

2.2 PROGRAMME OBJECTIVES

The Bachelor of Physiotherapy programme is designed to:

1. Provide students with a strong scientific and professional foundation in the basic medical sciences, movement sciences, clinical sciences, and physiotherapy sciences.
2. Develop the knowledge, skills, attitudes, and professional competencies required to examine, assess, evaluate, and manage individuals with movement dysfunction, impairments, activity limitations, and participation restrictions.
3. Prepare students to provide safe, effective, ethical, patient-centred, and evidence-informed physiotherapy care.
4. Develop competence in the application of physiotherapeutic interventions for the management of diseases, disorders, injuries, trauma, disability, and functional limitations.
5. Enable students to promote health and implement appropriate strategies for prevention and minimization of impairments, activity limitations, and participation restrictions.

6. Develop effective communication skills required to establish and maintain therapeutic and professional relationships with patients, caregivers, families, colleagues, and other healthcare professionals.
7. Develop the ability to appropriately understand and utilize relevant diagnostic, imaging, electrophysiological, hematological, biochemical, and other investigations within the scope of physiotherapy practice for clinical decision-making and appropriate referral.
8. Develop competence in the acquisition, appraisal, and application of the best available research evidence in clinical decision-making and physiotherapy practice.
9. Promote self-directed learning, scholarly activity, continuous professional development, and lifelong learning.
10. Develop the ability to work effectively as a member of an inter-professional healthcare team and contribute to comprehensive, collaborative, consultative, culturally responsive, and patient-centred care.
11. Develop professional abilities in managing self, time, resources, and priorities to ensure safe, effective, efficient, and sustainable physiotherapy services.
12. Develop awareness and competence in quality assurance, quality improvement, patient safety, and standards relevant to physiotherapy practice.
13. Prepare graduates to participate in community health promotion, preventive healthcare, rehabilitation, and social responsibility initiatives.
14. Develop professional values, ethical behaviour, accountability, leadership qualities, and respect for the rights and dignity of every individual.
15. Prepare graduates for entry-level professional physiotherapy practice, higher education, specialization, research, and lifelong professional development.

These objectives are aligned with the NCAHP expectations for an entry-level physiotherapy graduate, including clinical competence, ethical practice, communication, evidence-based practice, teamwork, leadership, and quality assurance.

2.3 DEGREE AWARDED

Candidates who successfully complete all the prescribed academic, practical, clinical, assessment, and internship requirements of the programme shall be awarded the degree of: **BACHELOR OF PHYSIOTHERAPY (BPT)** by **MALLA REDDY VISHWAVIDYAPEETH (DEEMED TO BE UNIVERSITY)**

The award of the degree shall be subject to the successful completion of all academic requirements prescribed by the University and the compulsory one-year rotatory internship, in accordance with the applicable regulations and curriculum requirements.

2.4 ELIGIBILITY FOR ADMISSION

A candidate seeking admission to the Bachelor of Physiotherapy programme shall fulfil the eligibility requirements prescribed by the National Commission for Allied and Healthcare Professions, Malla Reddy Vishwavidyapeeth, and other applicable statutory or regulatory authorities.

The candidate shall:

1. Have passed the Higher Secondary Examination (10+2) or an equivalent examination conducted by a recognized Indian Board, duly constituted Board, or National Open School.
2. Have studied Physics, Chemistry, and Biology, including Botany and Zoology, at the qualifying examination.
3. Have obtained a minimum of **80% aggregate marks in Physics, Chemistry, and Biology**, as prescribed under the NCAHP Physiotherapy Curriculum Handbook.
4. Have appeared for the **NEET examination**, wherever applicable in accordance with the prevailing NCAHP and other applicable regulatory requirements.
5. Be admitted based on fulfilment of the prescribed eligibility criteria and merit requirements applicable to the qualifying examination and admission process.

6. Candidates who have studied abroad and possess an equivalent qualification recognized by the Association of Indian Universities and the appropriate equivalence mechanism shall fulfil the applicable eligibility requirements prescribed for admission to the programme.
7. Fulfil any additional eligibility requirements prescribed by Malla Reddy Vishwavidyapeeth and applicable statutory or regulatory authorities from time to time.

2.5 ADMISSION REQUIREMENTS

Admission to the Bachelor of Physiotherapy programme shall be made in accordance with the admission policies and procedures prescribed by Malla Reddy Vishwavidyapeeth and the applicable statutory and regulatory authorities.

A candidate seeking admission shall be required to:

1. Fulfil the eligibility criteria prescribed for admission to the BPT programme.
2. Submit the prescribed application form within the notified admission schedule.
3. Submit the required academic records and certificates relating to the qualifying examination.
4. Submit valid proof of identity, date of birth, and other documents required by the University.
5. Fulfil the requirements relating to MRVCET, NEET or any other entrance or selection process applicable under prevailing regulations.
6. Submit equivalence certificates, where applicable, in the case of qualifications obtained from institutions or boards outside India.
7. Submit medical fitness or other certificates, wherever required under University or applicable regulatory requirements.
8. Complete the admission, counselling, verification, registration, and fee requirements prescribed by the University.
9. Fulfil all other requirements notified by the University and applicable statutory or regulatory authorities from time to time.

Admission shall be confirmed only after verification of the candidate's eligibility and submission of all prescribed documents.

2.6 DURATION OF THE PROGRAMME

The Bachelor of Physiotherapy programme shall be of **five years' duration**, comprising:

Four Academic Years followed by **One Year of Compulsory Full-Time Rotatory Internship**. The four academic years shall follow the annual pattern prescribed under the NCAHP curriculum framework. Each academic year shall provide a minimum of **38 weeks of academic training**, with academic activities structured for a minimum of **six days per week and six hours per day**, excluding internal and University examinations, extracurricular activities, public holidays, and vacations.

The fifth year shall consist of a **one-year full-time compulsory rotatory internship programme**.

The programme structure is therefore:

Stage	Duration
First Academic Year	1 Year
Second Academic Year	1 Year
Third Academic Year	1 Year
Fourth Academic Year	1 Year
Compulsory Rotatory Internship	1 Year
Total Duration	5 Years

The duration and annual pattern are based on the NCAHP Physiotherapy Curriculum Handbook, which prescribes four years of academic training followed by a one-year full-time rotatory internship.

2.7 MEDIUM OF INSTRUCTION

The medium of instruction for the Bachelor of Physiotherapy programme shall be **English**.

All theory instruction, practical and skill-based training, clinical teaching, academic activities, assignments, assessments, examinations, clinical documentation, and other academic requirements shall be conducted in English, except where communication with patients and the public requires the appropriate use of local or other languages for effective patient care.

2.8 PROGRAMME PATTERN

The Bachelor of Physiotherapy programme shall follow an **annual pattern** consisting of four academic years followed by a compulsory one-year rotatory internship.

The programme shall be implemented through a progressive competency-based educational structure that integrates:

- Foundational healthcare learning
- Basic medical sciences
- Movement and functional sciences
- Physiotherapy sciences
- Clinical sciences
- Practical and skill-based training
- Therapeutic interventions
- Supervised clinical learning
- Evidence-based practice
- Self-directed learning
- Research and scholarly activities
- Community and preventive healthcare learning
- Professional and ethical development
- Inter-professional learning
- Clinical case discussion and reflective learning
- Compulsory rotatory internship

The programme shall progressively advance students from foundational knowledge and basic professional competencies towards comprehensive clinical assessment, physiotherapy management, patient education, evidence-informed decision-making, professional responsibility, and entry-level physiotherapy practice.

2.9 INTAKE

The intake capacity for the Bachelor of Physiotherapy programme shall be as approved by:

- Malla Reddy Vishwavidyapeeth (Deemed to be University);
- The appropriate statutory and regulatory authorities;
- The National Commission for Allied and Healthcare Professions, wherever applicable; and
- Other competent authorities governing admissions and programme capacity.

The total number of students admitted in any academic year shall not exceed the intake capacity approved by the competent authorities from time to time.

The intake shall be determined in accordance with the availability of adequate academic infrastructure, qualified faculty, laboratories, clinical facilities, patient exposure, teaching hospitals, affiliated healthcare facilities, and other requirements necessary to ensure quality physiotherapy education and clinical training.

2.10 PROGRAMME COMPONENTS

The Bachelor of Physiotherapy programme shall consist of integrated academic, practical, clinical, professional, and experiential learning components.

The major programme components shall include:

A. Theory Instruction

Theory instruction shall provide the foundational and applied knowledge required for understanding human structure, function, movement, disease, dysfunction, rehabilitation, physiotherapy assessment, intervention, and professional practice.

B. Practical and Skills Training

Students shall undergo structured practical and skills-based training to develop psychomotor competence, procedural skills, patient handling skills, therapeutic application skills, assessment skills, and safe professional practice.

C. Clinical Education

Clinical education shall provide supervised exposure to patients and healthcare settings and facilitate the integration of academic knowledge with clinical assessment, reasoning, intervention planning, patient management, communication, documentation, and professional behaviour.

D. Foundation and Professional Learning

The programme shall include foundational learning designed to establish essential healthcare-related understanding and prepare students for progressive professional education.

E. Self-Directed Learning

Students shall be encouraged to engage in independent learning, reading, reflection, evidence appraisal, and other scholarly activities to promote lifelong learning.

F. Evidence-Based Practice and Research Orientation

Students shall progressively develop the ability to identify, acquire, appraise, and apply relevant scientific evidence to physiotherapy practice.

G. Community and Preventive Healthcare Learning

The programme shall incorporate learning experiences related to health promotion, prevention, community health, rehabilitation, disability, participation, and population health.

H. Professional Development

Students shall develop competencies related to communication, ethics, professional behaviour, teamwork, leadership, management, quality assurance, and lifelong learning.

I. Clinical Academic Activities

Clinical education shall progressively incorporate activities such as clinical observation, demonstrations, case discussions, case presentations, critique enquiry, reflective learning, and other structured academic activities relevant to professional competence.

The NCAHP curriculum integrates foundational learning, academic instruction, skills training, clinical learning, evidence-based practice, and progressive competency development throughout the BPT programme.

2.11 CREDIT SYSTEM

The Bachelor of Physiotherapy programme shall follow a **credit-based competency-oriented academic framework** in accordance with the applicable National Credit Framework principles and University regulations.

Credits shall be assigned to academic and experiential learning components based on the prescribed workload and learning requirements.

The credit framework shall recognize the following broad components:

- Theory and classroom learning
- Tutorials and other structured learning activities
- Practical and laboratory training
- Skills training
- Clinical and experiential learning
- Field and community-based learning
- Other prescribed academic and professional learning activities

In accordance with the credit-hour principles described in the NCAHP Physiotherapy Curriculum Handbook and the National Credit Framework:

- **One credit for theory/classroom learning shall generally correspond to 15 hours of learning.**
- **One credit for practical learning shall generally correspond to 30 hours of learning.**
- **One credit for experiential learning, including clinical and field learning, shall generally correspond to 40–45 hours of learning.**

Credits shall be awarded subject to successful completion of the prescribed academic and experiential requirements of each course or learning component.

The credits and hours completed during the compulsory internship shall also be reflected in the student's academic transcript in accordance with the prescribed curriculum and University regulations.

2.12 TEACHING–LEARNING METHODS

The Bachelor of Physiotherapy programme shall adopt a **learner-centred, competency-based, outcome-oriented, and clinically integrated approach to teaching and learning.**

Teaching and learning methods shall facilitate the progressive development of knowledge, psychomotor skills, clinical reasoning, professional attitudes, communication, ethical behaviour, and independent learning abilities.

The teaching-learning methods may include:

- Interactive lectures
- Tutorials
- Small-group teaching
- Practical demonstrations
- Supervised hands-on practice
- Skills laboratory training
- Clinical demonstrations
- Clinical observation
- Bedside and patient-based teaching
- Case-based learning
- Case discussions
- Problem-based learning
- Simulation-based learning
- Mannequin and simulator-based learning
- Video-based learning
- Technology-enabled learning
- Hybrid learning
- Virtual learning, where appropriate
- Self-directed learning
- Evidence appraisal activities
- Reflective learning
- Peer learning
- Group discussions
- Seminars and presentations
- Clinical academic discussions
- Community-based learning
- Inter-professional learning activities

The teaching-learning process shall not be restricted to classroom contact hours. Students shall be encouraged to undertake self-directed learning and scholarly activities to develop the habits necessary for lifelong learning. Technology, advanced learning tools, mannequins, simulators, videos, hybrid learning, and virtual learning methods may be utilized to enhance the learning experience wherever appropriate.

The NCAHP curriculum specifically promotes competency-based learning, classroom teaching supplemented by self-learning, and the use of technology, hybrid or virtual learning, advanced learning tools, mannequins, simulators, and videos.

2.13 CLINICAL EDUCATION

Clinical education shall form an essential component of the Bachelor of Physiotherapy programme and shall provide students with progressive, supervised exposure to real and simulated clinical environments.

Clinical learning shall facilitate the integration of theoretical knowledge, practical skills, professional attitudes, communication, and clinical reasoning into physiotherapy practice.

Students shall progressively develop competence in:

- Patient consultation and communication
- History taking
- Clinical observation
- Physical examination and assessment
- Identification of impairments and functional limitations
- Interpretation of relevant clinical information
- Clinical reasoning
- Physiotherapy diagnosis within the professional scope
- Goal setting
- Intervention planning
- Selection and application of appropriate physiotherapy interventions
- Monitoring patient response
- Use of outcome measures
- Patient and caregiver education
- Clinical documentation
- Safe handling and patient safety
- Professional communication
- Inter-professional collaboration
- Appropriate referral
- Ethical clinical decision-making
- Quality assurance

Clinical education shall be conducted under appropriate supervision in the teaching hospital, physiotherapy department, affiliated hospitals, approved healthcare facilities, rehabilitation centres, community healthcare settings, and other approved clinical learning environments.

Students shall participate in supervised patient care appropriate to their stage of training and demonstrated level of competence.

Clinical academic activities such as **critique enquiry, case presentation, and case discussion shall form a regular part of clinical education from the third year onwards**, in accordance with the NCAHP curriculum framework.

Clinical learning shall progressively develop students from observation and guided participation towards increasing responsibility and competence in assessment, clinical reasoning, intervention planning, patient management, documentation, communication, teamwork, and professional practice.

2.14 COMPULSORY ROTATORY INTERNSHIP

Every student admitted to the Bachelor of Physiotherapy programme shall undergo a **compulsory full-time rotatory internship of one year** after successfully passing all the prescribed academic examinations and fulfilling the requirements for completion of the four academic years.

No student shall commence the internship until all subjects and academic requirements prescribed for the four academic years have been successfully completed.

The internship shall:

1. Be of one year's duration.
2. Be undertaken on a full-time basis.
3. Follow a rotatory clinical training pattern.
4. Be conducted in the hospital of the teaching institution or in affiliated and approved hospitals or healthcare centres.
5. Be the responsibility of the teaching institution to organize and ensure its successful completion.
6. Include appropriate clinical exposure across major areas of physiotherapy practice.

7. Include mandatory completion of a Basic Life Support (BLS) programme under certified instructors.
8. Include a compulsory **two-month rural/community posting**, preferably in appropriate government or approved healthcare settings such as Community Health Centres, Primary Health Centres, or Rural Rehabilitation Centres.
9. Permit up to **four months of internship training as an externship** in an institution approved by the competent authority, subject to applicable regulations.
10. Require maintenance of a prescribed internship logbook documenting the student's clinical learning and work.
11. Require the logbook and internship records to be verified and certified by the appropriate supervising faculty and institutional authorities.

The NCAHP curriculum prescribes a one-year compulsory rotatory internship, mandatory BLS training, a two-month rural posting, provision for approved externship up to four months, and maintenance of an internship logbook.

The internship shall provide supervised exposure to major areas of physiotherapy practice. The NCAHP curriculum includes rotatory exposure in areas such as:

- Musculoskeletal/Orthopaedic Physiotherapy
- Neurological Physiotherapy
- Community Physiotherapy/Rural Posting
- Cardiology and Intensive Care
- Pulmonology and General Medicine
- Sports Physiotherapy
- Obstetrics and Gynaecological Physiotherapy
- Paediatric Physiotherapy
- Surgery/Oncology
- Burns and Plastic Surgery

During internship, students shall maintain professional discipline and comply with all applicable rules and regulations of the institution and hospital in which they are posted.

Internship assessment shall consider the student's attendance, clinical performance, discipline, knowledge, skills, attitudes, documentation, logbook, and prescribed academic activities.

The NCAHP internship assessment framework includes evaluation of attendance, logbook, and project work, with weightage specified as:

Component	Weightage
Attendance	10%
Logbook	60%
Project	30%

Students shall also undertake prescribed case presentations and project work during internship. The NCAHP curriculum specifies that twelve case presentations are mandatory during the one-year internship and requires completion of supervised project work.

A Certificate of Satisfactory Completion of Internship shall be issued upon successful completion of all prescribed internship requirements. The award of the BPT degree shall be subject to successful completion of the compulsory internship and fulfilment of all applicable academic and regulatory requirements.

2.15 PROFESSIONAL CONDUCT AND ETHICS

Students of the Bachelor of Physiotherapy programme shall maintain the highest standards of professional conduct throughout their academic, practical, clinical, community, and internship training.

Every student shall demonstrate:

- Professional integrity
- Ethical behaviour
- Respect for patient dignity
- Respect for patient rights

- Compassionate and patient-centred care
- Patient confidentiality
- Appropriate professional boundaries
- Informed consent practices within the scope of training
- Respectful communication
- Cultural sensitivity
- Non-discriminatory behaviour
- Accountability
- Punctuality
- Discipline
- Academic integrity
- Responsible use of technology
- Respect for faculty, staff, peers, patients, caregivers, and other healthcare professionals
- Commitment to patient safety
- Commitment to quality care
- Appropriate inter-professional collaboration
- Responsible clinical documentation
- Lifelong learning and professional development

Students shall perform clinical procedures and patient care activities only within their level of competence and under the level of supervision appropriate to their stage of education and training.

Students shall maintain confidentiality of patient information and shall not disclose patient records, photographs, videos, or other personal information except as permitted under applicable institutional, ethical, and legal requirements.

Students shall demonstrate honesty and integrity in examinations, assignments, research activities, clinical documentation, attendance, and all academic and professional activities.

Any form of academic dishonesty, fabrication, falsification, plagiarism, misconduct, harassment, discrimination, abuse, breach of confidentiality, or unethical professional behaviour shall be dealt with in accordance with University regulations and applicable laws and professional standards.

Professional conduct shall remain an integral component of the student's overall competency development and clinical education.

The NCAHP framework emphasizes ethical and professional practice, patient-centred care, effective communication, inter-professional teamwork, appropriate referral, leadership, management, and quality assurance as essential expectations for physiotherapy graduates.

2.16 COMPETENCY-BASED EDUCATION

The Bachelor of Physiotherapy programme shall follow a **Competency-Based Education (CBE) framework** in accordance with the principles of the NCAHP Physiotherapy Curriculum.

Competency-based education emphasizes the demonstrated ability of the student to apply knowledge, skills, attitudes, values, and professional behaviours in academic, practical, clinical, and professional contexts.

The programme shall focus not only on what students know but also on what they are able to **demonstrate and perform safely, effectively, ethically, and consistently**.

The competency-based educational framework shall emphasize the progressive development of:

1. Knowledge Competence

Understanding and application of foundational, clinical, movement, rehabilitation, and physiotherapy sciences.

2. Clinical Skills Competence

Development and demonstration of practical and procedural skills required for physiotherapy assessment and intervention.

3. Clinical Reasoning Competence

Ability to collect, interpret, synthesize, and apply relevant information for clinical decision-making.

4. Patient Assessment Competence

Ability to obtain relevant patient information, conduct appropriate assessments, recognize changes in patient status, and perform assessment procedures safely and accurately.

5. Physiotherapy Management Competence

Ability to formulate appropriate goals and management plans and implement, monitor, modify, and document physiotherapy interventions.

6. Communication Competence

Ability to communicate effectively with patients, caregivers, families, colleagues, and members of the healthcare team.

7. Ethical and Professional Competence

Demonstration of integrity, accountability, ethical behaviour, respect for patient rights, confidentiality, and professional responsibility.

8. Evidence-Based Practice Competence

Ability to acquire, appraise, and apply the best available evidence to clinical decision-making and professional practice.

9. Inter-Professional Competence

Ability to contribute effectively to collaborative and patient-centred healthcare teams and make appropriate referrals.

10. Leadership and Management Competence

Ability to manage self, time, resources, priorities, and professional responsibilities.

11. Quality Assurance Competence

Understanding and application of principles related to quality, standards, processes, patient safety, and continuous improvement in physiotherapy practice.

12. Lifelong Learning Competence

Commitment to self-directed learning, scholarly activity, reflection, continuing professional development, and adaptation to advances in physiotherapy and healthcare.

The NCAHP competency framework identifies expected graduate roles and outcomes in the domains of clinical practice, ethical and professional practice, communication, evidence-based practice and lifelong learning, inter-professional teamwork, leadership and management, and quality assurance.

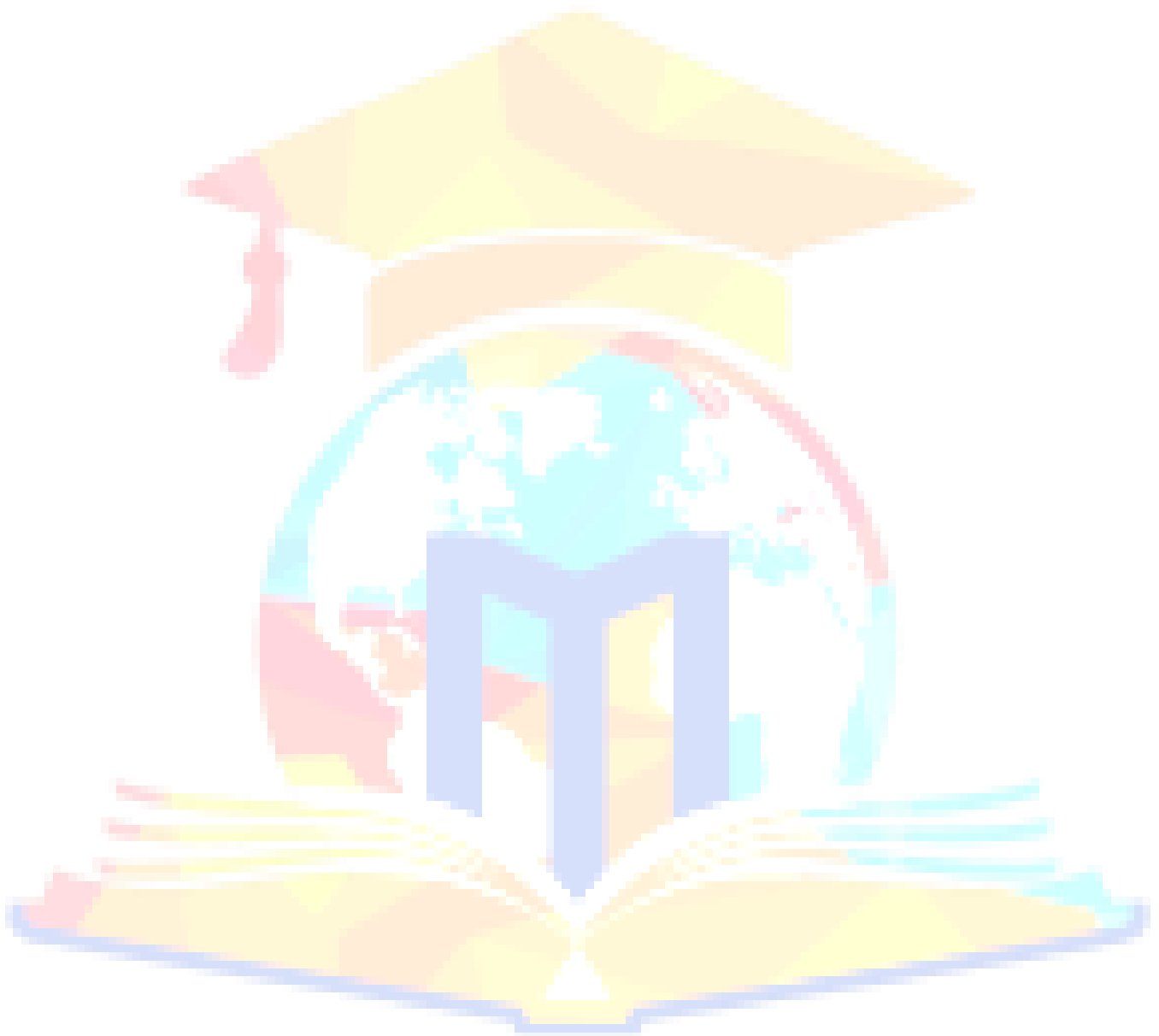
Competencies shall be developed progressively throughout the programme through:

- Theory learning
- Practical and skills training
- Demonstrations
- Simulation
- Clinical observation
- Supervised clinical practice
- Case-based learning
- Case discussions
- Self-directed learning
- Reflective learning
- Evidence appraisal
- Clinical documentation
- Community-based learning
- Clinical presentations
- Internship training

Assessment within the competency-based framework shall evaluate both academic knowledge and the student's ability to demonstrate required skills, clinical reasoning, professional behaviour, communication, and safe physiotherapy practice.

The programme shall progressively move students from foundational learning towards increasingly independent performance of professional activities appropriate to the level of education, demonstrated competence, and required supervision.

The ultimate objective of the competency-based BPT programme is to prepare a graduate who can function as a competent entry-level physiotherapy practitioner capable of providing safe, ethical, evidence-informed, patient-centred, and quality-assured physiotherapy services while continuing to learn and develop throughout professional life.



CHAPTER 3

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs), GRADUATE ATTRIBUTES (GAs), PROGRAMME OUTCOMES (POs), AND PROGRAMME SPECIFIC OUTCOMES (PSOs)**3.1 OUTCOME-BASED EDUCATION (OBE)**

The Bachelor of Physiotherapy (BPT) programme at Malla Reddy Vishwavidyapeeth follows the principles of **Outcome-Based Education (OBE)**, wherein curriculum design, teaching-learning strategies, practical and clinical training, assessment methods, and internship experiences are structured to achieve clearly defined graduate outcomes and professional competencies.

The Outcome-Based Education framework focuses on what students are expected to **know, understand, demonstrate, and perform** at the successful completion of the programme. The curriculum is therefore designed around progressive achievement of knowledge, psychomotor skills, clinical reasoning, communication, ethical behaviour, professional responsibility, evidence-informed practice, teamwork, leadership, and quality assurance.

The competency-based framework prescribed in the NCAHP Physiotherapy Curriculum identifies the entry-level physiotherapist as a professional capable of functioning in multiple roles, including a **Clinician/Physiotherapy Practitioner, Ethical and Professional Practitioner, Communicator, Evidence-Based Practitioner and Lifelong Learner, Inter-Professional Team Member, Leader and Manager, and Quality Assurance Practitioner.**

Accordingly, the BPT programme at Malla Reddy Vishwavidyapeeth is designed to progressively develop these competencies through classroom learning, practical training, skills development, supervised clinical education, evidence-based learning, community engagement, professional development, and compulsory rotatory internship.

The OBE framework establishes a systematic relationship between the institutional and departmental philosophy and measurable student learning outcomes:



This framework ensures that all academic and clinical activities contribute towards the development of a competent, ethical, evidence-informed, compassionate, and professionally responsible entry-level physiotherapist.

The BPT programme also reflects the Department of Physiotherapy's broader educational and professional development philosophy:

LEARN → PRACTISE → INNOVATE → COLLABORATE → LEAD → SERVE → TRANSFORM

This integrated framework emphasizes competency-based learning, evidence-based clinical practice, research and innovation, interdisciplinary collaboration, professional leadership, community engagement, and the ultimate objective of improving human movement, function, functional independence, participation, and quality of life.

3.2 PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Within three to five years after graduation, Bachelor of Physiotherapy graduates from Malla Reddy Vishwavidyapeeth are expected to:

PEO 1 – Clinical Competence and Professional Practice

Demonstrate competence as physiotherapy practitioners capable of providing safe, ethical, patient-centred, culturally responsive, and evidence-informed physiotherapy care through appropriate assessment, clinical reasoning, intervention planning, implementation, evaluation, and modification of physiotherapy management.

PEO 2 – Professionalism and Ethical Responsibility

Function as accountable, compassionate, ethical, and professionally responsible healthcare practitioners who uphold patient dignity, professional standards, legal and regulatory requirements, and principles of quality and patient safety.

PEO 3 – Evidence-Based Practice and Lifelong Learning

Apply scientific knowledge and the best available evidence to physiotherapy practice, engage in critical inquiry and reflective learning, and continually develop professional knowledge and competence through lifelong learning and continuing professional development.

PEO 4 – Collaboration, Leadership and Healthcare Contribution

Function effectively as members of inter-professional healthcare teams and progressively contribute to leadership, communication, management, quality improvement, and effective delivery of physiotherapy and rehabilitation services.

PEO 5 – Community Engagement and Societal Contribution

Contribute to health promotion, prevention, rehabilitation, disability management, community engagement, and socially responsible healthcare services, with the objective of improving movement, function, participation, independence, and quality of life across diverse populations.

3.3 GRADUATE ATTRIBUTES (GAs)

Graduates of the Bachelor of Physiotherapy programme shall possess the following attributes:

GA1 – Disciplinary Knowledge

Possess a sound foundation in basic medical sciences, movement sciences, clinical sciences, physiotherapy sciences, and rehabilitation required for entry-level professional physiotherapy practice.

GA2 – Clinical Reasoning and Decision-Making

Demonstrate the ability to collect, interpret, analyse, synthesize, and apply relevant clinical information to support appropriate physiotherapy assessment, clinical reasoning, decision-making, intervention planning, and evaluation.

GA3 – Clinical and Psychomotor Competence

Demonstrate competence in relevant assessment procedures, therapeutic techniques, patient handling, exercise prescription, therapeutic modalities, rehabilitation interventions, and other physiotherapy skills appropriate to entry-level practice.

GA4 – Evidence-Based Practice

Demonstrate the ability to identify, acquire, critically appraise, and appropriately apply scientific evidence to clinical decision-making and physiotherapy practice.

GA5 – Communication and Interpersonal Skills

Communicate effectively, respectfully, and compassionately with patients, caregivers, families, peers, faculty, colleagues, and members of inter-professional healthcare teams.

GA6 – Ethical and Professional Practice

Demonstrate integrity, accountability, ethical behaviour, professional responsibility, respect for patient rights, confidentiality, appropriate professional boundaries, and commitment to safe and patient-centred care.

GA7 – Teamwork and Inter-Professional Collaboration

Work effectively as a collaborative member of healthcare and rehabilitation teams and contribute appropriately to coordinated, comprehensive, and patient-centred care.

GA8 – Leadership and Management

Demonstrate the ability to manage self, time, resources, priorities, and professional responsibilities while developing appropriate leadership and management capabilities.

GA9 – Health Promotion and Community Engagement

Contribute to health promotion, prevention, community healthcare, rehabilitation, disability management, and socially responsible professional services.

GA10 – Digital and Technological Competence

Demonstrate the ability to appropriately utilize contemporary technologies, digital resources, information systems, and technology-enabled approaches relevant to physiotherapy education and professional practice.

GA11 – Quality and Patient Safety

Demonstrate awareness of quality standards, quality assurance, patient safety, clinical documentation, and continuous improvement in physiotherapy practice.

GA12 – Research Awareness and Innovation

Demonstrate research awareness, scientific inquiry, critical thinking, and an openness towards innovation and emerging developments in rehabilitation sciences and physiotherapy.

GA13 – Lifelong Learning

Demonstrate self-directed learning, reflective practice, adaptability, professional curiosity, and commitment to continuous personal and professional development.

GA14 – Social Responsibility and Global Outlook

Demonstrate cultural sensitivity, social responsibility, community orientation, and an understanding of evolving national and global healthcare needs.

3.4 PROGRAMME OUTCOMES (POs)

Upon successful completion of the Bachelor of Physiotherapy programme, graduates shall be able to:

PO1 – Physiotherapy Knowledge and Clinical Application

Apply knowledge of basic medical sciences, movement sciences, clinical sciences, physiotherapy sciences, and rehabilitation principles to understand human movement, health, disease, dysfunction, disability, and functional limitations and to support physiotherapy practice.

PO2 – Patient Assessment and Clinical Reasoning

Perform appropriate physiotherapy assessment by obtaining relevant information, examining and evaluating impairments, activity limitations, and participation restrictions, interpreting relevant findings, and applying clinical reasoning to formulate appropriate physiotherapy decisions.

PO3 – Physiotherapy Intervention and Patient Management

Plan, implement, evaluate, monitor, and appropriately modify patient-centred physiotherapy management using relevant therapeutic interventions, exercises, modalities, assistive devices, aids, appliances, support systems, and other interventions within the scope of professional practice.

PO4 – Health Promotion and Prevention

Promote health and implement evidence-informed strategies to prevent and minimize impairments, activity limitations, participation restrictions, and functional decline among individuals and populations.

PO5 – Evidence-Based Practice

Identify, acquire, critically appraise, and appropriately apply the best available scientific evidence to physiotherapy assessment, clinical decision-making, intervention, and professional practice.

PO6 – Ethical and Professional Practice

Demonstrate commitment to ethical and professional physiotherapy practice by incorporating applicable legal, ethical, regulatory, and professional standards into patient care and professional decision-making.

PO7 – Communication and Documentation

Communicate effectively with patients, caregivers, colleagues, healthcare professionals, and other stakeholders and maintain appropriate documentation of physiotherapy assessment, management plans, interventions, modifications, and evaluation.

PO8 – Inter-Professional Teamwork

Function effectively as a member of an inter-professional healthcare team and collaborate with patients, caregivers, healthcare providers, and other stakeholders in planning and delivering holistic and patient-centred care.

PO9 – Leadership and Management

Demonstrate the ability to manage self, time, resources, priorities, and professional responsibilities and contribute appropriately to leadership and management within physiotherapy and healthcare services.

PO10 – Quality Assurance and Patient Safety

Apply principles of quality assurance, quality improvement, patient safety, standards, and appropriate professional processes to support safe and effective physiotherapy services.

PO11 – Research, Innovation and Technological Awareness

Demonstrate the ability to engage in scientific inquiry, understand research evidence, appreciate innovation, and appropriately utilize relevant technologies and emerging developments in physiotherapy and rehabilitation practice.

PO12 – Lifelong Learning and Professional Development

Engage in self-directed learning, reflection, continuing professional development, and ongoing improvement of professional knowledge, skills, attitudes, and practice.

The core PO domains are aligned with the intended NCAHP programme outcomes and broader competencies for physiotherapists, including clinical practice, ethical and professional practice, communication, evidence-based practice and lifelong learning, inter-professional teamwork, leadership and management, and quality assurance.

3.5 PROGRAMME SPECIFIC OUTCOMES (PSOs)

Upon successful completion of the Bachelor of Physiotherapy programme, graduates shall be able to:

PSO1 – Comprehensive Physiotherapy Assessment and Management

Perform comprehensive physiotherapy assessment and evaluation to identify impairments, activity limitations, participation restrictions, and functional problems, and develop appropriate physiotherapy management plans based on clinical findings and patient needs.

PSO2 – Evidence-Informed Therapeutic Intervention

Select, prescribe or apply, as appropriate within the professional scope, and safely implement evidence-informed physiotherapeutic interventions including therapeutic exercises, physical modalities, manual and other therapeutic techniques, assistive devices, aids, appliances, support systems, and relevant rehabilitation strategies.

PSO3 – Functional Rehabilitation and Participation

Design and implement physiotherapy and rehabilitation strategies aimed at optimizing movement, function, functional independence, activity, participation, health, and quality of life across diverse age groups and clinical conditions.

PSO4 – Patient-Centred and Contextually Appropriate Care

Provide patient-centred and culturally responsive physiotherapy care by involving patients, caregivers, and relevant healthcare providers in clinical decision-making and considering individual, social, local, cultural, and environmental factors.

PSO5 – Prevention, Community and Population Health

Apply physiotherapy knowledge and skills in health promotion, prevention, community healthcare, disability management, rehabilitation, and population-based strategies to address movement and functional health needs.

PSO6 – Professional Physiotherapy Practice

Function as an entry-level physiotherapy practitioner demonstrating safe practice, ethical responsibility, effective communication, appropriate documentation, professional accountability, teamwork, evidence-based decision-making, and commitment to lifelong professional development.

3.6 ALIGNMENT OF THE OBE FRAMEWORK

The Outcome-Based Education framework of the BPT programme establishes alignment between institutional aspirations, departmental priorities, programme objectives, graduate attributes, programme outcomes, course outcomes, learning experiences, assessment, and demonstrated professional competence.

The alignment framework is illustrated as follows:



Alignment with the MRV Institutional Framework

The programme is designed to support the University's strategic orientation towards value-based education, innovation, skill development, outcome-based education, collaboration, employability, and global engagement.

Alignment with the Department of Physiotherapy Framework

The BPT curriculum supports the Department's educational philosophy of developing competent, ethical, compassionate, evidence-informed, and globally competitive physiotherapy professionals.

The integrated departmental framework:

LEARN → PRACTISE → INNOVATE → COLLABORATE → LEAD → SERVE → TRANSFORM

provides an overarching developmental perspective for the programme:

- **LEARN:** Development of foundational knowledge, professional knowledge, values, and clinical reasoning.
- **PRACTISE:** Development of clinical skills, supervised patient care, evidence-informed physiotherapy practice, and rehabilitation competence.
- **INNOVATE:** Development of scientific inquiry, research awareness, innovation, rehabilitation science, digital health, and technological competence.
- **COLLABORATE:** Development of inter-professional practice and engagement with hospitals, rehabilitation centres, healthcare institutions, sports organizations, industry, and research networks.
- **LEAD:** Development of ethics, communication, leadership, management, entrepreneurship, professional responsibility, and lifelong learning.

- **SERVE:** Development of commitment towards community engagement, prevention, public health, social responsibility, and inclusive rehabilitation.
- **TRANSFORM:** Contribution towards improved human movement, function, functional independence, participation, health, and quality of life.

The OBE framework therefore ensures that the BPT curriculum is not limited to academic knowledge acquisition but is systematically directed towards measurable professional competence and meaningful healthcare contribution.

3.7 CONTINUOUS QUALITY IMPROVEMENT (CQI)

Continuous Quality Improvement (CQI) shall form an integral component of the Outcome-Based Education framework of the Bachelor of Physiotherapy programme.

The programme shall be periodically reviewed to ensure that curriculum design, teaching-learning strategies, clinical education, assessment practices, infrastructure, student support, faculty development, and professional training remain aligned with:

- Programme Educational Objectives
- Graduate Attributes
- Programme Outcomes
- Programme Specific Outcomes
- Course Outcomes
- NCAHP competency requirements
- University regulations
- Departmental vision and mission
- Advances in physiotherapy and rehabilitation sciences
- Healthcare and societal needs
- Feedback from relevant stakeholders

CQI shall be supported through systematic evaluation of:

1. Student academic performance.
2. Achievement of course outcomes.
3. Achievement of programme outcomes and programme specific outcomes.
4. Clinical competency development.
5. Internship performance.
6. Student feedback.
7. Faculty feedback.
8. Alumni feedback.
9. Employer and healthcare stakeholder feedback.
10. Clinical supervisor feedback.
11. Curriculum review.
12. Assessment analysis.
13. Research and scholarly activities.
14. Faculty development initiatives.
15. Infrastructure and clinical resource requirements.

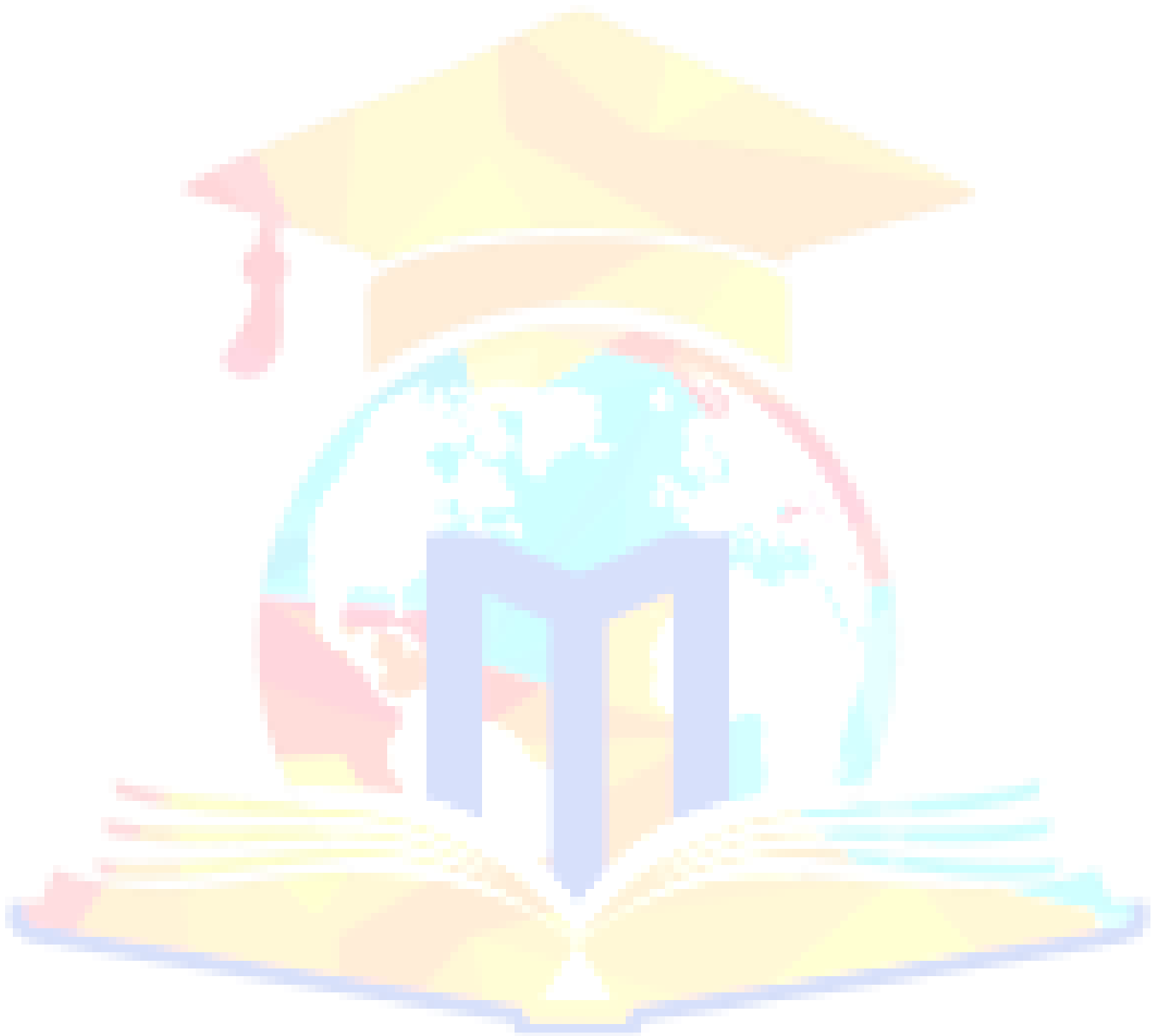
The findings obtained through these processes shall be analysed and utilized for appropriate improvement in curriculum delivery, teaching-learning practices, clinical education, assessment strategies, academic support systems, and professional development initiatives.

The CQI process shall follow a continuous cycle:

PLAN → IMPLEMENT → ASSESS → ANALYSE → IMPROVE → REVIEW

Through this process, the BPT programme shall remain responsive to evolving professional standards, healthcare requirements, advances in physiotherapy and rehabilitation sciences, emerging technologies, evidence-based practice, and the changing needs of society.

The ultimate objective of Continuous Quality Improvement is to ensure that graduates consistently achieve the expected entry-level competencies and are prepared to contribute safely, ethically, effectively, and meaningfully to physiotherapy practice and healthcare services.



CHAPTER 4

ACADEMIC AND EXAMINATION REGULATIONS

4.1 ACADEMIC YEAR AND COMMENCEMENT OF THE PROGRAMME

The Bachelor of Physiotherapy programme shall follow an **annual academic pattern**.

The academic training component shall consist of four academic years, with each academic year comprising a minimum of: **38 weeks per year × 6 days per week × 6 hours per day** of academic training, excluding internal and University examinations, extracurricular activities, public holidays, and vacations.

The BPT programme shall commence not later than **1st September of an academic year**, in accordance with the NCAHP Physiotherapy Curriculum.

The academic calendar for each year shall include, as applicable:

- Theory and practical instruction
- Skills training
- Clinical education and postings
- Internal assessments
- Mid-term examinations
- Seminars and academic activities
- Case-based and clinical learning activities
- Community-based learning activities
- University/Annual examinations
- Supplementary examinations
- Vacation periods
- Other academic and professional activities prescribed by the University

4.2 ATTENDANCE REQUIREMENTS

Attendance is compulsory for all prescribed academic and skills training activities.

A candidate shall be required to secure the following minimum attendance to become eligible to appear for the final examination:

Component	Minimum Attendance Required
Theory Subjects	75%
Skills Training / Practical	85%

No relaxation whatsoever shall be permissible in the prescribed attendance requirements under any ground, including indisposition or illness.

Students who fail to satisfy the prescribed attendance requirements shall not be eligible to appear for the relevant final examination.

Attendance shall be monitored and maintained separately for theory and skills/practical training in accordance with the applicable academic requirements.

4.3 INTERNAL ASSESSMENT

The programme shall follow a system of **Continuous Internal Assessment (CIA)** as the formative component of student evaluation.

Continuous Internal Assessment shall be undertaken by the academic staff based on the student's performance throughout the training programme.

The assessment process shall take into consideration the student's:

- Theoretical performance
- Practical and skills performance
- Clinical performance, wherever applicable
- Written assignments

- Project work
- Other prescribed academic activities
- Attendance and related components included under the internal assessment framework

All relevant assessment records and feedback shall be included and evaluated as part of the continuous assessment process.

Internal Assessment Weightage

Each paper shall carry:

Component	Weightage
Internal Assessment	20%
University/External Examination	80%
Total	100%

The internal assessment component shall be distributed as follows:

Internal Assessment Component	Weightage within Internal Assessment
Written Examination / Assignment / Project Work / Attendance, etc.	40%
Two Mid-Term Tests – Best of the Two	60%
Total	100%

The Continuous Internal Assessment is intended to provide formative evaluation and enable ongoing assessment of student learning and performance.

4.4 UNIVERSITY EXAMINATION

University examinations shall be conducted at the end of each academic year.

The University shall conduct the prescribed examinations in accordance with the annual examination pattern and applicable University regulations with **two examinations in an academic year are essential**, including an **Annual/Supplementary Examination**.

University examinations shall assess the prescribed knowledge, skills, practical competence, and other components relevant to the particular course or subject.

The examination pattern, marks distribution, theory, viva, practical, and clinical components shall be as prescribed in the respective examination scheme and applicable University regulations.

4.5 THEORY EXAMINATION

The theory examination shall assess the student's understanding, application, analysis, and integration of the prescribed subject content.

Theory examinations shall be conducted according to the examination scheme prescribed for the respective BPT subjects.

The theory examination shall normally include the University/External Examination component carrying **80% of the total marks**, while the remaining **20%** shall be contributed through the Continuous Internal Assessment.

The University examination may assess, as appropriate to the course:

- Knowledge and understanding
- Application of scientific principles
- Clinical reasoning
- Problem-solving ability
- Interpretation and analysis
- Evidence-informed decision-making

- Professional understanding relevant to physiotherapy practice

The detailed structure of question papers shall be governed by the applicable University examination regulations and the prescribed course examination scheme.

4.6 PRACTICAL / SKILLS EXAMINATION

Practical and skills examinations shall assess the student's ability to demonstrate the required psychomotor, procedural, clinical, and professional competencies.

Practical examinations may assess, as applicable:

- Practical skills
- Demonstration of procedures
- Patient assessment skills
- Examination techniques
- Therapeutic intervention skills
- Clinical reasoning
- Interpretation of findings
- Communication skills
- Patient handling and safety
- Professional behaviour
- Viva voce
- Other competencies prescribed for the course

Students shall be assessed on their ability to perform skills safely, appropriately, and in accordance with the level of competence expected for the respective stage of training.

Practical and theory components shall be considered separately for the purpose of passing, as prescribed under the NCAHP assessment regulations.

4.7 PASSING CRITERIA

A candidate shall be declared to have passed a subject only when the prescribed minimum requirements are fulfilled.

The passing requirement for every subject shall be:

- **50% marks in Theory**
- **50% marks in Practical/Skills Examination**

Theory and practical examinations shall be passed **separately**.

A candidate shall therefore obtain not less than **50% marks in theory and 50% marks in practical separately** in order to be declared as having passed the examination.

If a candidate fails in either the theory or practical examination of a subject, the candidate shall be required to reappear for **both theory and practical examinations**.

4.8 PROMOTION CRITERIA

A candidate shall be permitted to progress to the next academic year subject to fulfilment of the prescribed academic and attendance requirements.

A student may be permitted to proceed to the next academic year only when the number of failed subjects is **two or less**.

The student shall, however, clear all the failed subjects before appearing for the final examination of the subsequent academic year.

The promotion requirement may therefore be summarized as follows:

1. A candidate shall be declared to have passed a subject by obtaining not less than 50% marks in theory and practical separately.
2. A student with **not more than two failed subjects** may be permitted to proceed to the next academic year.

3. All failed subjects shall be cleared before appearing for the final examination of the subsequent academic year.
4. A candidate shall be permitted to commence the compulsory internship only after passing **all subjects of all four academic years**.

4.9 RE-EXAMINATION / SUPPLEMENTARY EXAMINATION

A candidate who fails to pass the prescribed examination shall be required to appear for the relevant subsequent examination in accordance with the University examination schedule and regulations.

The University shall conduct the required Annual/Supplementary Examination as part of the prescribed examination pattern.

Where a candidate fails in either the theory or practical component of a subject, the candidate shall reappear for **both the theory and practical examinations** of that subject.

Eligibility to appear for supplementary or subsequent examinations shall be governed by the applicable University regulations, attendance requirements, and other prescribed academic requirements.

4.10 REVIEW OF ANSWER PAPERS

Review of answer papers of failed candidates shall be permitted in accordance with the regulations and procedures prescribed by the competent Commission and/or the University.

Applications for review, scrutiny, or other permitted examination-related processes shall be submitted in accordance with the procedures, timelines, fees, and conditions prescribed by the University from time to time. The outcome of any review shall be governed by the applicable examination regulations and the decision of the competent authority.

4.11 BREAK OF STUDY AND RE-ADMISSION

Candidates who discontinue their studies and subsequently seek re-admission shall be governed by the following provisions:

4.11.1 Break of Study

Candidates having a break of study of **five years or above from the date of admission**, and candidates having **more than two spells of break**, shall not be considered for re-admission.

4.11.2 Calculation of Break Period

The five-year period of break of study shall be calculated from the date of the candidate's first admission to the programme for the purpose of subsequent spells of break of study.

4.11.3 Eligibility for Re-Admission

Candidates having a break of study may be considered for re-admission provided that:

- They have not been subjected to disciplinary action; and
- No disciplinary charges are pending or contemplated against them.

4.11.4 Approval for Re-Admission

All re-admissions shall be subject to the approval of a duly empowered committee of the University constituted by the Vice-Chancellor.

4.11.5 Exemption in Passed Subjects

Candidates having a break of study of up to five years shall apply for re-admission to the appropriate authority of the University.

Such candidates shall be granted exemption in the subjects that they have already passed, subject to the applicable regulations and approval of the competent authority.

4.12 MAXIMUM DURATION OF THE PROGRAMME

A candidate shall complete the Bachelor of Physiotherapy degree programme within a maximum period of **ten years from the date of joining the course**.

A student who is unable to complete the programme and qualify for the degree by passing the prescribed examinations within the maximum period prescribed shall be discharged from the programme in accordance with the applicable regulations.

Such a candidate shall:

- Be discharged from the programme;
- Have his/her name removed from the rolls of the University; and
- Not be permitted to attend classes or appear for subsequent examinations conducted by the University.

The NCAHP Physiotherapy Curriculum also provides that where internship is prescribed and a student is unable to complete the internship within **two years**, such cases may be placed before the appropriate competent committee for a decision on a case-by-case basis based on individual merit.

Students falling within the applicable final-year category may be provided the additional final opportunity prescribed under the relevant regulations, subject to the conditions and undertaking required by the competent University authority.

4.13 MIGRATION / TRANSFER OF CANDIDATES

Migration or transfer of candidates shall be governed by the applicable regulations of the University and competent statutory or regulatory authorities.

For students of Malla Reddy Vishwavidyapeeth, migration or transfer shall therefore be subject to:

- Applicable University regulations;
- NCAHP and other statutory requirements;
- Availability of seats and academic facilities;
- Equivalence of the curriculum and completed academic requirements; and
- Approval of the competent authorities.

No migration or transfer shall be permitted in violation of applicable regulatory requirements.

4.14 INTERNSHIP COMPLETION REQUIREMENTS

Every candidate shall successfully complete the prescribed **one-year full-time compulsory rotatory internship** after successful completion of all four academic years and all prescribed examinations.

A student shall not commence internship until all subjects of all four academic years have been successfully passed.

Successful completion of the internship shall require fulfilment of the prescribed:

- Internship duration;
- Rotatory clinical postings;
- Attendance requirements;
- Clinical responsibilities;
- Internship logbook requirements;
- Case presentations;
- Project work;
- Basic Life Support requirements;
- Rural/community posting requirements;
- Internship assessment requirements; and
- Other requirements prescribed by the University and applicable regulatory authorities.

The NCAHP internship assessment framework includes assessment of attendance, logbook, and project work as prescribed in the internship regulations.

A candidate shall be considered to have successfully completed the internship only after obtaining satisfactory certification from the appropriate supervising and institutional authorities.

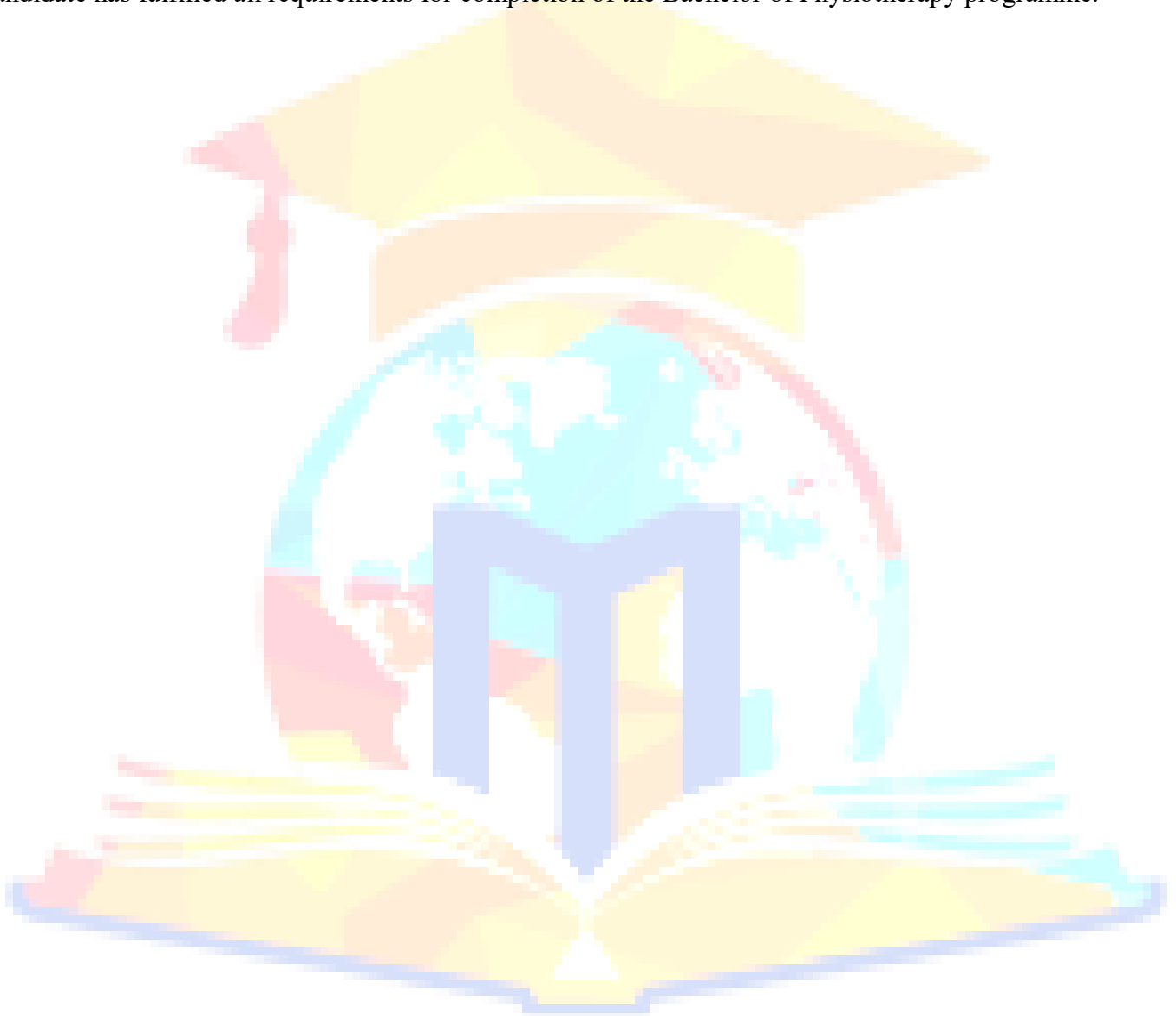
4.15 DECLARATION OF RESULTS AND AWARD OF DEGREE

The results of the University examinations shall be declared by the competent examination authority of Malla Reddy Vishwavidyapeeth in accordance with the applicable examination regulations.

A candidate shall be eligible for the award of the degree of **BACHELOR OF PHYSIOTHERAPY (BPT)** only after:

1. Successfully completing all prescribed academic years;
2. Passing all theory and practical/skills examinations as prescribed;
3. Fulfilling all attendance requirements;
4. Completing all prescribed academic, practical, and clinical requirements;
5. Successfully completing the compulsory rotatory internship; and
6. Fulfilling all other requirements prescribed by the University and applicable statutory and regulatory authorities.

The degree shall be awarded by **Malla Reddy Vishwavidyapeeth (Deemed to be University)** after the candidate has fulfilled all requirements for completion of the Bachelor of Physiotherapy programme.



CHAPTER 5

TEACHING–LEARNING, ASSESSMENT AND CLINICAL COMPETENCY FRAMEWORK

5.1 INTRODUCTION

The Bachelor of Physiotherapy (BPT) programme at **Malla Reddy Vishwavidyapeeth** adopts a competency-based, learner-centred and outcome-oriented educational approach for preparing graduates capable of functioning as competent entry-level physiotherapy professionals.

The teaching–learning process integrates theoretical knowledge, practical and psychomotor skill acquisition, clinical reasoning, patient-centred care, communication, professionalism, evidence-based practice, inter-professional collaboration, community engagement and lifelong learning.

The educational process is designed to ensure progressive development from foundational knowledge and skills to supervised clinical practice and ultimately to entry-level professional competence.

The framework follows the progression:

KNOW → UNDERSTAND → APPLY → PRACTISE → PERFORM → DEMONSTRATE COMPETENCE

The competency-based approach emphasizes assessment of the three essential domains required for professional practice:

- **Knowledge**
- **Skills**
- **Attitudes and Professional Behaviour**

The NCAHP Physiotherapy Curriculum emphasizes that competency-based assessment should evaluate performance and not merely theoretical knowledge.

5.2 TEACHING–LEARNING PHILOSOPHY

The BPT programme is based on the following educational principles:

➤ **Competency-Based Education**

Learning is directed towards the achievement of clearly defined professional competencies required for entry-level physiotherapy practice.

➤ **Outcome-Based Education**

Teaching, learning and assessment are aligned with Graduate Attributes, Programme Outcomes, Programme Specific Outcomes and Course Outcomes.

➤ **Learner-Centred Education**

Students are encouraged to actively participate in their learning through discussion, enquiry, practice, reflection and self-directed learning.

➤ **Experiential Learning**

Students learn through progressive practical exposure, clinical observation, patient interaction, supervised practice and clinical experience.

➤ **Skill-Based Learning**

Practical and psychomotor skills are developed through demonstration, guided practice, repeated performance and competency assessment.

➤ **Clinical Reasoning**

Students progressively develop the ability to collect information, analyse clinical findings, identify problems, formulate physiotherapy decisions, establish goals and plan appropriate interventions.

➤ **Evidence-Based Practice**

Students are encouraged to integrate scientific knowledge, clinical expertise and relevant evidence in professional decision-making.

➤ Reflective Practice

Reflection on learning experiences, clinical performance, professional behaviour and patient management is encouraged throughout the programme.

➤ Inter-Professional Learning

Students develop the ability to communicate and collaborate with members of the healthcare and rehabilitation team.

➤ Lifelong Learning

The programme promotes self-directed learning, professional curiosity, adaptability and continuous professional development.

5.3 TEACHING–LEARNING STRATEGIES

The programme utilizes multiple teaching–learning approaches to facilitate knowledge acquisition, skill development and professional competency.

A. Classroom Teaching

- Interactive lectures
- Small-group discussions
- Tutorials
- Question-and-answer sessions
- Integrated teaching
- Flipped classroom learning
- Audio-visual learning
- Concept-based teaching

B. Case-Based Learning

Students learn through discussion and analysis of clinical cases to develop:

- Problem identification
- Clinical reasoning
- Decision-making
- Integration of theoretical and clinical knowledge

C. Problem-Based Learning

Students are encouraged to analyse problems, identify learning needs, search for information and formulate solutions.

D. Practical Demonstrations

Faculty demonstrate practical procedures and students subsequently practise the procedures under supervision.

E. Skills Laboratory Training

Skills laboratories provide opportunities for students to:

- Learn procedures in a controlled environment
- Practise psychomotor skills
- Develop confidence
- Receive feedback
- Repeat procedures before patient application

F. Simulation-Based Learning

Simulation, mannequins and other appropriate training models may be used to facilitate safe learning and repeated practice of selected clinical and procedural skills.

G. Clinical Teaching

Clinical teaching includes:

- Bedside teaching
- Outpatient teaching
- Ward-based learning
- Clinical demonstrations
- Supervised patient assessment

- Supervised intervention
- Clinical reasoning sessions
- Case discussions

H. Self-Directed Learning

Students are encouraged to identify learning needs, access appropriate resources and independently strengthen their knowledge and professional competence.

I. Digital and E-Learning

Appropriate digital learning resources may be used to support academic learning, including:

- Learning management systems
- Digital resources
- Online academic material
- Evidence databases
- Educational videos
- Virtual learning resources

J. Community-Based Learning

Students learn through exposure to community health, prevention, rehabilitation, disability management and population health needs.

5.4 THEORY-BASED LEARNING

Theory-based learning provides the scientific, clinical and professional knowledge required for physiotherapy practice.

Theoretical instruction shall progressively integrate:

Foundational Sciences

- Anatomy
- Physiology
- Biochemistry
- Pathology
- Microbiology
- Pharmacology

Movement and Physiotherapy Sciences

- Biomechanics
- Kinesiology
- Exercise therapy
- Electrotherapy
- Physical and functional diagnosis

Clinical Sciences

- Medicine
- Pediatrics
- Surgery
- Orthopedics
- Neurology
- Neurosurgery
- Psychiatry
- Cardiothoracic diseases and surgeries

Applied Physiotherapy

- Medical physiotherapy
- Surgical physiotherapy
- Orthopedic physiotherapy
- Neurological physiotherapy
- Cardiothoracic physiotherapy

- Sports physiotherapy
- Community physiotherapy

Professional and Scholarly Learning

- Public health
- Health promotion
- Ethics
- Medico-legal aspects
- Management and administration
- Research methodology
- Biostatistics
- Evidence-based practice

Theory teaching shall progressively move beyond factual knowledge towards application, analysis, clinical reasoning and professional decision-making.

5.5 PRACTICAL AND SKILLS-BASED LEARNING

Practical education forms an essential component of the BPT programme.

Students shall acquire practical skills through a progressive process consisting of:

1. Demonstration

The faculty member demonstrates the required skill and explains:

- Purpose
- Indications
- Precautions
- Procedure
- Safety considerations
- Expected outcomes

2. Guided Practice

Students practise the skill under direct faculty supervision.

3. Repeated Practice

Students are provided opportunities to repeatedly perform the skill to improve proficiency and confidence.

4. Supervised Performance

Students perform the skill independently under supervision.

5. Competency Assessment

Students demonstrate their ability to perform the skill safely, appropriately and consistently. The NCAHP teaching framework identifies learning through patients, mannequins, simulators and supervised tasks as important approaches for acquiring and practising physiotherapy skills.

Practical learning may include skills related to:

- Physical examination
- Functional assessment
- Measurement of joint range of motion
- Assessment of muscle strength
- Postural assessment
- Gait assessment
- Balance assessment
- Coordination assessment
- Therapeutic exercise
- Electrotherapy
- Patient positioning and handling
- Joint mobilization
- Chest physiotherapy
- Functional activities

- Other prescribed physiotherapy interventions

5.6 CLINICAL EDUCATION AND EXPERIENTIAL LEARNING

Clinical education provides the essential bridge between classroom learning and professional physiotherapy practice.

Students shall progressively participate in:

- Clinical orientation
- Clinical observation
- Structured clinical education
- Supervised patient assessment
- Supervised intervention
- Clinical rotation
- Compulsory rotatory internship

Clinical education shall provide opportunities for students to develop competence in:

- Patient interaction
- History taking and interview
- Physical examination
- Functional assessment
- Identification of physiotherapy problems
- Clinical reasoning
- Goal setting
- Treatment planning
- Implementation of intervention
- Monitoring of patient response
- Outcome measurement
- Documentation
- Patient education
- Professional communication

The clinical learning process shall progressively increase in complexity and responsibility as students advance through the programme.

5.7 CLINICAL COMPETENCY DEVELOPMENT

Clinical competency development shall be progressive and appropriate to the student's stage of education.

The progression shall follow:

Level 1 – Knowledge

The student understands the scientific and theoretical basis of the skill or clinical procedure.

Level 2 – Demonstration

The student observes and understands how the skill is performed.

Level 3 – Guided Performance

The student performs the skill under close supervision.

Level 4 – Supervised Clinical Performance

The student performs the skill with real or simulated patients under appropriate supervision.

Level 5 – Demonstrated Competence

The student consistently demonstrates safe, appropriate and effective performance at the expected level of training.

Clinical competency development shall include the integration of:

Knowledge + Psychomotor Skills + Clinical Reasoning + Communication + Professional Behaviour

5.8 COMPETENCY-BASED ASSESSMENT

Assessment in the BPT programme shall evaluate the extent to which students have achieved the prescribed learning outcomes and professional competencies.

Competency-based assessment shall evaluate:

Knowledge

The student's understanding and application of relevant scientific and professional knowledge.

Skills

The student's ability to safely and correctly perform practical, procedural and clinical skills.

Attitudes and Professional Behaviour

The student's demonstration of:

- Professionalism
- Ethical behaviour
- Responsibility
- Respect
- Communication
- Teamwork
- Patient-centred behaviour
- Commitment to learning

The assessment process shall therefore extend beyond traditional written examinations and evaluate actual performance of professional competencies.

5.9 CONTINUOUS INTERNAL ASSESSMENT

Continuous Internal Assessment shall be conducted throughout the academic year to monitor student progress and provide formative feedback.

Internal assessment may include:

- Written examinations
- Mid-term examinations
- Assignments
- Practical assessments
- Skills assessments
- Oral examinations
- Viva voce
- Case discussions
- Clinical presentations
- Academic activities
- Project-related activities, where applicable
- Attendance and other prescribed components

Internal assessment shall support:

- Continuous monitoring of learning
- Identification of learning gaps
- Feedback
- Remediation
- Improvement in student performance

The prescribed internal assessment weightage and examination requirements shall be governed by the academic and examination regulations of the programme.

5.10 THEORY ASSESSMENT

Theory assessment shall evaluate the student's ability to demonstrate:

- Knowledge
- Understanding

- Application
- Analysis
- Problem-solving
- Clinical reasoning
- Integration of knowledge

Appropriate theory assessment methods may include:

- Written examinations
- Structured short-answer questions
- Long-answer questions
- Applied questions
- Case-based questions
- Problem-solving questions
- Viva voce
- Assignments

Theory assessment shall progressively emphasize application of knowledge rather than simple recall.

5.11 PRACTICAL AND CLINICAL ASSESSMENT

Practical and clinical assessments shall evaluate actual performance of skills and professional activities.

Assessment may include:

- Demonstration of procedures
- Practical examination
- Patient assessment
- Clinical case examination
- Oral examination
- Viva voce
- Skill assessment
- Observation of performance
- Case presentation

Students shall be assessed on:

- Preparation
- Technical performance
- Accuracy
- Safety
- Clinical reasoning
- Communication
- Professional behaviour
- Ability to interpret findings
- Appropriate intervention planning
- Patient education
- Documentation

5.12 WORKPLACE-BASED ASSESSMENT

Clinical performance may be assessed in authentic or supervised clinical environments.

Workplace-based assessment may evaluate the student's ability to:

- Interact with patients
- Obtain relevant clinical information
- Perform examination
- Conduct functional assessment
- Identify physiotherapy problems
- Formulate goals

- Plan interventions
- Implement physiotherapy interventions
- Monitor outcomes
- Communicate with patients and healthcare professionals
- Maintain professional behaviour

Workplace-based assessment emphasizes the student's actual performance within the clinical environment.

5.13 ASSESSMENT OF PROFESSIONALISM AND ETHICS

Professional behaviour and ethical conduct shall be continuously promoted and assessed.

Students shall demonstrate:

- Respect for patients
- Respect for privacy and dignity
- Appropriate communication
- Confidentiality
- Accountability
- Punctuality
- Professional appearance and behaviour
- Respectful interaction with healthcare professionals
- Ethical decision-making
- Appropriate professional boundaries
- Commitment to patient safety

Professional behaviour shall form an integral component of clinical education and professional competency development.

5.14 CLINICAL DOCUMENTATION AND LOGBOOK

Students shall maintain appropriate records of prescribed clinical learning activities.

Clinical documentation may include:

- Patient assessment
- Physiotherapy findings
- Intervention provided
- Patient response
- Outcome measures
- Progress documentation
- Relevant communication and consultation

The NCAHP internship framework specifically identifies documentation of interventions and progress, including the use of **SOAP format**, as part of professional clinical documentation.

Clinical logbooks shall provide evidence of:

- Clinical exposure
- Skills performed
- Cases observed or managed
- Clinical learning activities
- Case discussions
- Competency development

During internship, records of work shall be maintained and verified by the appropriate supervising Physiotherapy faculty.

5.15 FEEDBACK AND REFLECTIVE LEARNING

Feedback is an essential component of competency development.

Students shall receive constructive feedback regarding:

- Knowledge

- Practical skills
- Clinical performance
- Clinical reasoning
- Communication
- Professional behaviour

Feedback should be:

- Timely
- Specific
- Constructive
- Linked to expected competencies

Students shall be encouraged to reflect upon their performance and identify areas for improvement.

Reflective learning may include reflection on:

- Clinical encounters
- Patient management
- Practical performance
- Communication
- Professional behaviour
- Clinical decision-making
- Learning experiences

5.16 REMEDIATION AND ACADEMIC SUPPORT

Students experiencing academic or clinical performance difficulties shall be provided appropriate academic support.

Remedial measures may include:

- Additional teaching
- Individual guidance
- Re-demonstration
- Additional supervised practice
- Structured study support
- Skill reinforcement
- Clinical mentoring
- Additional feedback

The objective of remediation shall be to identify learning gaps and provide opportunities for improvement before progression to higher levels of responsibility.

5.17 CLINICAL COMPETENCY PROGRESSION

Clinical competency shall develop progressively across the four academic years and internship.

First Year

FOUNDATIONAL LEARNING AND CLINICAL ORIENTATION

Students develop:

- Foundational scientific knowledge
- Basic professional behaviour
- Communication skills
- Understanding of healthcare settings
- Introductory clinical exposure

Second Year

CORE SKILLS AND CLINICAL OBSERVATION

Students develop:

- Basic physiotherapy skills

- Therapeutic exercise skills
- Electrotherapy skills
- Movement and functional assessment skills
- Emergency care and life support skills
- Structured clinical observation

Third Year

CLINICAL APPLICATION AND SUPERVISED PRACTICE

Students develop:

- Clinical reasoning
- Patient assessment
- Applied physiotherapy skills
- Medical and surgical physiotherapy competence
- Orthopedic physiotherapy competence
- Evidence-based clinical decision-making
- Structured clinical education

Fourth Year

ADVANCED CLINICAL LEARNING AND CLINICAL ROTATION

Students develop competence in:

- Neurological physiotherapy
- Cardiothoracic physiotherapy
- Sports physiotherapy
- Community physiotherapy
- Rehabilitation
- Professional practice
- Clinical rotation
- Advanced clinical decision-making

INTERNSHIP

COMPREHENSIVE SUPERVISED PROFESSIONAL PRACTICE

The internship enables students to consolidate their competencies through full-time supervised clinical rotations.

The NCAHP framework requires documented clinical work during internship, including project work and mandatory case presentations, with assessment based on satisfactory attendance, performance, logbook and project requirements.

5.18 QUALITY ASSURANCE IN TEACHING, LEARNING AND ASSESSMENT

Quality assurance shall ensure that teaching, learning, clinical education and assessment remain aligned with the intended programme outcomes and professional competency requirements.

Quality assurance activities may include:

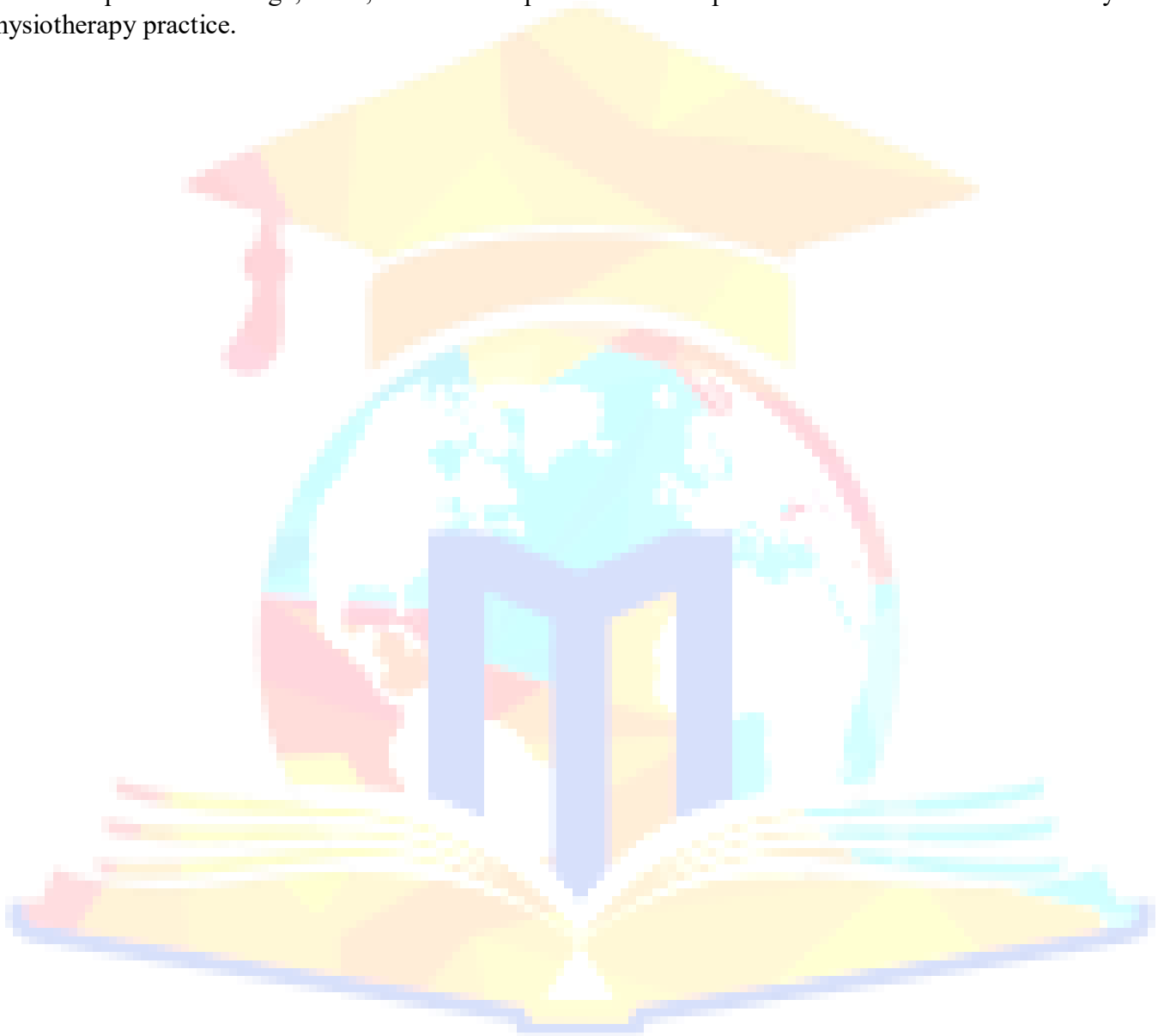
- Curriculum review
- Course review
- Course outcome attainment analysis
- Programme outcome attainment analysis
- Assessment review
- Student feedback
- Faculty feedback
- Clinical supervisor feedback
- Academic performance analysis

- Clinical competency review
- Faculty development
- Review of teaching-learning methods
- Review of clinical facilities and learning resources

The quality assurance cycle shall follow:

PLAN → IMPLEMENT → ASSESS → REVIEW → IMPROVE

The purpose of this continuous process is to ensure that the BPT programme consistently develops graduates with the required knowledge, skills, attitudes and professional competencies for safe and effective entry-level physiotherapy practice.



CHAPTER 6

PROGRAMME STRUCTURE AND SCHEME OF STUDY

6.1 INTRODUCTION

The Bachelor of Physiotherapy (BPT) programme at **Malla Reddy Vishwavidyapeeth (Deemed to be University)** is structured as a **five-year professional undergraduate programme**, comprising four academic years followed by one year of compulsory full-time rotatory internship.

The programme structure is designed in accordance with the competency-based framework prescribed by the **National Commission for Allied and Healthcare Professions (NCAHP)** and progressively develops the learner from foundational scientific knowledge to entry-level professional physiotherapy competence.

The curriculum integrates:

- Foundational medical sciences
- Basic sciences
- Movement sciences
- Core physiotherapy sciences
- Clinical sciences
- Practical and skills training
- Clinical and experiential learning
- Evidence-based practice
- Research methodology
- Community rehabilitation
- Professional ethics and administration
- Compulsory rotatory internship

The programme follows a progressive learning pathway:

FOUNDATION → SKILL DEVELOPMENT → CLINICAL APPLICATION → ADVANCED PRACTICE → SUPERVISED PROFESSIONAL PRACTICE

6.2 OVERALL PROGRAMME STRUCTURE

The BPT programme shall consist of the following components:

Phase	Duration	Component
First Academic Year	1 Year	Foundational Sciences and Clinical Orientation
Second Academic Year	1 Year	Core Physiotherapy Sciences and Clinical Observation
Third Academic Year	1 Year	Clinical Sciences and Applied Physiotherapy
Fourth Academic Year	1 Year	Advanced Physiotherapy and Clinical Rotation
Internship	1 Year	Compulsory Rotatory Clinical Internship
Total Duration	5 Years	BPT Programme

Each academic year shall progressively build upon the knowledge, skills and clinical competencies acquired during the preceding year.

6.3 ACADEMIC PHASES OF THE PROGRAMME

6.3.1 FIRST YEAR – FOUNDATIONAL SCIENCES AND CLINICAL ORIENTATION

The first academic year establishes the foundation required for subsequent physiotherapy education and professional development.

The curriculum focuses on:

- Human Anatomy
- Human Physiology
- Biochemistry

- Fundamentals of Exercise Modalities
- Fundamentals of Electro Physical Agents
- Psychology and Sociology
- Fundamentals of Healthcare Delivery System in India
- English
- Information Technology
- Clinical Orientation

The first year develops foundational knowledge of the human body, physiological processes, biochemical principles, introductory therapeutic modalities, behavioural sciences, healthcare delivery, communication and digital literacy.

Clinical orientation introduces students to the healthcare environment and provides early exposure to professional physiotherapy practice.

6.3.2 SECOND YEAR – CORE PHYSIOTHERAPY SCIENCES AND CLINICAL OBSERVATION

The second academic year focuses on the development of core physiotherapy knowledge and practical skills.

The curriculum includes:

- Pathology and Microbiology
- Pharmacology
- Public Health and Health Promotion
- Emergency Care and Life Support Skills
- Exercise Therapy
- Electrotherapy
- Biomechanics and Kinesiology
- Yoga and Systems of Medicine
- Clinical Observation

The educational focus shifts towards understanding disease processes, therapeutic interventions, movement science, emergency care and structured observation of physiotherapy practice.

Students progressively develop practical competence in therapeutic exercise, electrotherapy, movement assessment and basic clinical skills.

6.3.3 THIRD YEAR – CLINICAL SCIENCES AND APPLIED PHYSIOTHERAPY

The third academic year represents the transition from primarily foundational and skills-based learning to structured clinical application.

The curriculum includes:

- General Medicine and Pediatrics
- General Surgery
- Orthopedics
- Physiotherapy in Adult and Pediatric Medical and Surgical Conditions
- Physiotherapy in Adult and Pediatric Orthopedic Conditions
- Physical and Functional Diagnosis and Prescription
- Research Methodology, Biostatistics and Evidence-Based Practice
- Clinical Education

Students develop competencies in:

- Patient assessment
- Clinical reasoning
- Identification of physiotherapy problems
- Functional diagnosis
- Goal setting
- Treatment planning
- Evidence-based decision-making

- Supervised patient management

Clinical education provides structured opportunities for integration of classroom learning with supervised patient care.

6.3.4 FOURTH YEAR – ADVANCED PHYSIOTHERAPY PRACTICE AND CLINICAL ROTATION

The fourth academic year focuses on advanced clinical learning and preparation for the compulsory internship.

The curriculum includes:

- Neurology, Psychiatry and Neurosurgery
- Physiotherapy in Adult and Pediatric Neurological and Neurosurgical Conditions
- Cardiothoracic Diseases and Surgeries
- Physiotherapy in Adult and Pediatric Cardiothoracic and Surgical Conditions
- Sports Physiotherapy and Exercise Prescription
- Physiotherapy Ethics, Medico-Legal Aspects, Management and Administration
- Community Physiotherapy and Rehabilitation
- Project Work Orientation
- Clinical Rotation

Students are expected to integrate knowledge, skills, clinical reasoning, communication and professional behaviour in increasingly complex clinical situations.

6.4 TEACHING AND LEARNING HOURS

The BPT programme follows the prescribed annual academic workload under the NCAHP curriculum framework.

Each academic year includes a combination of:

- Theory instruction
- Practical training
- Skills training
- Clinical and experiential learning
- Clinical observation
- Clinical education
- Clinical rotation

Each of the four academic years is structured around **1,560 hours of academic and clinical learning**, resulting in: **Total Academic Training Hours = 6,240 Hours**

The compulsory internship is additional to the four academic years.

6.5 CREDIT FRAMEWORK

The programme follows a credit-based structure.

Credits are assigned according to the prescribed academic workload and the nature of the learning activity.

Credits are allocated to:

- Theory learning
- Practical learning
- Skills training
- Clinical education
- Experiential learning
- Clinical rotation

The four-year academic component of the BPT programme carries the prescribed credits under the NCAHP scheme of study.

6.6 FIRST YEAR BPT – SCHEME OF STUDY**Table 6.1 First Year BPT Scheme of Study**

S. No.	Course Code	Course Title	Theory Hours	Practical/Clinical Hours	Total Hours	Theory Credits	Practical Credits	Total Credits
1	BPT-101	Human Anatomy (HA)	180	120	300	12	4	16
2	BPT-102	Human Physiology (HP)	180	120	300	12	4	16
3	BPT-103	Biochemistry (BC)	90	–	90	6	–	6
4	BPT-104	Fundamentals of Exercise Modalities (FoEM)	120	60	180	8	2	10
5	BPT-105	Fundamentals of Electro Physical Agents (FoEA)	120	60	180	8	2	10
6	BPT-106	Psychology and Sociology (PS)	120	–	120	8	–	8
7	BPT-107	Fundamentals of Healthcare Delivery System in India (FoHS)	120	–	120	8	–	8
8	BPT-108	English (EG) – NUES	–	60	60	–	4	4
9	BPT-109	Information Technology (IT) – NUES	–	60	60	–	4	4
10	BPT-110	Clinical Orientation (CO _r)	–	150	150	–	5	5
TOTAL			1050	510	1560	70	17	87

6.7 SECOND YEAR BPT – SCHEME OF STUDY**Table 6.2 Second Year BPT Scheme of Study**

S. No.	Course Code	Course Title	Theory Hours	Practical/Clinical Hours	Total Hours	Theory Credits	Practical Credits	Total Credits
1	BPT-201	Pathology and Microbiology (PM)	120	–	120	8	–	8
2	BPT-202	Pharmacology (PC)	90	–	90	6	–	6
3	BPT-203	Public Health and Health Promotion (PH)	120	–	120	8	–	8
4	BPT-204	Emergency Care and Life Support Skills (ECLS)	90	30	120	6	1	7
5	BPT-205	Exercise Therapy (ExT)	150	120	270	10	4	14
6	BPT-206	Electrotherapy (ET)	150	120	270	10	4	14
7	BPT-207	Biomechanics and Kinesiology (BK)	120	60	180	8	2	10
8	BPT-208	Yoga and Systems of Medicine (YoG)	120	60	180	8	2	10
9	BPT-209	Clinical Observation (COB)	–	210	210	–	7	7
TOTAL			960	600	1560	64	20	84

6.8 THIRD YEAR BPT – SCHEME OF STUDY**Table 6.3 Third Year BPT Scheme of Study**

S. No.	Course Code	Course Title	Theory Hours	Practical/Clinical Hours	Total Hours	Theory Credits	Practical Credits	Total Credits
1	BPT-301	General Medicine and Pediatrics (GMP)	90	30	120	6	1	7
2	BPT-302	General Surgery (GS)	90	30	120	6	1	7
3	BPT-303	Orthopedics (OR)	90	30	120	6	1	7
4	BPT-304	Physiotherapy in Adult and Pediatric Medical and Surgical Conditions (PTMS)	180	120	300	12	4	16
5	BPT-305	Physiotherapy in Adult and Pediatric Orthopedic Conditions (PTO)	180	120	300	12	4	16
6	BPT-306	Physical and Functional Diagnosis and Prescription (PFDP)	120	60	180	8	2	10
7	BPT-307	Research Methodology, Biostatistics and Evidence-Based Practice (RMB)	120	–	120	8	–	8
8	BPT-308	Clinical Education (CEd)	–	300	300	–	10	10
TOTAL			870	690	1560	58	23	81

6.9 FOURTH YEAR BPT – SCHEME OF STUDY**Table 6.4 Fourth Year BPT Scheme of Study**

S. No.	Course Code	Course Title	Theory Hours	Practical/Clinical Hours	Total Hours	Theory Credits	Practical Credits	Total Credits
1	BPT-401	Neurology, Psychiatry and Neurosurgery (NPNS)	90	30	120	6	1	7
2	BPT-402	Physiotherapy in Adult and Pediatric Neurological and Neurosurgical Conditions (PTN)	150	90	240	10	3	13
3	BPT-403	Cardiothoracic Diseases and Surgeries (CTD)	90	30	120	6	1	7
4	BPT-404	Physiotherapy in Adult and Pediatric Cardiothoracic and Surgical Conditions (PTCT)	150	90	240	10	3	13
5	BPT-405	Sports Physiotherapy and Exercise Prescription (PTS)	150	90	240	10	3	13
6	BPT-406	Physiotherapy Ethics, Medico-Legal Aspects, Management and Administration (PTLM)	90	–	90	6	–	6
7	BPT-407	Community Physiotherapy and Rehabilitation (CPTR)	90	30	120	6	1	7
8	BPT-408	Project Work Orientation (PW) – NUES	90	–	90	6	–	6

BPT DEPARTMENT OF PHYSIOTHERAPY								
9	BPT-409	Clinical Rotation (CR)	–	300	300	–	10	10
TOTAL			900	660	1560	60	22	82



6.10 FOUR-YEAR ACADEMIC PROGRAMME SUMMARY

Academic Year	Total Hours	Theory Credits	Practical/Clinical Credits	Total Credits
First Year	1560	70	17	87
Second Year	1560	64	20	84
Third Year	1560	58	23	81
Fourth Year	1560	60	22	82
TOTAL	6240	252	82	334

6.11 COMPULSORY ROTATORY INTERNSHIP

Following successful completion of all four academic years and prescribed examinations, every student shall undergo a compulsory full-time rotatory internship.

The internship shall be:

- Of one calendar year duration
- Full-time
- Conducted under appropriate supervision
- Rotatory in nature
- Inclusive of clinical and community exposure

The internship shall provide the opportunity to consolidate theoretical knowledge, practical skills, clinical reasoning, professional behaviour and patient management abilities.

6.12 INTERNSHIP CLINICAL ROTATIONS

Students shall undergo supervised rotations through appropriate clinical areas, which may include:

1. Physiotherapy OPD
2. Neurology and Neurosurgery
3. Community and Primary Healthcare
4. Orthopedics
5. General Medicine
6. Intensive Care Units
7. General Surgery
8. Pediatric Services
9. Obstetrics and Gynaecology
10. Geriatric Care
11. Industrial and Ergonomic Exposure

The exact duration and rotation schedule shall be prescribed in the detailed internship regulations.

6.13 INTERNSHIP WORKLOAD

The compulsory internship shall comprise:

- 12 calendar months
- Average of 7 hours per day
- 6 days per week
- Minimum of 2,016 hours

The internship shall include clinical work, documentation, supervised learning, case discussions, case presentations and other prescribed professional activities.

6.14 INTERNSHIP PROJECT WORK

During the internship, students shall undertake prescribed scholarly or project work under the supervision of a Physiotherapy faculty member.

The project work may include:

- Case study
- Review of a contemporary physiotherapy technique
- Literature review
- Other approved scholarly work

The project is intended to develop scientific inquiry, critical thinking and evidence-informed professional practice.

6.15 INTERNSHIP ASSESSMENT

Internship assessment shall be based on:

Component	Weightage
Attendance	10%
Clinical Logbook	60%
Project Work	30%
TOTAL	100%

Successful completion of all prescribed internship requirements is mandatory for the award of the Bachelor of Physiotherapy degree.

6.16 PROGRAMME PROGRESSION MODEL

The programme follows the following progression:



The Bachelor of Physiotherapy programme is structured as a progressive five-year professional programme integrating academic learning, practical and skills training, clinical education and compulsory rotatory internship.

The structure ensures systematic development through:

KNOWLEDGE → SKILLS → CLINICAL REASONING → PATIENT MANAGEMENT → PROFESSIONAL COMPETENCE

The detailed subject-wise curriculum, course objectives, course outcomes, syllabus, practical competencies and clinical learning requirements for each academic year shall be provided in the subsequent chapters.

MALLA REDDY VISHWAVIDYAPEETH**(DEEMED TO BE UNIVERSITY)****DEPARTMENT OF PHYSIOTHERAPY****BACHELOR OF PHYSIOTHERAPY****COURSE STRUCTURE****First Year**

S. No.	Subject	Internal Assessment Marks – Theory	Internal Assessment Marks – Practical	University Examination Marks – Theory	University Examination Marks – Viva	University Examination Marks – Practical	Total Marks	Theory Hours	Practical Hours	Total Hours	Credits – Theory	Credits – Practical	Credits – Total
1	B.P.T-101 Human Anatomy (HA)	20	20	100	20	40	200	180	120	300	12	4	16
2	B.P.T-102 Human Physiology (HP)	20	20	100	20	40	200	180	120	300	12	4	16
3	B.P.T-103 Biochemistry (BC)	20	—	80	—	—	100	90	—	90	6	—	6
4	B.P.T-104 Fundamentals of Exercise Modalities (FoEM)	20	20	100	20	40	200	120	60	180	8	2	10
5	B.P.T-105 Fundamentals of Electro Physical Agents (FoEA)	20	20	100	20	40	200	120	60	180	8	2	10
6	B.P.T-106 Psychology & Sociology (PS)	20	—	80	—	—	100	120	—	120	8	—	8
7	B.P.T-107 Fundamentals of Healthcar	20	—	80	—	—	100	120	—	120	8	—	8

BPT DEPARTMENT OF PHYSIOTHERAPY													
	e delivery System in India (FoHSI)												
8	B.P.T-108English (EG)	—	—	[NUES]	—	—	—	60	—	60	4	—	4
9	B.P.T-109Information Technology (IT)	—	—	[NUES]	—	—	—	60	—	60	4	—	4
10	B.P.T-110Clinic Orientation (COOr)	—	—	—	—	—	150	—	150	150	—	5	5
Grand Total		140	80	640	80	160	1100	1050	510	1560	70	17	87



Second Year

S. No.	Subject	Internal Assessment Marks – Theory	Internal Assessment Marks – Practical	University Examination Marks – Theory	University Examination Marks – Viva	University Examination Marks – Practical	Total Marks	Theory Hours	Practical Hours	Total Hours	Credits – Theory	Credits – Practical	Credits – Total
1	B.P.T-201 Pathology & Microbiology (PM)	20	—	80	—	—	100	120	—	120	8	—	8
2	B.P.T-202 Pharmacology (PC)	20	—	80	—	—	100	90	—	90	6	—	6
3	B.P.T-203 Public Health & Health Promotion (PH)	20	—	80	—	—	100	120	—	120	8	—	8
4	B.P.T-204 Emergency Care and Life Support Skills (ECLS)	20	—	80	—	—	100	90	30	120	6	1	7
5	B.P.T-205 Exercise Therapy (ET)	20	20	100	20	40	200	150	120	270	10	4	14
6	B.P.T-206 Electrophysiology (ET)	20	20	100	20	40	200	150	120	270	10	4	14
7	B.P.T-207 Biomechanics & Kinesiology (BK)	20	—	80	—	—	100	120	60	180	8	2	10
8	B.P.T-208 Yoga and Systems of Medicine (YoS)	20	20	100	20	40	200	120	60	180	8	2	10
9	B.P.T-209 Clinical	—	—	—	—	210	210	—	210	210	—	7	7

BPT		DEPARTMENT OF PHYSIOTHERAPY											
	Orientation (COB)												
Grand Total		160	60	700	60	120	1100	960	600	1560	64	20	84



Third Year

S. No.	Subject	Internal Assessment Marks – Theory	Internal Assessment Marks – Practical	University Examination Marks – Theory	University Examination Marks – Viva	University Examination Marks – Practical	Total Marks	Theory Hours	Practical Hours	Total Hours	Credits – Theory	Credits – Practical	Credits – Total
1	B.P.T-301 Medicine and Pediatrics (MP)	20	—	80	—	—	100	90	30	120	6	1	7
2	B.P.T-302 Surgery (GS)	20	—	80	—	—	100	90	30	120	6	1	7
3	B.P.T-303 Orthopedics (O)	20	—	80	—	—	100	90	30	120	6	1	7
4	B.P.T-304 Physiotherapy in Adult and Pediatric Medical and Surgical Conditions (PMS)	20	20	100	20	40	200	180	120	300	12	4	16
5	B.P.T-305 Physiotherapy in Adult and Orthopedic Conditions (PTO)	20	20	100	20	40	200	180	120	300	12	4	16
6	B.P.T-306 Functional & Professional Diagnosis (FDP)	20	20	100	20	40	200	120	60	180	8	2	10
7	B.P.T-307 Research, Biostatistics and Evidence Based Practice (RBP)	20	—	80	—	—	100	120	—	120	8	—	8

BPT		DEPARTMENT OF PHYSIOTHERAPY											
8	B.P.T-308 Clinical Education (CEd)	—	—	—	—	—	300	—	300	300	—	10	10
Grand Total		140	60	620	60	120	1000	870	690	1560	58	23	81



Fourth Year

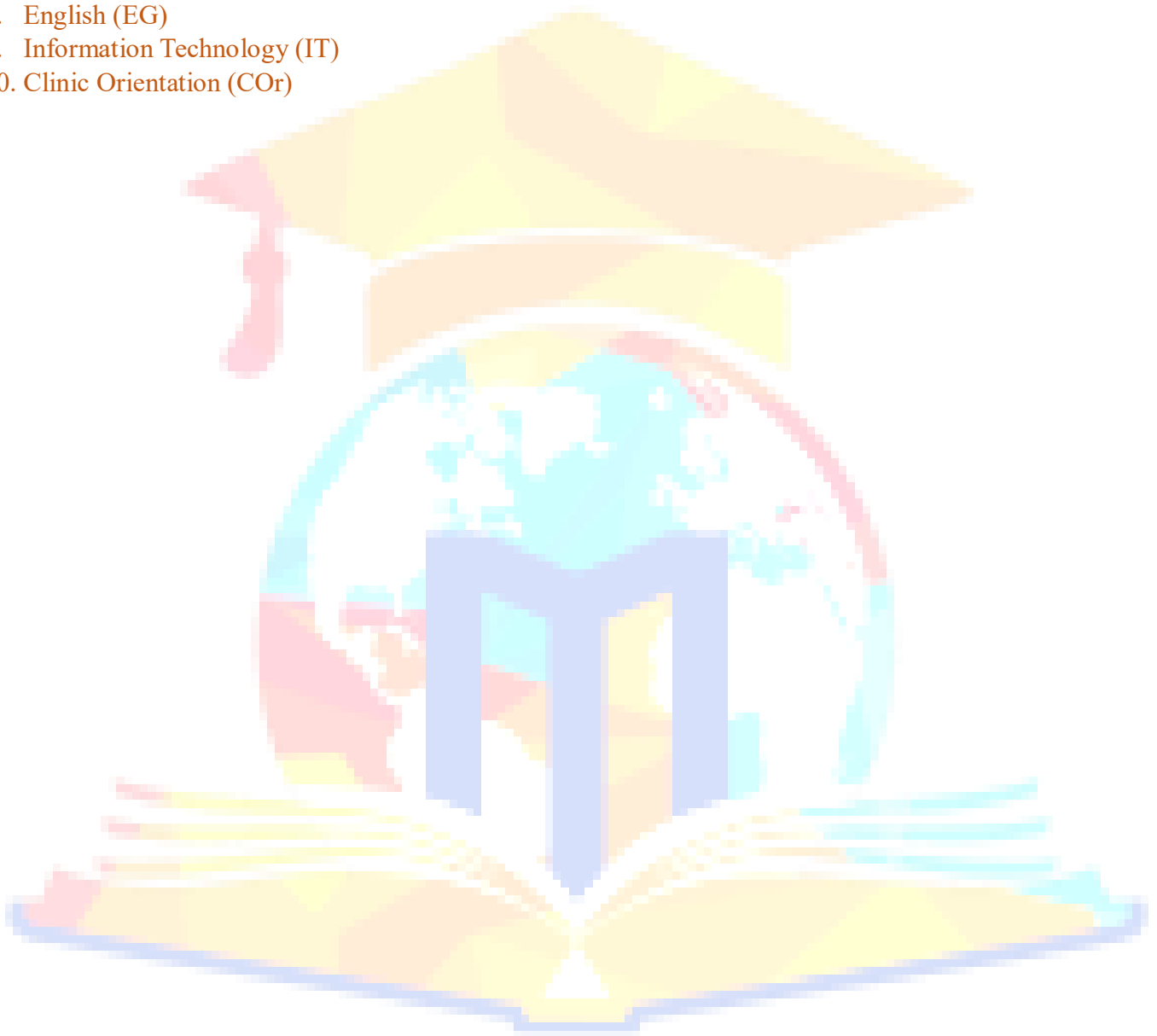
S. No.	Subject	Internal Assessment Marks – Theory	Internal Assessment Marks – Practical	University Examination Marks – Theory	University Examination Marks – Viva	University Examination Marks – Practical	Total Marks	Theory Hours	Practical Hours	Total Hours	Credits – Theory	Credits – Practical	Credits – Total
1	B.P.T-401Neurology, Psychiatry and Neurosurgery (NPNS)	20	—	80	—	—	100	90	30	120	6	1	7
2	B.P.T-402Physiotherapy in Adult and Pediatric Neurological and Neurosurgical Conditions (PTN)	20	20	100	20	40	200	150	90	240	10	3	13
3	B.P.T-403Cardio thoracic Diseases and Surgeries (CTD)	20	—	80	—	—	100	90	30	120	6	1	7
4	B.P.T-404Physiotherapy in Adult and Pediatric Cardiothoracic Conditions and Surgical Conditions (PTC)	20	20	100	20	40	200	150	90	240	10	3	13
5	B.P.T-405Sports Physiotherapy & Exercise Prescription (PTS)	20	20	100	20	40	200	150	90	240	10	3	13

BPT DEPARTMENT OF PHYSIOTHERAPY													
6	B.P.T-406PT Ethics, Medico Legal Aspects, Management & Administration (PTLM)	20	—	80	—	—	100	90	—	90	6	—	6
7	B.P.T-407Community Physiotherapy & Rehabilitation (CPTR)	20	—	80	—	—	100	90	30	120	6	1	7
8	B.P.T-408Project Work Orientation [NUES] (PW)	—	—	—	—	—	0	90	0	90	6	0	6
9	B.P.T-409Clinical Rotation (CR)	—	—	—	—	—	—	—	300	300	—	10	10
Grand Total							1000	900	660	1560	60	22	82



COURSE TITLES

1. Human Anatomy (HA)
2. Human Physiology (HP)
3. Biochemistry (BC)
4. Fundamentals of Exercise Modalities (FoEM)
5. Fundamentals of Electro Physical Agents (FoEA)
6. Psychology & Sociology (PS)
7. Fundamentals of Healthcare Delivery System in India (FoHSI)
8. English (EG)
9. Information Technology (IT)
10. Clinic Orientation (COr)



HUMAN ANATOMY (HA)

Course Code	BPT-101	L	P	C	Total sessions
Course Title	Human Anatomy (HA)	180	120	16	300
Pre-requisite	Knowledge of basic Human Anatomy and Biological Sciences.				
Co-requisites	NIL				

Course Objective:

1. Develop a fundamental understanding of common anatomical terms, anatomical position and the structural organization of the human body.
2. Understand the basic embryological development of structures, development of bones, muscles, nervous system and related body systems.
3. Develop knowledge of the gross anatomy and applied anatomy of bones, joints, muscles, connective tissues, fascia, ligaments and other components of the musculoskeletal system.
4. Identify and describe the osteology, muscles, nerves, blood vessels, lymphatic drainage and joints of the upper extremity, lower extremity, trunk, pelvis, head and neck.
5. Understand the regional anatomy and topographic relationships of the thorax, abdomen, pelvis and perineum and the anatomical components of the major organ systems.
6. Develop knowledge of the organization and components of the nervous system, including the brain, spinal cord, peripheral nerves, cranial nerves and autonomic nervous system.
7. Relate anatomical knowledge to clinically relevant injuries, lesions, fractures, nerve injuries, anatomical malformations and conditions encountered in physiotherapy practice.
8. Develop practical competency in identifying bones, muscles, joints, peripheral nerves, plexuses, surface markings and gross anatomical structures using dissected specimens and/or three-dimensional models.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Describe common anatomical terms, anatomical position, general anatomical concepts and the basic embryological development of human structures.

CLO2: Explain the structure, development, classification, functions and applied anatomy of bones, cartilage, joints, muscles and connective tissues.

CLO3: Identify and describe the osteology, muscles, joints, nerves, blood vessels and lymphatic drainage of the upper extremity, lower extremity, trunk, pelvis, head and neck.

CLO4: Describe the topographic and regional anatomy of the thorax, abdomen, pelvis and perineum, including the anatomical components of major organ systems.

CLO5: Explain the organization and anatomical components of the central, peripheral and autonomic nervous systems and their clinically relevant relationships.

CLO6: Identify important anatomical structures on dissected human body specimens and/or three-dimensional models and relate anatomical knowledge to clinically relevant injuries, lesions and anatomical malformations.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate foundational knowledge and understanding of basic medical sciences relevant to Physiotherapy practice.

PLO2: Apply knowledge of human structure and function in the assessment and management of health conditions.

PLO3: Demonstrate clinical reasoning and problem-solving skills in Physiotherapy practice.

PLO4: Demonstrate effective communication and professional interaction with patients, peers and healthcare professionals.

PLO5: Apply scientific principles and evidence-based knowledge in Physiotherapy practice.

PLO6: Uphold ethical, professional and responsible conduct in healthcare practice.

PLO7: Engage in lifelong learning, self-directed learning and professional development.

Program Specific Outcomes (PSOs):

PSO1: Demonstrate competency in understanding and applying basic medical science knowledge relevant to Physiotherapy.

PSO2: Apply anatomical and physiological knowledge for assessment and clinical reasoning in Physiotherapy.

PSO3: Demonstrate competency in identifying and understanding musculoskeletal, neurological and systemic structures relevant to Physiotherapy practice.

PSO4: Integrate foundational scientific knowledge into professional Physiotherapy education and practice.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	2	2	1	3	1	2	3	3	2	3
CLO2	3	3	2	1	3	1	2	3	3	3	3
CLO3	3	3	3	1	2	1	2	3	3	3	3
CLO4	3	3	3	1	2	1	2	3	3	3	3
CLO5	3	3	3	2	3	2	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

UNIT 1

GENERAL ANATOMY

HA 1.1

Define Scope of Anatomy.

HA 1.2

Discuss the Anatomical Position and anatomical Terminology common anatomical terminologies (Groove, tuberosity, trochanters etc.)

BONE

HA 1.4

Discuss Composition, Functions, Classification based on Morphology,

HA 1.5

Describe Development and Structure; Formation / Development of Bones esp. Long Bones; Parts of Long Bones.

HA 1.6

Discuss the Blood Supply of Bones.

CARTILAGE

HA 1.7

Describe Types and Features of cartilage.

JOINTS

HA 1.8

Define and state types of joints.

HA 1.9

Discuss the features of fibrous, Cartilaginous & Synovial joints, sub-types of synovial joints.

HA 1.10

Explain the movements of joints, factors permitting and limiting these movement.

HA 1.11

Discuss blood supply of joints; applied aspects.

MUSCLES

HA 1.12

Discuss Comparative Feature of Skeletal, Smooth and Cardiac Muscles, parts & structure of Skeletal Muscle including fascicular architecture.

HA 1.13

Describe Blood supply and nerve supply of Skeletal Muscle; Motor Unit.

HA 1.14

Discuss the Types of Skeletal Muscles based on their action i.e. Agonists, Antagonists, Fixators, Synergists, Origin & Insertion, Tendon; Isometric & Isotonic contractions; Applied Aspects.

CONNECTIVE TISSUE

HA 1.15

Explain Composition i.e. Cellular & Non-Cellular components.

HA 1.16

Types and functions of connective tissue.

HA 1.17

Types and functions of Ligaments.

HA 1.18

Applied Aspects.

GENERAL EMBRYOLOGY

HA 1.19

Describe Ovum, Spermatozoa, fertilization and formation of the Germ layers and their derivations. Development of skin, Fascia, blood vessels, lymphatic, (outline only details not required).

HA 1.20

Discuss Development of bones, axial and appendicular skeleton and muscles, Neural tube, brain vessels and spinal cord, Development of brain and brain stem structures.

INTEGUMENTARY SYSTEM

HA 1.21

Discuss the Structure of skin and its appendages.

UNIT 2

UPPER EXTREMITY

MUSCULO SKELETAL ANATOMY OF UPPER EXTREMITY

HA 2.1

Identify Osteology: Clavicles, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, and Phalanges.

HA 2.2

Identify Soft parts: Breast, pectoral region, axilla, front of arm, back of arm, cubital fossa, front of fore arm, back of fore arm, palm, dorsum of hand, muscles, nerves, blood vessels and lymphatic drainage of upper extremity.

HA 2.3

Explain Shoulder girdle, shoulder joint, elbow joints, radio ulnar joint, wrist joint and joints of the hand.

HA 2.4

Discuss Arches of hand, skin of the palm and dorsum of hand.

UNIT 3**THORAX****CARDIO-VASCULAR SYSTEM****HA 3.1**

Describe Mediastinum: Divisions and contents Pericardium.

HA 3.2

Describe Thoracic Wall: position, shape and parts of the heart; conducting System.

HA 3.3

Describe blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body – region wise.

RESPIRATORY SYSTEM**HA 3.4**

Outline the respiratory passages, Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on bronchopulmonary segments.

HA 3.5

Describe Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm.

HA 3.6

Describe Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action.

UNIT 4**LOWER EXTREMITY****MUSCULO SKELETAL ANATOMY OF LOWER EXTREMITY****HA 4.1**

Identify Osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metatarsals and phalanges.

HA 4.2

Identify Soft parts: Gluteal region, Anterior, posterior, medial and lateral aspects of the thigh (Femoral triangle, femoral canal and inguinal canal), medial side of the thigh (Adductor canal), lateral side of the thigh, popliteal fossa, anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of lower limb, venous drainage of the lower limb, arterial supply of the lower limb, arches of foot, skin of foot.

HA 4.3

Discuss Joints of the lower limb: Hip Joint, Knee joint, Ankle and joint, joints of the foot.

UNIT 5**MUSCULO SKELETAL ANATOMY OF TRUNK & PELVIS**

HA 5.1

Identify Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs.

HA 5.2

Discuss Soft tissue: Pre and Para vertebral muscles, intercostal muscles, anterior abdominal wall muscles, Inter-vertebral disc.

HA 5.3

Describe Pelvic girdle and muscles of the pelvic floor.

UNIT 6**ABDOMEN****HA 6.1**

Describe Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum.

HA 6.2

Describe large blood vessels of the gut.

HA 6.3

Identify Location, size, shape, features, blood supply, nerve supply and functions of the following: stomach, liver, spleen, pancreas, kidney, urinary bladder, intestines, and gall bladder.

HA 6.4

Describe Pelvis: Position, shape, size, features, blood supply and nerve supply of the male and female reproductive system.

UNIT 7**ENDOCRINE GLANDS****HA 7.1**

Describe Position, shape, size, function, blood supply and nerve supply of the following glands:

- Hypothalamus and pituitary gland
- Thyroid glands
- Parathyroid glands
- Adrenal glands
- Pancreatic islets
- Ovaries and testes
- Pineal glands
- Thymus

UNIT 8**MUSCULO SKELETAL ANATOMY OF HEAD AND NECK****HA 8.1**

Identify Osteology: Mandible and bones of the skull.

HA 8.2

Identify Soft parts: Muscles of the face and neck and their nerve and blood supply-extra ocular muscles, triangles of the neck.

UNIT 9**NEURO ANATOMY****HA 9.1**

Discuss Organization of Central Nervous system - Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital system (Cranial nerves, Peripheral nervous system, Peripheral nerve, Neuromuscular junction, Sensory end organs, Central Nervous System, Spinal segments and areas, Brain Stem, Cerebellum, Inferior colliculi, Superior Colliculi, Thalamus, Hypothalamus, Corpus striatum, Cerebral hemisphere, Lateral ventricles, Blood supply to brain, Basal Ganglia, The pyramidal system, Pons, medulla, extra pyramidal systems, Anatomical integration).

PRACTICAL: B.P.T. HUMAN ANATOMY 101 PRACTICAL – HA (P)

HA (P) 10.1

Identify the parts of bones (Upper limb, lower limb and spine).

HA (P) 10.2

Identify the muscles of extremities, trunk and face on a dissected human body/3 D models.

HA (P) 10.3

Identify the joints of extremities, trunk and face on a dissected human body/3 D models.

HA (P) 10.4

Identify the course and relationships of major peripheral nerves including plexuses formation.

HA (P) 10.5

Identify the surface markings of joints, fascia, ligaments and muscles of extremities, trunk and face on a model.

HA (P) 10.6

Identify the gross structure of heart, lungs, brain and spinal cord on a dissected

HA (P) 10.7

Human body/3 D models.

Recommended Text Books

1. Snell RS. Clinical anatomy: an illustrated review with questions and explanations. Lippincott Williams & Wilkins; 2004.
2. Inderbir Singh, Text book of Anatomy with color Atlas – Vol. 1, 2, 3. Jaypee Brothers.
3. Chaurasia BD. Human anatomy Volume- I, II & III, CBS Publisher; 2004.
4. Singh I. Textbook of human neuroanatomy. Jaypee Brothers Publishers; 2006.
5. Kadasne'S T.B. of Anatomy Vol.1 Upper and Lower Extremities 2009.
6. Singh V. Textbook of clinical neuroanatomy. Elsevier Health Sciences; 2014.
7. Dutta AK. Essentials of human anatomy, head and neck.

Recommended Reference Books

1. Gray's Anatomy: Descriptive and Applied. Longman.
2. Snell RS. Neuroanatomy.
3. Singh V. Textbook of clinical neuroanatomy.
4. Romanes GJ. Cunningham's manual of practical anatomy.
5. McMinn's Last's Anatomy – Regional and applied, Churchill Livingstone.
6. McMinn, et al. A Colour Atlas of Human Anatomy, Mosby.
7. Snell – Clinical Anatomy – Lippincott.

HUMAN PHYSIOLOGY (HP)

Course Code	BPT-102	L	P	C	Total sessions
Course Title	Human Physiology (HP)	180	120	16	300
Pre-requisite	Knowledge of basic Human Anatomy and Biological Sciences.				
Co-requisites	NIL				

Course Objective:

1. To develop a comprehensive understanding of the normal functions and regulatory mechanisms of the human body.
2. To understand the physiological principles governing major body systems and their integration.
3. To develop knowledge of cardiovascular, respiratory, neuromuscular and nervous system physiology relevant to physiotherapy practice.
4. To understand physiological responses and adaptations of the body during exercise.
5. To develop practical skills in basic physiological and clinical examination procedures.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the physiological functions and regulatory mechanisms of cells, body fluids, blood and major organ systems.

CLO2: Describe and interpret normal physiological functions of the cardiovascular, respiratory, digestive, renal, reproductive and endocrine systems.

CLO3: Explain the physiological principles of nerve, muscle and nervous system function relevant to movement and rehabilitation.

CLO4: Describe the physiological effects of acute and chronic exercise on the respiratory, cardiovascular and musculoskeletal systems.

CLO5: Demonstrate basic practical and clinical examination skills related to human physiology.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate knowledge and understanding of basic and applied medical sciences relevant to physiotherapy.

PLO2: Apply scientific and physiological principles in the assessment and management of patients.

PLO3: Demonstrate clinical reasoning and problem-solving skills in physiotherapy practice.

PLO4: Demonstrate effective communication and professional behaviour.

PLO5: Apply appropriate assessment techniques and interpret clinical findings.

PLO6: Uphold ethical and professional standards in healthcare practice.

PLO7: Engage in lifelong learning and evidence-based professional development.

Program Specific Outcomes (PSOs):

PSO1: Apply knowledge of human physiology in understanding normal body function and movement.

PSO2: Integrate physiological principles into physiotherapy assessment and clinical practice.

PSO3: Demonstrate competency in basic physiological and clinical assessment procedures.

PSO4: Apply exercise physiology principles in health promotion and rehabilitation.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	1	2	1	2	3	3	2	2
CLO2	3	3	3	1	3	1	2	3	3	3	2
CLO3	3	3	3	2	3	1	2	3	3	3	3
CLO4	3	3	3	2	3	2	3	3	3	2	3
CLO5	2	3	3	2	3	2	2	2	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**UNIT I: General Physiology**

HP 1.1. Discuss Cell: Morphology. Organelles: their structure and functions And Transport Mechanisms across the cell membrane.

HP 1.2. Discuss Body fluids: Distribution, composition.

UNIT II: Blood

HP 2.1. Explain Composition and functions of blood and Plasma:

HP 2.2. Describe RBC: count and its variations. Erythropoiesis- stages, factors regulating. Reticulo-endothelial system (in brief)

HP 2.3. Describe Hemoglobin—structure, function and derivatives Anemia (in detail), types of Jaundice. Blood indices, PCV, ESR.

HP 2.4. Discuss WBC. Morphology, functions, count, its variation of each. Immunity

HP 2.5. Describe Platelets: Morphology, functions, count, its variations

HP 2.6. Discuss Hemostatic mechanisms: Blood coagulation—factors, mechanisms. Their disorders. Anticoagulants.

HP 2.7. Describe Blood Groups

HP 2.8. Describe Cross matching. Indications and complications of Blood Transfusion

HP 2.9. Discuss Composition, formation, circulation and functions of Lymph

UNIT III: Cardiovascular System

HP 3.1. Describe: Physiological anatomy and nerve supply of the heart and blood vessels. Organisation of CVS. Cardiac muscles: Structure. Ionic basis of action potential and pacemaker potential. Properties.

HP 3.2. Explain Conducting system in terms of Components. Impulse conduction Cardiac Cycle: Definition. Phases of cardiac cycle. Pres- sure and volume curves. Heart sounds – causes, character. ECG: Definition. Different types of leads. Waves and their causes. P-R interval. Heart block.

HP 3.3. Discuss Normal value. Determinants. Stroke volume and regulation of Cardiac Output: Heart rate and its regulation. Their variations

HP 3.4. Describe Definition Normal values and its variations. Determinants. Peripheral resistance of Arterial Blood Pressure Regulation of BP Arterial Pulse

HP 3.5. Discuss the causes and features of Shock

HP 3.6. Discuss Regional Circulations such as Coronary, Cerebral and Cutaneous circulation.

HP 3.7. Discuss cardiovascular changes during exercise.

UNIT IV: Respiratory System

HP 4.1. Discuss the functions of – Pleura, tracheo-bronchial tree, alveolus, respiratory membrane and their nerve supply. Functions of respiratory system. Respiratory muscles.

HP 4.2. Explain the Mechanics of breathing in terms of Intra pleural and intrapulmonary pressure changes during respiration. Chest expansion.

HP 4.3. Discuss Spirometry- Lung volumes and capacities. Timed vital capacity and its clinical significance. Maximum ventilation volume. Respiratory minute volume

HP 4.4. Discuss Pulmonary Circulation. Ventilation-perfusion ratio and its importance.

HP 4.5. Explain Transport of respiratory gases: Diffusion across the respiratory membrane. Oxygen transport – Different forms, oxygen- hemoglobin dissociation curve. Factors affecting it. P50, Haldane and Bohr effect. Carbon dioxide transport: Different forms, chloride shift.

HP 4.6. Explain Regulation of Respiration: Neural Regulation. Hering-breuer's reflex. Voluntary control. Chemical Regulation.

HP 4.7. Discuss Hypoxia: Effects of hypoxia. Types of hypoxia. Hyperbaric oxygen therapy. Acclimatization Hypercapnia. Asphyxia. Cyanosis – types and features. Dysbarism

HP 4.8. Explain Respiratory changes during exercise.

UNIT V: Digestive System

HP 5.1. Describe the functions of digestive system

HP 5.2. Describe Salivary Secretion: Saliva: Composition. Functions. Regulation. Mastication

HP 5.3. Discuss the stages and Function of Swallowing

HP 5.4. Describe Stomach in terms of Functions. Gastric juice: Gland, composition, function, regulation. Gastrin: Production, function and regulation. Peptic ulcer. Gastric motility. Gastric emptying. Vomiting.

HP 5.5. Describe Pancreatic Secretion: Composition, production, function. Regulation.

HP 5.6. Discuss the Functions of liver, Gall bladder And Composition, functions of bile.

UNIT VI: Renal System

HP 6.1. Describe the functions of renal system. Nephrons – cortical and juxtamedullary. Juxtaglomerular apparatus. Glomerular membrane. Renal blood flow and its regulation. Functions of kidneys.

HP 6.2. Discuss the Mechanism of Urine Formation: Glomerular Filtration: Mechanism of glomerular filtration. GFR – normal value and factors affecting. Renal clearance. Inulin clearance. Creatinine clearance.

HP 6.3. Explain Tubular Reabsorption: Reabsorption of Na⁺, glucose, HCO₃⁻, urea and water. Filtered load. Renal tubular transport maximum. Glucose clearance: TmG. Renal threshold for glucose.

HP 6.4. Discuss the Mechanism of concentrating and diluting the Urine: Counter-current mechanism. Regulation of water excretion. Diuresis. Diuretics.

HP 6.5. Describe Mechanism of micturition. Cystometrogram. Atonic bladder, automatic bladder.

HP 6.6. Describe Acid-Base balance

UNIT VII: Reproductive System

HP 7.1. Discuss the physiology of reproductive organs. Sex determination. Sex differentiation. Disorder

HP 7.2. Describe Male Reproductive System: Functions of testes. Pubertal changes in males. Spermatogenesis. Testosterone: action. Regulation of secretion. Semen.

HP 7.3. Describe Female Reproductive System: Functions of ovaries and uterus. Pubertal changes in females. Oogenesis.

HP 7.4. Hormones: estrogen and progesterone-action. Regulation of secretion.

HP 7.5. Describe Menstrual Cycle: Phases. Ovarian cycle. Uterine cycle. Hormonal basis. Menarche. Menopause.

HP 7.6. Describe Pregnancy: Pregnancy tests. Physiological changes during pregnancy. Functions of placenta. Lactation. Contraception methods

UNIT VIII: Endocrine System

HP 8.1. Enumerate Major endocrine glands.

HP 8.2. Describe classification, mechanism of action and Functions of hormones

HP 8.3. Describe Pituitary hormones: Secretory cells, action on target cells, and regulation of secretion of each hormone.

HP 8.4. Describe Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxedema, Cretinism, Grave's disease

HP 8.5. Describe Parathyroid hormones: secretory cell, action, regulation of secretion. Disorders: Hypoparathyroidism. Hyperthyroidism. Calcium metabolism and its regulation.

HP 8.6. Describe Adrenal Medulla: Secretory cells, action, regulation of secretion of adrenaline and noradrenaline. Disorders: Pheochromocytoma.

HP 8.7. Describe Endocrine Pancreas: Secretory cells, action, regulation secretion of insulin and glucagon. Glucose metabolism and its regulation. Disorder: Diabetes mellitus.

UNIT IX: Nerve Muscle Physiology

HP 9.1. Discuss Resting membrane potential. Action potential – ionic basis and properties.

HP 9.2. Describe Structure and functions of neurons. Classification, Properties and impulse transmission of nerve fibers. Nerve injury – degeneration and regeneration.

HP 9.3. Describe Neuroglia: Types and functions

HP 9.4. Classify Skeletal muscle Structure.

HP 9.5. Discuss the physiology of neuromuscular transmission

HP 9.6. Discuss the applied aspects of neuromuscular disorders.

UNIT X: Nervous System

HP 10.1. Describe Organisation of CNS – central and peripheral nervous system.

HP 10.2. Describe Functions of nervous system. Synapse: Functional anatomy, classification, Synaptic transmission. Properties

HP 10.3. Discuss Sensory Mechanism: Sensory receptors: function, classification and properties. Sensory pathway: The ascending tracts, Posterior column tracts, lateral spinothalamic tract and the anterior spinothalamic tract – their origin, course, termination and functions. The trigeminal pathway

HP 10.4. Discuss Sensory cortex. Somatic sensations: crude touch, fine touch tactile localization, tactile discrimination, stereo gnosis vibration sense,

HP 10.5. Describe kinesthetic sensations. Pain sensation: mechanism of pain. Cutaneous pain – slow and fast pain, hyperalgesia. Deep pain. Visceral pain – referred pain.

HP 10.6. Describe Motor Cortex. Motor pathway: The descending tracts – pyramidal tracts, extrapyramidal tracts – origin, course, termination and functions. Upper motor neuron and lower motor neuron. Paralysis, monoplegia, paraplegia, hemiplegia and quadriplegia.

HP 10.7. Describe Muscle tone – definition, and properties hypotonia, atonia and hypertonia. UMNL and LMNL

HP 10.8. Discuss Spinal cord Lesions: Complete transection and Hemi section of the spinal cord.

HP 10.9. Describe Cerebellum: Functions. Cerebellar ataxia.

HP 10.10. Describe Posture and Equilibrium: Postural reflexes – spinal, medullary, midbrain and cerebral reflexes.

HP 10.11. Describe Functions of Thalamus and Hypothalamus: Nuclei. Thalamic syndrome

HP 10.12. Describe Reticular Formation and Limbic System: Components and Functions.

HP 10.13. Describe Structures and functions of Basal Ganglia: Parkinson's disease

HP 10.14. Describe Cerebral Cortex: Lobes. Brodmann's areas and their functions. Higher functions of cerebral cortex – learning, memory and speech.

HP 10.15. Describe Formation, composition, circulation and functions of CSF Lumbar puncture and its significance. Blood brain barrier. Hydrocephalus.

HP 10.16. Describe Features and actions of parasympathetic and sympathetic nervous system

UNIT XI: Physiology of Exercise

Explain the Effects of acute and chronic exercise on:**HP 11.1** Respiratory,**HP 11.2** Cardio vascular**HP 11.3** Musculoskeletal system**Practical: B.P.T. Human Physiology 102 Practical: HP (P)****HP (P) 12.1 Practical classes include**

1. Hematology experiments,
2. Clinical examinations,
3. Amphibian chart, and
4. Recommended demonstrations.

HP (P) 12.2 Recommended demonstrations include but are not limited to:

- i. Differentiate Blood cells
- ii. Determine the blood cell counts
- iii. Determine Blood groups
- iv. Calculate bleeding and clotting time
- v. Observe the procedures of common blood investigations
- vi. Elicit superficial and deep tendon reflexes
- vii. Determine muscle tone
- viii. Interpret normal ECG wave pattern
- ix. Identify normal breath sound
- x. Differentiate Heart sounds including murmurs

HP (P) 12.3 Perform the following clinical examination procedures:

- i. Body Temperature measurement
- ii. Pulse rate
- iii. Blood Pressure
- iv. Oxygen saturation
- v. Respiratory rate

Recommended Textbooks

1. Text book of Physiology – Anand & Manchanda, Tata McGraw Hill.
2. Human Physiology – Vol. 1 & 2 – Chatterjee. CC, Calcutta Medical Allied.
3. Concise Medical Physiology – Chaudhari, S.K., New Central Agency, Calcutta.
4. Principles of Anatomy and Physiology – Tortora & Grabowski, Harper Collins.
5. Text book of Practical Physiology – Ghai, Jaypee.

Recommended Reference Books

1. Text book of Medical Physiology – Guyton Arthur, Mosby.
2. Best & Taylor's Physiological Basis of Medical Practice.
3. West's Respiratory Physiology.
4. Nunn and Lumb's Applied Respiratory Physiology.

BIOCHEMISTRY (BC)

Course Code	BPT-103	L	P	C	Total sessions
Course Title	Biochemistry (BC)	90	-	6	90
Pre-requisite	Knowledge of basic Chemistry and Biological Sciences.				
Co-requisites	NIL				

Course Objective:

1. To develop a fundamental understanding of the biochemical composition and functions of cells and cell membranes.
2. To develop knowledge of the chemistry, metabolism and physiological importance of carbohydrates, lipids, proteins and amino acids.
3. To understand the principles of nutrition, energy metabolism, enzymes, nucleotides, nucleic acids, vitamins and minerals in the human body.
4. To develop an understanding of acid–base balance and the biochemical basis of normal physiological function and metabolic disorders.
5. To interpret basic clinical biochemical investigations and understand their relevance in the diagnosis and management of disorders.
6. To understand exercise-related biochemical changes and apply knowledge of energy metabolism and nutrition to exercise prescription and physiotherapy practice.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the fundamental biochemical composition and functional significance of cells and cell membranes in the human body.

CLO2: Describe the chemistry, metabolism and physiological importance of carbohydrates, lipids, proteins and amino acids.

CLO3: Explain the biochemical principles of nutrition, energy metabolism, enzymes, nucleic acids, vitamins and minerals.

CLO4: Interpret basic clinical biochemical parameters and relate biochemical investigations to the diagnosis and management of disorders.

CLO5: Apply knowledge of exercise-related biochemical changes, energy metabolism and nutrition in understanding and planning exercise prescription.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge of basic medical sciences and their application to physiotherapy practice.

PLO2: Apply scientific principles and clinical reasoning for assessment and management of patients.

PLO3: Integrate knowledge of anatomy, physiology, biochemistry and pathology in understanding normal and abnormal human function.

PLO4: Demonstrate competency in planning and implementing evidence-based physiotherapy interventions.

PLO5: Apply knowledge of exercise science, nutrition and health promotion in physiotherapy practice.

PLO6: Demonstrate effective communication, ethical conduct and professional responsibility.

PLO7: Engage in lifelong learning, research and continuous professional development.

Program Specific Outcomes (PSOs):

PSO1: Apply knowledge of basic and clinical sciences for understanding human health, function and dysfunction.

PSO2: Integrate biochemical and physiological principles into physiotherapy assessment and clinical decision-making.

PSO3: Apply principles of exercise, nutrition and metabolism in physiotherapy and health promotion.

PSO4: Demonstrate scientific and evidence-based approaches in physiotherapy practice.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	1	3	1	1	1	2	3	2	1	2
CLO2	3	2	3	2	2	1	2	3	3	2	2
CLO3	3	2	3	2	3	1	2	3	3	3	2
CLO4	3	3	3	2	1	2	2	3	3	1	3
CLO5	3	3	3	3	3	2	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**UNIT I****SECTION A****BC 1.1. Acid–Base Balance**

- Acids, bases and buffers
- pH
- Buffer systems of the body
- Bicarbonate buffer system
- Role of lungs and kidneys in acid–base balance
- Acid–base imbalance

BC 1.2. Carbohydrate Chemistry

1. Definition, general classification with examples, Glycosidic bond.
2. Structures, composition, sources, properties and functions of Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides.
3. Glycosaminoglycan (mucopolysaccharides).
4. Carbohydrate Metabolism:
 - Introduction
 - Glycolysis – Aerobic and Anaerobic
 - Citric acid cycle
 - Substrate-level phosphorylation
5. Glycogen metabolism:
 - Glycogenesis
 - Glycogenolysis
 - Metabolic disorders of glycogen
 - Gluconeogenesis
 - Cori cycle
 - Hormonal regulation of glucose

- Glycosuria
- Diabetes mellitus
- 6. Role of carbohydrates in diet:
 - Digestible carbohydrates
 - Dietary fibers

BC 1.3. Lipid Chemistry

1. Definition and general classification.
2. Definition, classification, properties and functions of:
 - Fatty acids
 - Triacylglycerol
 - Phospholipids
 - Cholesterol
3. Essential fatty acids and their importance.
4. Lipoproteins:
 - Definition
 - Classification
 - Properties
 - Sources
 - Function
 - Ketone bodies
5. Role of lipids in diet.

BC 1.4. Amino Acid Chemistry

1. Amino acid chemistry:
 - Definition
 - Classification
 - Peptide bonds
2. Peptides:
 - Definition
 - Biologically important peptides
3. Protein chemistry:
 - Definition
 - Classification
 - Functions of proteins
4. Role of proteins in diet:
 - Quality of proteins
 - Biological value
 - Net protein utilization
 - Nutritional aspects of proteins
 - Essential and non-essential amino acids
 - Nitrogen balance

BC 1.5. Nutrition

1. Introduction and importance of nutrition.
 - Calorific values
 - Respiratory quotient – Definition and significance
 - Energy requirement of a person
 - Basal metabolic rate:
 - Definition

- Normal values
- Factors affecting BMR
- Special dynamic action of food
- 2. Physical activities:
 - Energy expenditure for various activities
 - Calculation of energy requirement of a person
- 3. Balanced diet:
 - Recommended dietary allowances
 - Nutritional disorders

UNIT II

BC 2.1. Enzymes

- Definition
- Active site
- Cofactor:
 - Coenzyme
 - Activator
- Proenzyme
- Classification with examples
- Factors affecting enzyme activity
- Enzyme inhibition and significance
- Isoenzymes
- Diagnostic enzymology
- Clinical significance of enzymes

BC 2.2. Nucleotide and Nucleic Acid Chemistry

1. Nucleotide Chemistry

- Nucleotide composition
- Functions of free nucleotides in the body

2. Nucleic Acid (DNA and RNA) Chemistry

- Difference between DNA and RNA
- Structure of DNA – Watson and Crick model
- Functions of DNA
- Structure and functions of:
 - tRNA
 - rRNA
 - mRNA

BC 2.3. Vitamins

1. Definition.
2. Classification according to solubility.
3. Individual vitamins:
 - Sources
 - Coenzyme forms
 - Functions
 - RDA
 - Digestion
 - Absorption
 - Transport
 - Deficiency

- Toxicity

BC 2.4. Mineral Metabolism

Definition, sources, RDA, digestion, absorption, transport, excretion, functions and disorders of individual minerals:

- Calcium
- Phosphate
- Iron
- Magnesium
- Fluoride
- Selenium
- Molybdenum
- Copper

Phosphate, Calcium and Iron in detail.

BC 2.5. Clinical Biochemistry

- Normal levels of blood and urine constituents.
- Relevance of blood and urine levels of:
 - Glucose
 - Urea
 - Uric acid
 - Creatinine
 - Calcium
 - Phosphates
 - pH
 - Bicarbonate
- Liver function tests.
- Renal function tests.

Recommended Textbooks

1. Textbook of Biochemistry – M.N. Chatterjea. Jaypee Brothers.
2. Textbook of Biochemistry for Medical Students – D.M. Vasudevan. Jaypee Brothers.
3. Clinical Biochemistry: Metabolic and Clinical Aspects – Marshall & Bangert. Churchill Livingstone.
4. Biochemistry – Sutherland. Churchill Livingstone.

Recommended Reference Books

1. Drugs in Sport – David R. Mottram and Sally Gunnel. E. & F.N. Spon.
2. Normal and Therapeutic Nutrition – Robison H. Cortinne et al. Macmillan Publishing Company, New York.
3. Physiological Chemistry – Harper.

FUNDAMENTALS OF EXERCISE MODALITIES (FoEM)

Course Code	BPT-104	L	P	C	Total sessions
Course Title	Fundamentals of Exercise Modalities (FoEM)	120	60	10	180
Pre-requisite	Knowledge of basic Human Anatomy, Human Physiology, Biomechanics and basic concepts of movement and exercise..				
Co-requisites	NIL				

Course Objective:

1. To develop fundamental knowledge of the principles, aims and techniques of Exercise Therapy and the assessment of patients' conditions.
2. To understand the principles of mechanics and their application to human movement and Exercise Therapy.
3. To develop knowledge and practical skills in fundamental and derived positions, joint range of motion measurement and Manual Muscle Testing.
4. To understand and perform different classifications and techniques of therapeutic exercises, including active, passive, assisted and resisted exercises.
5. To develop knowledge and practical competency in soft tissue manipulation techniques and their physiological and therapeutic applications.
6. To develop basic clinical skills in assessment, measurement and application of Exercise Therapy modalities on human models.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the basic principles, aims, techniques and mechanical concepts applicable to Exercise Therapy and patient assessment.

CLO2: Demonstrate and analyse fundamental and derived positions, muscle work, group action of muscles and coordinated movements.

CLO3: Perform measurement and interpretation of joint range of motion using appropriate goniometric techniques.

CLO4: Demonstrate and perform Manual Muscle Testing for muscles of the upper limb, lower limb, trunk and face.

CLO5: Classify, explain and perform therapeutic exercises including active, passive, active-assisted and resisted exercises according to their principles, techniques, indications, contraindications, effects and uses.

CLO6: Demonstrate and perform basic soft tissue manipulation techniques and apply appropriate techniques based on physiological and therapeutic effects and contraindications.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge of basic medical sciences and their application to physiotherapy practice.

PLO2: Apply scientific principles and clinical reasoning for physiotherapy assessment and management.

PLO3: Integrate knowledge of anatomy, physiology and biomechanics in understanding human movement and function.

PLO4: Demonstrate competency in planning and implementing appropriate physiotherapy interventions.

PLO5: Apply principles of exercise science and therapeutic modalities for health promotion and rehabilitation.

PLO6: Demonstrate effective communication, ethical conduct and professional responsibility.

PLO7: Engage in lifelong learning, research and continuous professional development.

Program Specific Outcomes (PSOs):

PSO1: Demonstrate competency in physiotherapy assessment of movement, joint range of motion and muscle function.

PSO2: Apply principles of Exercise Therapy and biomechanics for the management of movement dysfunction.

PSO3: Demonstrate competency in the selection and application of appropriate therapeutic exercise modalities.

PSO4: Apply scientific and evidence-based approaches in physiotherapy assessment and intervention.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	2	3	2	2	1	2	2	3	2	2
CLO2	3	2	3	3	2	2	2	3	3	3	2
CLO3	3	3	3	2	2	2	2	3	3	2	3
CLO4	3	3	3	3	2	2	2	3	3	2	3
CLO5	3	3	3	3	3	2	2	3	3	3	3
CLO6	2	3	2	3	3	2	2	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**UNIT I – Basic Principles****FoEM 1.1.**

Describe the aims of Exercise Therapy, the techniques of Exercise Therapy, approach to patient's problems, and assessment of patient's condition – Measurements of Vital parameters.

FoEM 1.2.

Apply the principles of mechanics applied to Exercise Therapy:

- Force
- Composition
- Resolution
- Equilibrium – Stable, unstable and neutral
- Gravity
- LOG
- COG
- Levers – Types
- Speed
- Velocity
- Work
- Energy
- Power
- Acceleration
- Momentum
- Friction
- Inertia

FoEM 1.3.

Discuss:

- Muscle work
- Group action of muscles

- Angle of pull
- Mechanical efficiency of the muscles

UNIT II – Starting and Derived Positions

FoEM 2.1.

Demonstrate the starting positions, their muscle work, effects and uses:

- Standing
- Kneeling
- Sitting
- Lying
- Hanging

FoEM 2.2.

Demonstrate derived positions. Discuss the muscle work of each derived position.

UNIT III – Measurement of Joint Range

FoEM 2.3.

Demonstrate different methods of measuring range of motion (ROM).

FoEM 2.4.

Discuss:

- Reliability and validity of goniometry
- Functional ROM
- Normal range of motion of various joints
- Technique of goniometry

FoEM 2.5.

Perform ROM measurement of individual joints using a goniometer.

UNIT IV – Muscle Testing

FoEM 3.1.

Discuss the:

- Principles and aims
- Indications and limitations
- Techniques of MMT for group and individual testing

FoEM 3.2.

Demonstrate Manual Muscle Testing procedure.

FoEM 3.3.

Perform MMT for:

- Upper limb muscles
- Lower limb muscles
- Spine muscles
- Face muscles

UNIT V – Classification of Therapeutic Exercise

FoEM 4.1.

Classify therapeutic exercises:

- Technique
- Effects
- Therapeutic use

FoEM 4.2.

Demonstrate Active Movements.

FoEM 4.3.

Discuss active movements in terms of:

- Definition of strength, power and work
- Endurance
- Muscle actions
- Causes of decreased muscle performance

FoEM 4.4.

Explain the physiological adaptation to training:

- Strength and Power
- Endurance

FoEM 4.5.

Demonstrate Free Exercise:

- Classification
- Principles
- Techniques
- Indications
- Contraindications
- Effects
- Uses

FoEM 4.6.

Demonstrate Active Assisted Exercise.

FoEM 4.7.

Discuss:

Active Assisted Exercise:

- Principles
- Techniques
- Indications
- Contraindications
- Effects
- Uses

Assisted-Resisted Exercise:

- Principles
- Techniques
- Indications
- Contraindications
- Effects
- Uses

FoEM 4.8.

Demonstrate Resisted Exercise.

Discuss:

- Principles
- Indications
- Contraindications
- Precautions
- Techniques
- Effects
- Uses

Types of resisted exercises:

- Manual resistance exercise
- Mechanical resistance exercise
- Isometric exercise

- Dynamic exercise:
 - Concentric
 - Eccentric
- Dynamic exercise:
 - Constant resistance
 - Variable resistance
- Isokinetic exercise
- Open-Chain exercise
- Closed-Chain exercise

FoEM 4.9.

Demonstrate Passive Movements.

Discuss:

- Causes of immobility
- Classification of Passive movements
- Specific definitions related to passive movements
- Principles of giving passive movements
- Indications
- Contraindications
- Effects and uses
- Techniques of giving passive movements

Demonstrate mobilization exercises of the joints region-wise:

- Passive
- Active

UNIT VI – Soft Tissue Manipulation Techniques**FoEM 5.1.**

Classify various types of soft tissue manipulation techniques.

FoEM 5.2.

Discuss:

- Physiological effects
- Therapeutic effects
- Contraindications of soft tissue manipulation

FoEM 5.3.

Describe:

- Effleurage
- Stroking
- Kneading
- Petrissage
- Deep friction
- Vibration
- Shaking

FoEM 5.4.

Perform:

- Effleurage
- Stroking
- Kneading
- Petrissage
- Deep friction
- Vibration
- Shaking

PRACTICAL**B.P.T. Fundamentals of Exercise Modalities 104 Practical: FoEM (P)**

The students of Exercise Therapy are to be trained in Practical Laboratory work for all the topics discussed in theory.

List of Practical

The student shall be able to perform independently:

FoEM (P) 6.1.

Demonstrate the different types of muscle contraction, muscle work, group action of muscles and co-ordinated movements on self.

FoEM (P) 6.2.

Demonstrate various fundamental and derived positions and describe muscle work and uses on self.

FoEM (P) 6.3.

Measure the ROM of joints using hand-held goniometer:

- Upper limb
- Lower limb
- Trunk

On human model.

FoEM (P) 6.4.

Demonstrate the relaxed passive movement of joints of upper limb and lower limb on human model.

FoEM (P) 6.5.

Instruct the patient to perform active mobilisation exercises of joints of upper limb and lower limb on human model.

FoEM (P) 6.6.

Perform passive mobilisation exercises of different joints region-wise on self/human model.

FoEM (P) 6.7.

Demonstrate the testing of muscle strength/function region-wise:

- Upper limb
- Lower limb
- Trunk

On human model.

FoEM (P) 6.8.

Perform all the soft tissue manipulative techniques region-wise:

- Upper limb
- Lower limb
- Neck
- Back
- Face

On human model.

FoEM (P) 6.9. Demonstration ONLY

To be shown to the student by the teacher:

1. Digital goniometry
2. Pelvic inclinometry
3. Dynamometry
4. Accessory passive movement

Recommended Textbooks

1. Principles of Exercise Therapy – Gardiner. C.B.S., Delhi.
2. Practical Exercise Therapy – Margaret Hollis. Blackwell Scientific Publications.

3. Therapeutic Exercise: Foundations and Techniques – Kisner and Colby. F.A. Davis.
4. Principles and Practices of Therapeutic Massage – Sinha, 3rd Edition. Jaypee Brothers, Delhi.
5. Textbook of Massage – Margaret Hollis.
6. Muscles: Testing and Function – Kendall. Williams & Wilkins.
7. Daniels and Worthingham's Muscle Testing – Hislop & Montgomery. W.B. Saunders.
8. Measurement of Joint Motion: A Guide to Goniometry – Norkin & White. F.A. Davis.

Recommended Reference Books

1. Therapeutic Exercise – Basmajian. Williams and Wilkins.
2. Licht S.H., Editor. Massage, Manipulation, and Traction. E. Licht.
3. Global Strategy on Diet, Physical Activity and Health – World Health Organization.
4. McArdle W.D., Katch F.I., Katch V.L. Exercise Physiology: Nutrition, Energy, and Human Performance. Lippincott Williams & Wilkins; 2010.
5. Kennedy-Armbruster C., Yoke M. Methods of Group Exercise Instruction. Human Kinetics; 2014.
6. ACSM's Guidelines for Exercise Testing and Prescription.



FUNDAMENTALS OF ELECTRO PHYSICAL AGENTS (FoEA)

Course Code	BPT-105	L	P	C	Total sessions
Course Title	Fundamentals of Electro Physical Agents (FoEA)	120	60	10	180
Pre-requisite	Knowledge of basic Physics, Human Anatomy and Human Physiology.				
Co-requisites	NIL				

Course Objective:

1. To develop an understanding of the fundamental physical and electrical principles underlying electro physical agents used in Physiotherapy.
2. To acquire knowledge of the production, properties and physiological effects of electrical currents and physical agents.
3. To understand the principles, indications, contraindications and precautions of low frequency currents and superficial heating modalities.
4. To develop competency in the safe and effective selection, application and operation of electrotherapy equipment.
5. To develop practical skills in electro-diagnostic testing and the application of basic electro physical agents in Physiotherapy practice.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the fundamental physical principles related to matter, electricity, magnetism, light, sound and electromagnetic spectrum in relation to Physiotherapy.

CLO2: Demonstrate knowledge of electrical supply, electrical safety devices, precautions and initial management of electric shock.

CLO3: Explain the biophysical principles, therapeutic uses, indications, contraindications and clinical application of low frequency currents.

CLO4: Perform and interpret basic electrical reactions and electro-diagnostic tests including strength-duration curve, Chronaxie and Rheobase.

CLO5: Demonstrate safe and effective application of Infrared Rays and superficial heat modalities including paraffin wax bath, moist heat and electrical heating pads.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate foundational knowledge and professional competence in Physiotherapy.

PLO2: Apply principles of basic medical and Physiotherapy sciences in clinical practice.

PLO3: Perform appropriate assessment and identify Physiotherapy needs.

PLO4: Plan and implement safe and effective Physiotherapy interventions.

PLO5: Demonstrate competency in the use of Physiotherapy equipment and therapeutic modalities.

PLO6: Practice Physiotherapy ethically, safely and professionally.

PLO7: Demonstrate effective communication, lifelong learning and evidence-based practice.

Program Specific Outcomes (PSOs):

PSO1: Apply fundamental principles of Physiotherapy sciences in assessment and intervention.

PSO2: Demonstrate competency in the safe application of electro physical agents and therapeutic modalities.

PSO3: Perform basic Physiotherapy assessment and therapeutic procedures.

PSO4: Demonstrate professional and safe clinical practice in Physiotherapy.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	2	2	2	2	3	3	2	2
CLO2	3	3	2	3	3	3	2	3	3	2	3
CLO3	3	3	2	3	3	3	2	3	3	3	3
CLO4	3	3	3	3	3	3	2	3	3	3	3
CLO5	3	3	2	3	3	3	2	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**UNIT I – Physical Principles in Relation to Physiotherapy****FoEA 1.1. Physical Principles In Relation to Physiotherapy:**

1. Structure and Properties of matter-solids, liquids and gases, adhesion, surface tension, viscosity, density and elasticity. Structure of atoms, molecules, elements and compounds, electron theory, static and current electricity.
2. Conduction, Insulators, Potential difference, Resistance and Intensity. Ohm's Law its application to AC and DC currents.
3. Rectifying Devices-Thermionic valves, semiconductors, Transistors, Amplifiers, Transducers, Oscillator Circuits. Capacitance, Condensers in DC and AC circuits.
4. Display devices and indicators-analogue & digital.

FoEA 1.2. Effects of Current Electricity

1. Chemical effects- ions and electrolytes, ionization, production of E.M.F by chemical actions. Magnetic effects, Molecular theory of Magnetism. Magnetic fields, electromagnetic induction.
2. Milli ammeter and voltmeter, transformers and choke coil, thermal effects-joules law and heat production.
3. Physical principles of light and its properties.
4. Physical principles of sound and its properties.
5. Electromagnetic spectrum-biophysical application.

FoEA 1.3. Electrical Supply

1. Brief outline of main supply of electric current. Dangers short circuits, electric shocks.
2. Precautions safety devices, earthing, fuses etc. First and initial management of electric shock.

UNIT II – Low Frequency Currents**FoEA 2.1. Low Frequency Currents**

Introduction to direct, alternating and modified currents.

1. **Iontophoresis:** Biophysics, principles, therapeutic uses, indications, contraindications, operational skills of equipment and patient preparation.
2. **Faradic current:** Biophysics, principles, therapeutic uses, indications, contraindications, operational skills of equipment and patient preparation.
3. **Interrupted direct current:** Biophysics, principles, therapeutic uses, indications, contra-indications, operational skills of equipment and patient preparation.
4. **Transcutaneous Electrical Nerve Stimulations (TENS):** Types of low frequency, pulse widths, frequencies and intensities used as TENS applications, Theories of pain relief by TENS. Principles of clinical application, effects and uses, indications, contraindications, precautions. Operational skills of equipment patient preparation.

UNIT III – Electrical Reactions and Electro-Diagnostic Tests**FoEA 3.1. Electrical Reactions and Electro-Diagnostic Tests**

1. Electrical stimuli and normal behavior of nerve and muscle tissue. Types of lesions and development of reaction of degeneration.
2. Faradic/Intermittent direct current test.
3. S.D. Curve and its application. Chronaxie, Rheobase and pulse ratio.

UNIT IV – Infrared Rays and Superficial Heat

FoEA 4.1. Infrared Rays

Infrared Rays-Wavelength, frequency, types and sources of IRR generation techniques of irradiation, physiological and therapeutic effects indications, contraindications, precautions, Operational skills of equipment and patient Preparation.

FoEA 4.2. Superficial Heat: Paraffin wax bath, moist heat, electrical heating pads.

1. Mechanism of production.
2. Mode of heat transfer.
3. Physiological & therapeutic effects.
4. Indications, contraindications, precautions, operational skills of equipment and patient preparation.

PRACTICAL

B.P.T. Fundamentals of Electro Physical Agents 105 Practical: FoEA (P)

The students of are to be trained in Practical Laboratory work for all the topics discussed in theory.

List of Practical (Student shall be able to perform independently)

FoEA (P) 5.1. Identify components and safety devices involved in electric supply of the electrotherapy department.

FoEA (P) 5.2. Experience sensory and motor stimulation of nerves and muscles by various types of low frequency currents on self.

FoEA (P) 5.3. Locate and stimulate different motor points region wise including the upper & lower limb, trunk face. On human model.

FoEA (P) 5.4. Demonstrate the application of special techniques of low frequency current including Faradic foot bath, faradism under pressure.

FoEA (P) 5.5. Demonstrate the application of techniques of Iontophoresis.

FoEA (P) 5.6. Demonstrate the plotting of strength duration curve and find out Chronaxie and Rheobase.

FoEA (P) 5.7. Demonstrate the techniques of application of various types of IR lamps to various body regions.

FoEA (P) 5.8. Demonstrate the techniques of application of paraffin wax bath to various body regions.

FoEA (P) 5.9. Demonstrate the techniques of application of TENS to various body regions.

Recommended Text Books

1. Electrotherapy Explained: Principles & Practice – Low & Reed, Butterworth Heinemann.
2. Clayton's Electrotherapy – Forster & Palastanga, Baillière Tindall.

Recommended Reference Books

1. Principles & Practice of Electrotherapy – Kahn, Churchill Livingstone.
2. Clinical Electrotherapy – Currier and Nelson.
3. Therapeutic Heat & Cold – Lehmann, Williams & Wilkins.

PSYCHOLOGY AND SOCIOLOGY (PSY & SOC)

Course Code	BPT-106	L	P	C	Total sessions
Course Title	Psychology and Sociology (PSY & SOC)	120	-	8	120
Pre-requisite	NIL				
Co-requisites	NIL				

Course Objective:

1. Develop an understanding of the fundamental principles and concepts of Psychology relevant to health and physiotherapy practice.
2. Understand human growth, development, emotions, perception, motivation, learning, personality and psychological responses to illness and disability.
3. Develop knowledge of stress, frustration, anxiety, adjustment, coping strategies and psychological management relevant to patient care.
4. Understand the principles of social psychology and clinical psychology and their application in physiotherapist–patient interaction and rehabilitation.
5. Develop an understanding of the basic concepts, principles and scope of Sociology in relation to health, illness, disability and rehabilitation.
6. Understand the influence of family, social groups, community, culture and social change on health and disease.
7. Develop awareness regarding social problems, disability, social security and social legislation relevant to healthcare and rehabilitation.
8. Apply psychological and sociological principles to promote effective communication, patient-centred care and holistic rehabilitation.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the fundamental concepts, schools, methods and branches of Psychology and their relevance to physiotherapy practice.

CLO2: Describe human growth and development, emotions, sensation, perception, attention, motivation, learning and intelligence and their relevance to health and rehabilitation.

CLO3: Explain frustration, stress, anxiety, personality, defence mechanisms and psychological reactions of patients during illness, admission and treatment.

CLO4: Apply principles of social and clinical psychology, including leadership, attitude, psychotherapy, stress management, self-management and physiotherapist–patient interaction in clinical practice.

CLO5: Explain the fundamental concepts and scope of Sociology and describe the influence of social factors, socialization, social groups and family on health, illness and rehabilitation.

CLO6: Describe the influence of community, culture, social change and social problems on health, disability and rehabilitation.

CLO7: Apply psychological and sociological principles to promote effective communication, holistic patient care, social participation and rehabilitation.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge of basic medical sciences, physiotherapy sciences and clinical sciences relevant to physiotherapy practice.

PLO2: Perform appropriate assessment and clinical evaluation for identification of impairments, functional limitations and rehabilitation needs.

PLO3: Plan and implement safe, effective and evidence-informed physiotherapy interventions.

PLO4: Demonstrate effective communication and interpersonal skills with patients, families, caregivers and healthcare professionals.

PLO5: Work effectively as a member of an interdisciplinary healthcare and rehabilitation team.

PLO6: Demonstrate ethical, professional and socially responsible behaviour in physiotherapy practice.

PLO7: Engage in lifelong learning, critical thinking and professional development.

Program Specific Outcomes (PSOs):

PSO1: Apply knowledge of human sciences and physiotherapy sciences in the assessment and management of individuals with health conditions and disabilities.

PSO2: Demonstrate competency in planning and delivering patient-centred physiotherapy and rehabilitation interventions.

PSO3: Apply effective communication, behavioural and psychosocial principles in physiotherapy practice.

PSO4: Promote health, functional independence, participation and quality of life through physiotherapy and rehabilitation.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	2	1	2	1	2	2	3	1	3	2
CLO2	3	2	2	2	1	2	2	3	2	3	2
CLO3	3	2	2	3	2	3	2	2	2	3	3
CLO4	2	2	2	3	3	3	2	2	3	3	3
CLO5	3	2	2	3	2	3	2	3	2	3	3
CLO6	3	2	2	3	2	3	2	2	2	3	3
CLO7	2	3	3	3	3	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

PART A: PSYCHOLOGY (PSY)

UNIT 1: INTRODUCTION TO PSYCHOLOGY

PSY 1.1. Introduction to Psychology

1. Describe Schools: Structuralism, functionalism, behaviorism, Psychoanalysis.
2. Describe Methods: Introspection, observation, inventory and experimental method.
3. Describe in brief Branches: pure psychology and applied psychology
4. Describe importance of study of Psychology to physiotherapy

UNIT 2: DEVELOPMENTAL PSYCHOLOGY

PSY 1.2. Developmental Psychology

1. Describe Growth and Development Nature of growth and development, Characteristics of growth and development. Developmental periods of infancy.
2. Describe Childhood, adolescence, adulthood and old age, Factors affecting growth and development.
3. Describe Role of heredity and environment and their relative importance in physical, psychological and social development

UNIT 3: EMOTIONS AND PERCEPTION

PSY 1.3. Emotions and perception

1. Describe Emotions Concept and definition, Theories of emotions, Physiological changes due to emotional state. Nature and control of anger, fear and anxiety.
2. Describe Sensation, attention and perception Meaning and definition.

3. Describe Types of sensation and Perception.
4. Describe Principles of Perception. Illusion and hallucination concept of lattention and Factors determining attention.

UNIT 4: MOTIVATION AND LEARNING

PSY 1.4. Motivation and Learning

1. Definition, needs, drives and motives, primary motives and secondary motives, Achievement motivation.
2. Discuss the theories of motivation.
3. Describe theories of Learning
4. Describe Concepts, Characteristics, Types, Laws of Leaning, Theories of learning, Trial and Error theory,
5. Describe Conditioning-classical and operant, Insight theory of learning, Factors influencing learning.
6. Describe the effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.
7. Describe Intelligence; Discuss Characteristics, Types. IQ. Mental age.
8. Describe Assessment of intelligence, intelligence tests-verbal and performance test

UNIT 5: PSYCHOLOGY OF FRUSTRATION AND STRESS

PSY 1.5. Psychology of frustration and Stress

1. Describe Frustration and stress under the following headings: Definition. Causes, Sources of frustrations, Conflict, Different types of conflicts, Adjustment and maladjustment. Defense Mechanism.
2. Describe Different types of Anxiety, Tension, Physiological symptoms, causes reactions to stresses, psycho-somatic problems, coping strategies.
3. Discuss the management of stress

UNIT 6: PERSONALITY

PSY 1.6. Personality

1. Define Personality and describe factors in personality development
2. Describe tools of Measurement of Personality:- observation, situational test, questionnaire, rating scale, interview, and projective techniques.
3. Describe Defense Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjection, acting out.
4. Describe psychological reactions of a patient during admission and treatment in terms of possible Anxiety, shock denial, suspicion. Loneliness, shame, guilt, rejection, fear, withdrawal, depression, egocentric, justify and loss of hope.

UNIT 7: SOCIAL PSYCHOLOGY

PSY 1.7. Social psychology

1. Describe Different types of leaders and Different theoretical approaches to leadership.
2. Describe development of attitude and Change of attitude.

UNIT 8: CLINICAL PSYCHOLOGY

PSY 1.8. Clinical psychology

1. Describe Models of training, abnormal behavior assessment, clinical judgement, psychotherapy, self-management methods, physiotherapist patient interaction, aggression,
2. Discuss the following:

- i. Self-imaging
- ii. stress management
- iii. assertive training
- iv. Group therapy
- v. Body awareness
- vi. Pediatric, child and geriatric clinical psychology.

PART B: SOCIOLOGY (SOC)

UNIT 1: INTRODUCTION TO SOCIOLOGY

SOC 1.1 Introduction to sociology

SOC 1.2 Meaning- Definition and scope of sociology

SOC 1.3 Its relation to Anthropology, Psychology, Social Psychology.

SOC 1.4 Methods of Sociological investigations- Case study, social survey, questionnaire, Interview and opinion poll methods.

SOC 1.5 Importance of its study with special reference to Health Care Professionals.

SOC 1.6 Social Factors in Health and disease situations:

1. Meaning of social factors
2. Role of social factors in health and illness

SOC 1.7 Socialization:

1. Meaning and nature of socialization.
2. Primary, Secondary and Anticipatory socialization.
3. Agencies of socialization.

SOC 1.8 Social Groups:

Concepts of social groups, influence of formal and informal groups on health and sickness. The role of primary groups and secondary groups in the hospital and rehabilitation setup.

SOC 1.9 Family:

1. The family, meaning and definitions.
2. Functions of types of family
3. Changing family patterns
4. Influence of family on the individuals health, family and nutrition, the effects of sickness in the family and psychosomatic disease and their importance to physiotherapy.

UNIT 2: COMMUNITY, CULTURE, SOCIAL CHANGE AND SOCIAL PROBLEMS

SOC 2.1. Community:

1. Rural community: Meaning and features –Health hazards of ruralities, health hazards to tribal community.
2. Urban community: Meaning and features- Health hazards of urbanities.

SOC 2.2. Culture and Health:

1. Concept of Health
2. Concept of Culture
3. Culture and Health
4. Culture and Health Disorders

SOC 2.3. Social change:

1. Meaning of social changes.
2. Factors of social changes.
3. Human adaptation and social change
4. Social change and stress.
5. Social change and deviance.
6. Social change and health programme

7. The role of social planning in the improvement of health and rehabilitation.

SOC 2.4. 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 in employment
8. Geriatric problems
9. Problems of underprivileged.

SOC 2.5. Social Security:

Social security and social legislation in relation to the disabled.

RECOMMENDED TEXTBOOKS FOR PSY

1. Morgan C.T. & King R.A. Introduction to Psychology – recent edition [Tata McGraw-Hill publication].
2. Munn N.L. Introduction to Psychology [Premium Oxford, I.B.P. publishing].
3. Clinical Psychology – Akolkar.
4. Hurlock E.B. Development Psychology. McGraw-Hill.

RECOMMENDED REFERENCE BOOKS FOR PSY

1. Psychology Indian continent edition – Raron R.A. Mishra, 2018.
2. Abnormal Psychology – Sarason I.G., Sarason B.R., Prentice Hall India.
3. Introduction to Psychology – Atkinson R.L., Hilgard E.R., 2019.
4. Development: A Lifespan Approach – Johnson M.L., 2020, Pearson Education.
5. Abnormal Psychology: An Integrative Approach – Thomson Brooks / Cole Publishing.
6. Theories of Counselling and Psychotherapy: A Case Approach – Murdock N.L., Pearson Education, New Zealand.
7. Theories of Personality – Hall C.S., Lindzey G., Wiley and Sons Inc.

RECOMMENDED TEXTBOOKS FOR SOC

1. McGee – Sociology – Drydon Press, Illinois.
2. Kupuswamy – Social Changes in India – Vikas, Delhi.
3. Ahuja – Social Problems – Bookhive, Delhi.
4. Ginnsberg – Principles of Sociology – Sterling Publications.
5. Parter & Alder – Psychology & Sociology Applied to Medicine – W.B. Saunders.
6. Julian – Social Problems – Prentice Hall. Indian Social Problems – Madan, Vol-I, Madras.
7. Bhushan, V., & Sachdeva, D. R. (2005). Introduction to Sociology. Kitab Mahal.

RECOMMENDED REFERENCE BOOKS FOR SOC

1. Sociology – Anthony Giddens.
2. Sociology: Themes and Perspectives – Haralambos and Holborn.
3. Society: An Introductory Analysis – MacIver and Page.
4. Rules of Sociological Methods – Emile Durkheim.
5. Essay on Sociology – Max Weber.
6. Sociological Imagination – C. Wright Mills.

FUNDAMENTALS OF HEALTH CARE DELIVERY SYSTEM IN INDIA (FoHC)

Course Code	BPT-107	L	P	C	Total sessions
Course Title	Fundamentals of Health Care Delivery System in India (FoHC)	120	-	8	120
Pre-requisite	Basic knowledge of health, healthcare and healthcare services.				
Co-requisites	NIL				

Course Objective:

1. Develop an understanding of the structure, organization and functioning of the healthcare delivery system in India.
2. Understand the organization of primary, secondary and tertiary healthcare services and the role of community participation in healthcare delivery.
3. Develop knowledge regarding national health policies, National Health Mission and various National Health Programmes in India.
4. Understand the health scenario of India and major issues affecting healthcare delivery at present and in the future.
5. Develop an understanding of the profession of physiotherapy and its role in addressing national health issues and societal healthcare needs.
6. Understand the concepts of health, disease, risk factors, health promotion and disease prevention.
7. Develop awareness regarding globalization, corporatization, healthcare reforms and the role of healthcare financing and insurance.
8. Understand the roles of different healthcare professionals, health services, primary care and specialty care in the delivery of comprehensive healthcare services.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the basic concepts, structure and organization of the healthcare delivery system in India at primary, secondary and tertiary levels.

CLO2: Describe the role of community participation, private sector, National Health Mission and National Health Policy in healthcare delivery in India.

CLO3: Explain the objectives, action plans, targets, operations, achievements and constraints of various National Health Programmes.

CLO4: Describe the past, present and future health scenario of India and identify major issues affecting healthcare delivery.

CLO5: Explain the role of physiotherapy and physiotherapists in addressing national health issues and meeting societal healthcare expectations.

CLO6: Apply the concepts of health, disease, risk factors, health promotion and disease prevention in the context of healthcare delivery.

CLO7: Describe the concepts of corporatization, globalization, healthcare reform, healthcare financing and health insurance and their impact on healthcare delivery.

CLO8: Differentiate between various healthcare professionals, healthcare practice settings, primary care and specialty care and explain their roles within the healthcare delivery system.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge of basic medical sciences, physiotherapy sciences and clinical sciences relevant to physiotherapy practice.

PLO2: Perform appropriate assessment and clinical evaluation for identification of impairments, functional limitations and rehabilitation needs.

PLO3: Plan and implement safe, effective and evidence-informed physiotherapy interventions.

PLO4: Demonstrate effective communication and interpersonal skills with patients, families, caregivers and healthcare professionals.

PLO5: Work effectively as a member of an interdisciplinary healthcare and rehabilitation team.

PLO6: Demonstrate ethical, professional and socially responsible behaviour in physiotherapy practice.

PLO7: Engage in lifelong learning, critical thinking and professional development.

Program Specific Outcomes (PSOs):

PSO1: Apply knowledge of human sciences and physiotherapy sciences in the assessment and management of individuals with health conditions and disabilities.

PSO2: Demonstrate competency in planning and delivering patient-centred physiotherapy and rehabilitation interventions.

PSO3: Apply effective communication, behavioural and psychosocial principles in physiotherapy practice.

PSO4: Promote health, functional independence, participation and quality of life through physiotherapy and rehabilitation.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	1	1	2	2	2	2	2	1	2	2
CLO2	3	1	1	2	3	3	2	2	1	2	3
CLO3	3	1	1	2	2	3	3	2	1	2	3
CLO4	3	1	1	2	2	3	3	2	1	2	3
CLO5	2	2	3	3	3	3	2	3	3	3	3
CLO6	3	2	3	2	2	3	2	3	3	2	3
CLO7	3	1	1	2	2	3	3	2	1	2	2
CLO8	3	1	1	3	3	3	2	2	2	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION – A

FoHC 1.1. Introduction to healthcare delivery system

FoHC 1.2. Healthcare delivery system in India at primary, secondary and tertiary care

FoHC 1.3. Community participation in healthcare delivery system

FoHC 1.4. Health system in developed countries.

FoHC 1.5. Private Sector

FoHC 1.6. National Health Mission

FoHC 1.7. National Health Policy

FoHC 1.8. Issues in Health Care Delivery System in India

SECTION – B

FoHC 1.9. National Health Programme- Background objectives, action plan, targets, operations, achievements and constraints in various National Health Programme.

FoHC 1.10. Health scenario of India- past, present and future

FoHC 1.11. Introduction to the profession of physiotherapy role of physiotherapy in national health issues and the expectations of society from physiotherapists

FoHC 1.12. The concepts of health and disease, risk factors, and the role of health promotion and disease prevention

FoHC 1.13. Explore the corporatization of health care.

FoHC 1.14. Identify the globalisation of health care.

FoHC 1.15. Assess the prospects of new health care reform.

FoHC 1.16. Understand various types of health services professionals and their training, practice requirements, and practice settings.

FoHC 1.17. Differentiate between primary care and specialty care, and identify the causes of the imbalance between primary care and specialty care

FoHC 1.18. Study the role of health care financing and its impact on the delivery of health care.

FoHC 1.19. Understand the basic concept of insurance and how general insurance terminology applies to health insurance.

Recommended Text Books

1. Mukherjee, Som Sankar. Introduction to National Healthcare Delivery System in India: As per NCAHP Curriculum for Bachelor of Physiotherapy. Crown Publishing, 2026.
2. Park, K. Park's Textbook of Preventive and Social Medicine. Banarsidas Bhanot Publishers, Latest Edition.
3. Kelkar, Sanjeev. India's Public Health Care Delivery: Policies for Universal Health Care. Palgrave Macmillan, 1st Edition, 2021.
4. Rao, K. Sujatha. Do We Care? India's Health System. Oxford University Press, 2016.
5. Goel, Sonu and Aggarwal, Arun Kumar. Management of Healthcare Systems. Oxford University Press India.

Recommended Reference Books

1. Park, K. Park's Textbook of Preventive and Social Medicine. Banarsidas Bhanot Publishers, Latest Edition.
2. Rao, S. B. Principles of Community Medicine. AITBS Publishers & Distributors, New Delhi.
3. Rahim, A. Principles and Practice of Community Medicine. Jaypee Brothers Medical Publishers.
4. Gupta, M. C. and Mahajan, B. K. Textbook of Preventive and Social Medicine. Jaypee Brothers Medical Publishers.
5. Abel-Smith, Brian. An Introduction to Health: Policy, Planning and Financing. Routledge, 2018.
6. Murray, Christopher J. L. and Frenk, Julio. A Framework for Assessing the Performance of Health Systems. Bulletin of the World Health Organization.
7. World Health Organization. Health Policy and Systems Research: A Methodology Reader. World Health Organization.
8. Government of India. National Health Policy, 2017. Ministry of Health and Family Welfare, Government of India.
9. Matzen, R. N. and Lang, R. S. Clinical Preventive Medicine. Mosby.
10. Jekel, J. F., Katz, D. L. and Elmore, J. G. Epidemiology, Biostatistics and Preventive Medicine. Saunders.
11. Kelkar, Sanjeev. India's Public Health Care Delivery: Policies for Universal Health Care. Palgrave Macmillan, 2021.
12. Goel, Sonu and Aggarwal, Arun Kumar. Management of Healthcare Systems. Oxford University Press India.

ENGLISH, COMMUNICATION AND SOFT SKILLS (EG)

Course Code	M.P.T (MS)-104	L	P	C	Total sessions
Course Title	English, Communication And Soft Skills (EG)	60	-	4	60
Pre-requisite	NIL				
Co-requisites	NIL				

Course Objective:

1. To develop basic English language skills required for academic and professional communication.
2. To develop effective verbal, non-verbal and written communication skills.
3. To enable students to communicate effectively in professional, academic and healthcare settings.
4. To develop therapeutic communication skills required for effective interaction with patients and caregivers.
5. To develop communication skills for teaching, learning, patient education and professional presentations.
6. To identify barriers to effective communication and apply appropriate strategies to overcome them.
7. To develop essential soft skills including interpersonal communication, empathy, active listening, teamwork and professional behaviour.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Demonstrate appropriate English language skills including grammar, vocabulary, speaking and writing for academic and professional communication.

CLO2: Apply effective verbal, non-verbal and written communication skills in academic, professional and healthcare settings.

CLO3: Prepare professional communications including letters, E-mails, reports, case studies, patient records and basic academic compositions.

CLO4: Demonstrate effective therapeutic communication and appropriate interaction with patients, caregivers and healthcare professionals.

CLO5: Apply appropriate communication methods for teaching, learning and patient education.

CLO6: Identify barriers to communication and implement appropriate strategies to improve communication effectiveness.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate knowledge and professional competence in physiotherapy practice.

PLO2: Apply scientific knowledge and evidence-based principles in physiotherapy practice.

PLO3: Demonstrate clinical reasoning and problem-solving skills for physiotherapy management.

PLO4: Communicate effectively with patients, caregivers, healthcare professionals and the community.

PLO5: Demonstrate professional behaviour, teamwork, leadership and interpersonal skills.

PLO6: Uphold ethical, legal and professional responsibilities in healthcare practice.

PLO7: Engage in lifelong learning, professional development and continuous improvement.

Program Specific Outcomes (PSOs):

PSO1: Demonstrate effective communication skills required for physiotherapy assessment, treatment and rehabilitation.

PSO2: Establish therapeutic and professional relationships with patients, caregivers and members of the healthcare team.

PSO3: Apply effective communication strategies for patient education, health promotion and rehabilitation.

PSO4: Demonstrate professional interpersonal, teamwork and soft skills in physiotherapy practice.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	2	1	1	3	2	2	2	3	2	2	3
CLO2	2	1	2	3	3	2	2	3	3	2	3
CLO3	2	2	2	3	2	2	2	3	2	3	2
CLO4	3	1	2	3	3	3	2	3	3	3	3
CLO5	2	2	2	3	3	2	2	3	3	3	3
CLO6	2	1	2	3	3	3	2	3	3	2	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**SECTION A****EG 1.1. Basic Language Skills**

Grammar and Usage.

EG 1.2. Business Communication Skills

With focus on speaking – Conversations, discussions, dialogues, short presentations, pronunciation.

EG 1.3. Teaching the Different Methods of Writing

Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization.

EG 1.4. Basic Concepts & Principles of Good Communication**SECTION B****EG 1.5. Special Characteristics of Health Communication****EG 1.6. Types & Process of Communication**

Verbal, non-verbal and written communication. Upward, downward and lateral communication.

EG 1.7. Therapeutic Communication

Empathy versus sympathy.

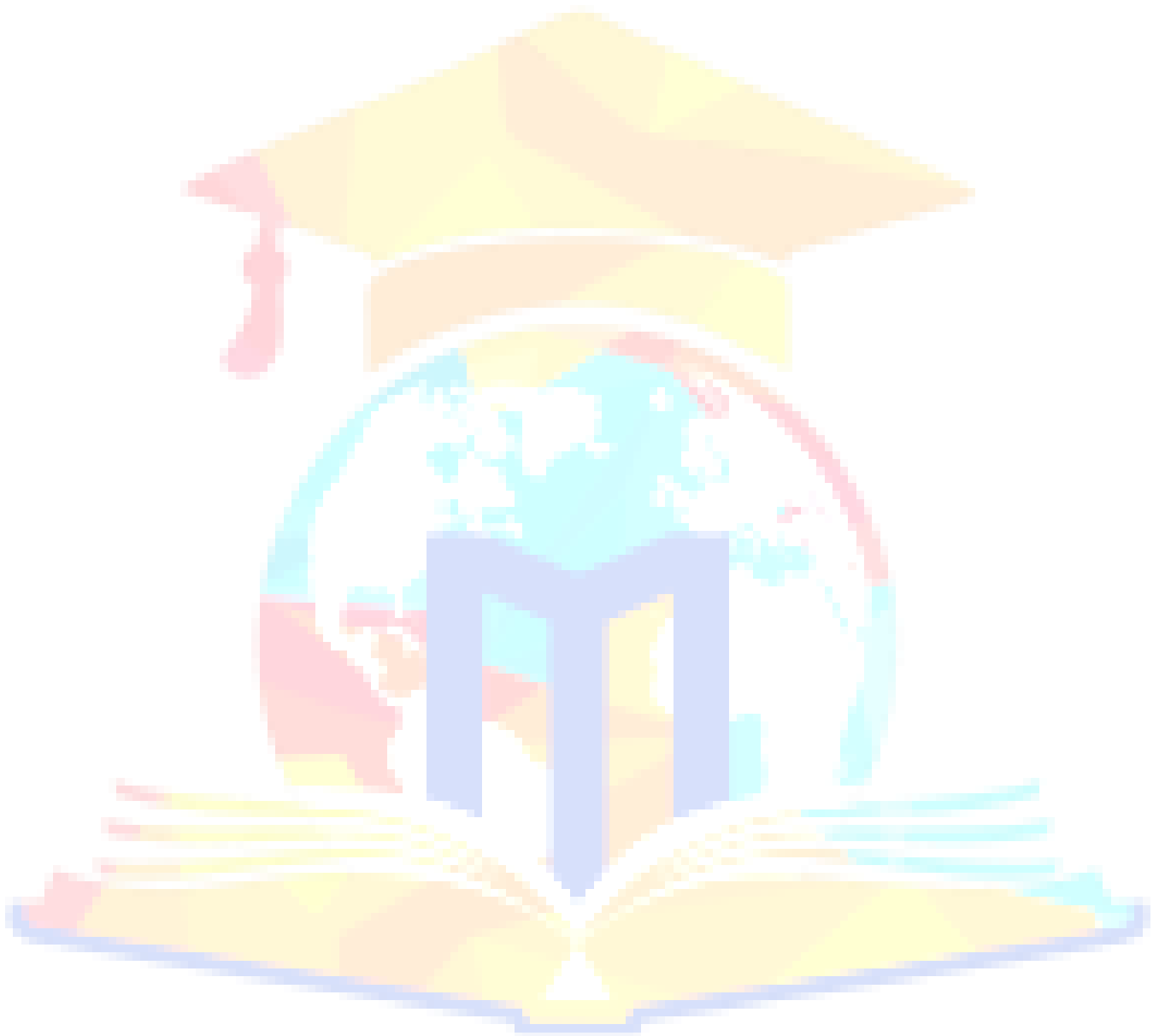
EG 1.8. Communication Methods for Teaching and Learning**EG 1.9. Communication Methods for Patient Education****EG 1.10. Barriers of Communication & How to Overcome****Recommended Text Books**

1. Business Communication Today – Bovee, C. L. and Thill, J. V. Pearson Education.
2. Effective Communication Skills – Hargie, O. Routledge.
3. English for Professional Success – Basic communication and professional English language skills for healthcare and professional practice.
4. Communication Skills for the Healthcare Professional – Effective communication principles and clinical communication skills.
5. Professional Communication in Healthcare – Communication skills for interaction with patients, caregivers and healthcare professionals.

Recommended Reference Books

1. English Grammar in Use – Raymond Murphy. Cambridge University Press.
2. The Communication Book: 44 Ideas for Better Conversations Every Day – Mikael Krogerus and Roman Tschäppeler.
3. Skills for Communicating with Patients – Jonathan Silverman, Suzanne Kurtz and Juliet Draper.
4. Communication Skills for Health Professionals – Margaret Lloyd and Robert Bor.

5. The Essentials of Communication in Health Care – Effective communication approaches for healthcare professionals.
6. Patient Education: A Practical Approach – Barbara K. Redman.
7. Soft Skills: Know Yourself and Know the World – Meenakshi Raman and Sangeeta Sharma.
8. Personality Development and Soft Skills – Barun K. Mitra.



COMPUTERS AND INFORMATION SCIENCE (IT)

Course Code	M.P.T (MS)-104	L	P	C	Total sessions
Course Title	Computers And Information Science (IT)	60	-	4	60
Pre-requisite	NIL				
Co-requisites	NIL				

Course Objective:

1. To develop fundamental knowledge of computers, their characteristics, components and functioning.
2. To familiarize students with input-output devices, processors, memory and storage devices.
3. To develop competency in the use of operating systems and basic computer applications.
4. To develop practical skills in MS Word, MS Excel and MS PowerPoint for academic and professional purposes.
5. To introduce students to computer networks, internet services and their applications.
6. To develop skills in the use of computers for data entry, documentation, communication and information management.
7. To understand the application of computers and information technology in clinical settings and physiotherapy practice.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Describe the basic concepts, characteristics, components and generations of computers.

CLO2: Identify and explain the functions of input-output devices, processors, memory and storage devices.

CLO3: Demonstrate basic operational skills in operating systems and computer-based applications.

CLO4: Create, edit and manage documents, spreadsheets and presentations using MS Word, MS Excel and MS PowerPoint.

CLO5: Explain the basic concepts of computer networks, internet services and internet applications.

CLO6: Apply computer and information technology skills for data entry, documentation, academic work and clinical settings.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate knowledge and professional competence in physiotherapy practice.

PLO2: Apply scientific knowledge and evidence-based principles in physiotherapy practice.

PLO3: Demonstrate clinical reasoning and problem-solving skills for physiotherapy management.

PLO4: Communicate effectively with patients, caregivers, healthcare professionals and the community.

PLO5: Demonstrate professional behaviour, teamwork, leadership and interpersonal skills.

PLO6: Uphold ethical, legal and professional responsibilities in healthcare practice.

PLO7: Engage in lifelong learning, professional development and continuous improvement.

Program Specific Outcomes (PSOs):

PSO1: Demonstrate competency in the use of information and communication technology relevant to physiotherapy practice.

PSO2: Apply computer-based skills for academic, professional, clinical documentation and information management.

PSO3: Utilize digital tools and information resources for communication, learning and professional development.

PSO4: Apply appropriate computer and information technology skills in healthcare and physiotherapy settings.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	2	2	1	1	1	1	3	3	2	3	2
CLO2	2	2	1	1	1	1	2	3	2	2	2
CLO3	2	2	2	2	2	2	3	3	3	3	3
CLO4	2	2	2	3	2	2	3	3	3	3	3
CLO5	2	2	1	3	2	2	3	3	3	3	3
CLO6	3	3	2	3	2	2	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**IT 1.1. Introduction to Computer**

Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.

IT 1.2. Input Output Devices

Input devices (keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices (monitors, pointers, plotters, screen image projector, voice response systems).

IT 1.3. Processor and Memory

The Central Processing Unit (CPU), main memory.

IT 1.4. Storage Devices

Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.

IT 1.5. Introduction of Windows

History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).

IT 1.6. Introduction to MS-Word

Introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.

IT 1.7. Introduction to Excel

Introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.

IT 1.8. Introduction to Power-Point

Introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs/photos/ Videos.

IT 1.9. Introduction of Operating System

Introduction, operating system concepts, types of operating system.

IT 1.10. Computer Networks

Introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.

IT 1.11. Internet and its Applications

Definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.

IT 1.12. Application of Computers in Clinical Settings

PRACTICAL

Course Contents: B.P.T. IT 109 Practical (P)

IT (P) 2.1. Practical on Fundamentals of Computers

1. Learning to use MS office: MS Word, MS PowerPoint, MS Excel.
2. To install different software.
3. Data entry efficiency.

Recommended Text Books

1. Computer Fundamentals – P. K. Sinha and Priti Sinha. BPB Publications.
2. Fundamentals of Computers – V. Rajaraman. PHI Learning.
3. Computer Fundamentals and Programming in C – Reema Thareja. Oxford University Press.
4. Microsoft Office Step by Step – Joan Lambert. Microsoft Press.
5. Computers in Healthcare and Medicine – Reference text covering applications of computers and information technology in healthcare and clinical practice.

Recommended Reference Books

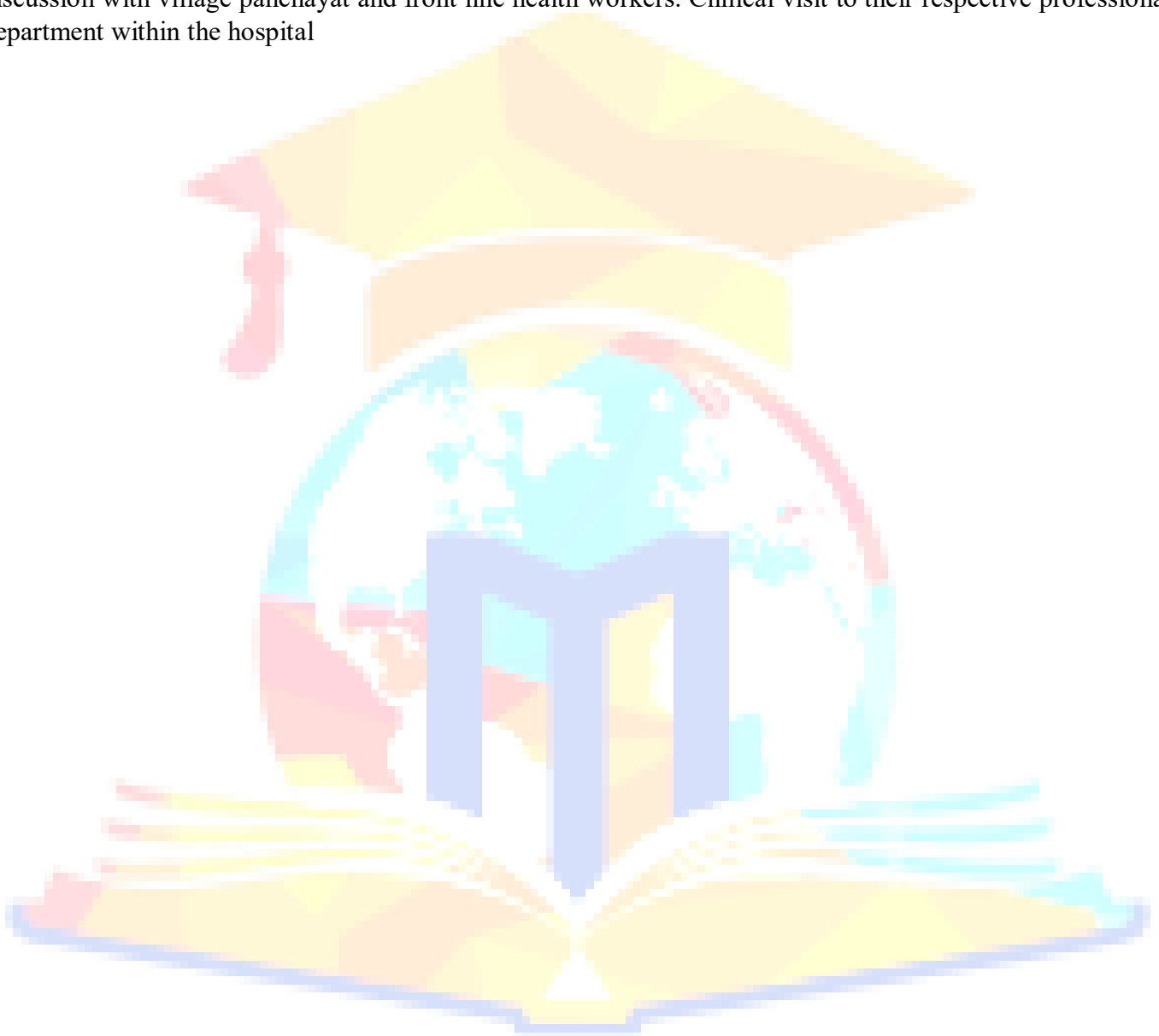
1. Introduction to Information Technology – IT concepts and applications.
2. Fundamentals of Computer Networks – Computer networking concepts, communication and network applications.
3. Computer Networks – Andrew S. Tanenbaum and David J. Wetherall. Pearson Education.
4. Information Technology for Healthcare Professionals – Reference material on information technology applications in healthcare settings.
5. Using Microsoft Office – Reference guide for MS Word, MS Excel and MS PowerPoint applications.
6. Introduction to Computers and Information Technology – Reference text for computer hardware, software and information systems.

CLINIC ORIENTATION AND VISIT (Cor)

COr 1.0. The objective of this particular section of the foundation course is to sensitize potential learners with essential knowledge; this will lay a sound foundation for their learning across the under-graduate program and across their career. Innovative teaching methods should be used to ensure the attention of a student and make them more receptive such as group activities, interactive fora, role plays, and clinical bed-side demonstrations.

COr 1.1. The community orientation and clinical visit will include visit to the entire chain of healthcare delivery system -Sub centre, PHC, CHC, SDH, DH and Medical College, private hospitals, dispensaries and clinics.

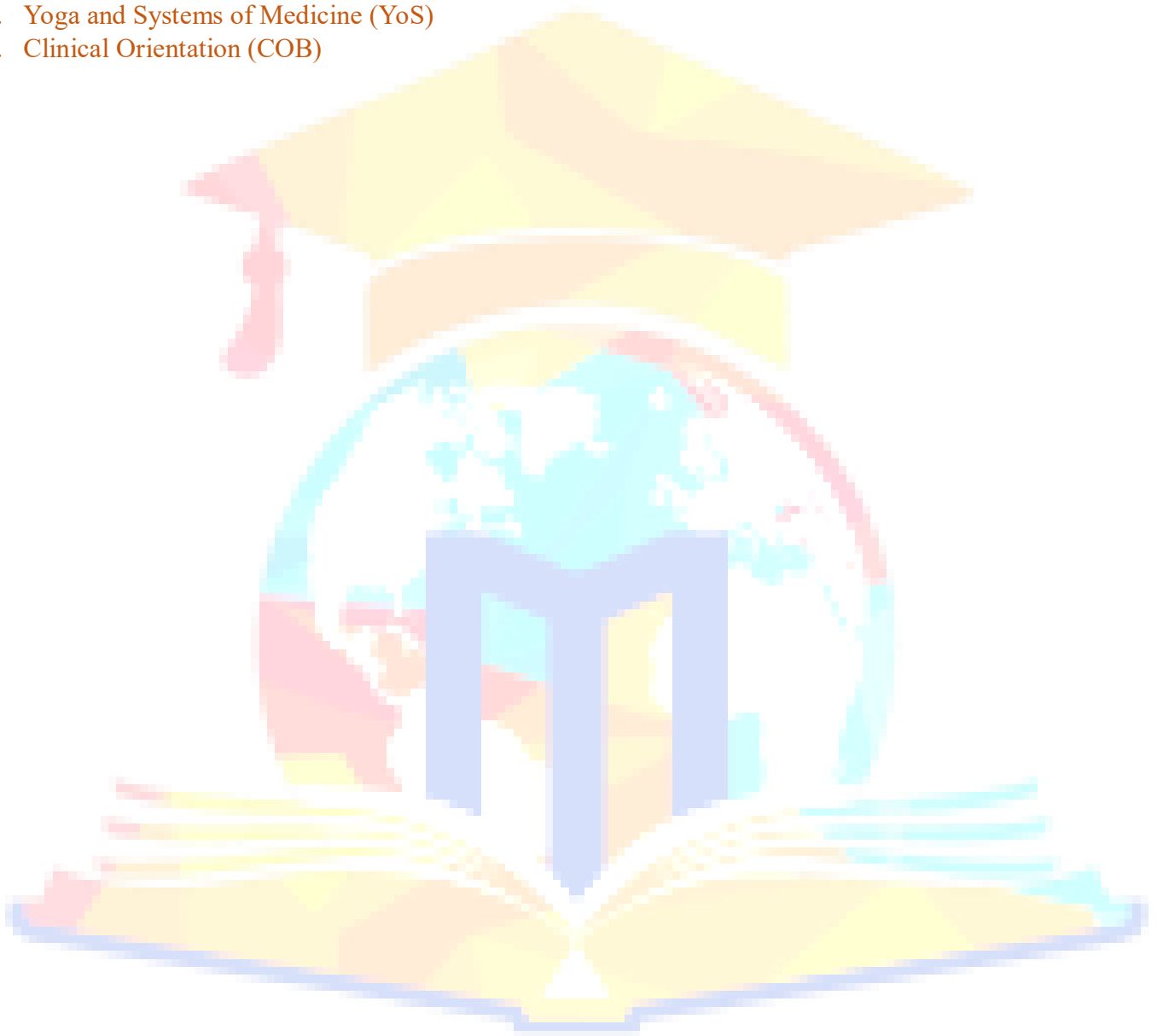
COr 1.2. The student will also be briefed regarding governance at village level including interaction and group discussion with village panchayat and front line health workers. Clinical visit to their respective professional department within the hospital





COURSE TITLES

1. Pathology & Microbiology (PM)
2. Pharmacology (PC)
3. Public Health & Health Promotion (PH)
4. Emergency Care and Life Support Skills (ECLS)
5. Exercise Therapy (ET)
6. Electrotherapy (ET)
7. Biomechanics & Kinesiology (BK)
8. Yoga and Systems of Medicine (YoS)
9. Clinical Orientation (COB)



PATHOLOGY AND MICROBIOLOGY (PM)

Course Code	BPT-201	L	P	C	Total sessions
Course Title	Pathology and Microbiology (PM)	120	-	8	120
Pre-requisite	Students should have basic knowledge of: Human Anatomy, Human Physiology, Biochemistry, Basic concepts of cells, tissues and body systems, Basic understanding of normal structure and function of the human body				
Co-requisites	NIL				

Course Objective:

1. Develop an understanding of the causes and mechanisms of disease, cell injury, inflammation, healing and repair.
2. Understand fluid and hemodynamic derangements, immune mechanisms, nutritional disorders, hypersensitivity and neoplasia.
3. Acquire knowledge of the causative factors, pathology, clinical features, diagnosis and management of common disorders affecting major body systems.
4. Develop an understanding of diseases affecting the musculoskeletal, nervous, cardiovascular, respiratory, endocrine and hematological systems.
5. Understand the classification, sources, mechanisms, prevention and management of infections.
6. Acquire knowledge regarding common bacterial, viral, fungal, opportunistic and parasitic infections relevant to physiotherapy practice.
7. Apply knowledge of pathology and microbiology in understanding disease processes and their implications for physiotherapy assessment, treatment planning and rehabilitation.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO 1: Explain the causes and mechanisms of disease, cell injury, necrosis, gangrene, inflammation, healing and repair.

CLO 2: Describe fluid and hemodynamic derangements, immune mechanisms, autoimmune and immunodeficiency disorders, hypersensitivity reactions, nutritional disorders and neoplasia.

CLO 3: Explain the causative factors, pathology, clinical features, diagnosis and management of common diseases affecting the cardiovascular, respiratory, musculoskeletal, nervous, endocrine and hematological systems.

CLO 4: Classify microorganisms and explain the sources, mechanisms, prevention and management of common infections.

CLO 5: Describe the causative factors, pathology, clinical features, diagnosis and management of common bacterial, viral, fungal, opportunistic and parasitic diseases.

CLO 6: Apply knowledge of pathological and microbiological processes to understand disease conditions and their implications for physiotherapy assessment and rehabilitation.

Program Learning Outcomes (PLOs):

PLO 1: Demonstrate comprehensive knowledge and understanding of basic medical sciences, physiotherapy sciences and clinical sciences relevant to physiotherapy practice.

PLO 2: Apply scientific knowledge and clinical reasoning for assessment, diagnosis, planning and management of physiotherapy conditions.

PLO 3: Demonstrate competence in physiotherapy assessment and evidence-informed intervention for individuals with health conditions and disabilities.

PLO 4: Integrate knowledge from basic, clinical and behavioural sciences for effective physiotherapy practice.

PLO 5: Demonstrate effective communication and interpersonal skills with patients, families and members of the healthcare team.

PLO 6: Demonstrate professionalism, ethical conduct and responsibility in healthcare practice.

PLO 7: Apply evidence-based practice and scientific inquiry in physiotherapy and healthcare.

PLO 8: Function effectively as an independent practitioner and as a member of the multidisciplinary healthcare team.

PLO 9: Demonstrate commitment towards lifelong learning, professional development and continuous improvement.

PLO 10: Demonstrate responsibility towards individual, community and public health needs.

Program Specific Outcomes (PSOs):

PSO 1: Apply knowledge of basic medical and physiotherapy sciences for understanding human health, disease, dysfunction and disability.

PSO 2: Perform appropriate physiotherapy assessment and clinical evaluation using scientific principles and clinical reasoning.

PSO 3: Plan and implement safe, effective and evidence-informed physiotherapy interventions for prevention, treatment and rehabilitation.

PSO 4: Integrate pathological, clinical and functional knowledge to understand disease processes and their impact on human movement and function.

PSO 5: Demonstrate professional competence in multidisciplinary healthcare, rehabilitation and health promotion.

Mapping:

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PSO1	PSO2	PSO3	PSO4	PSO5
CLO 1	3	2	–	3	–	–	1	–	1	–	3	2	–	3	–
CLO 2	3	2	–	3	–	–	1	–	1	–	3	2	–	3	–
CLO 3	3	3	2	3	–	–	2	1	1	1	3	3	2	3	2
CLO 4	3	2	–	2	–	–	2	1	1	2	3	2	–	2	1
CLO 5	3	3	2	3	–	–	2	1	1	2	3	3	1	3	2
CLO 6	3	3	3	3	1	2	3	2	2	2	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION A

UNIT 1

PM 1.1. Discuss the Causes of disease, cell injury

PM 1.2. Describe the mechanism of cell injury – hypoxia, free radical injury. Necrosis and gangrene

PM 1.3. Explain the pathology inflammation

PM 1.4. Differentiate acute and chronic inflammation

PM 1.5. Explain the process of primary healing, secondary healing

PM 1.6. Discuss the factors affecting healing and repair of soft tissues and skin.

UNIT 2

PM 2.1. Describe Fluid and hemodynamic derangements

PM 2.2. Discuss the pathophysiology of edema, hyperemia, Hemorrhage, shock, embolism, thrombosis, and infarction

PM 2.3. Discuss Immune mechanisms (natural and acquired)

PM 2.4. Discuss the features of autoimmune diseases and immunodeficiency diseases.

PM 2.5. Discuss the characteristic of benign and malignant tumors

PM 2.6. Describe grading and staging of malignant tumors

PM 2.7. Describe general effects of malignancy on the host

PM 2.8. Outline the carcinogenic agents

PM 2.9. Outline the methods of diagnosis of malignancy

PM 2.10. Classify the Nutritional disorders

PM 2.11. Discuss the deficiency disorders (protein deficiency, vitamin deficiency (A,B,C,D,E,K) iodine deficiency)

PM 2.12. Discuss the effect of nutrition deficiency on skeletal muscles, bones and neurological functions

PM 2.13. Describe the hypersensitivity reactions

UNIT 3

PM 3.1. Discuss the causative factors, pathology, clinical features, diagnosis and management of Disorders of blood

1. Discuss the causative factors, pathology, clinical features, diagnosis and management of Disease of circulatory system (atherosclerosis,
2. Thromboangitis obliterans, varicose vein, DVT, thrombophlebitis, lymphedema, congestive cardiac failure, rheumatic heart disease,)
3. Explain the causative factors, pathology, clinical features, diagnosis and management of ischemic heart disease
4. Explain the causative factors, pathology, clinical features, diagnosis and management of Congenital Heart disease.
5. Explain the causative factors, pathology, clinical features, diagnosis and management of Disease of Respiratory System (Pneumonias, Bronchiectasis, Emphysema, Chronic bronchitis, Asthma, Occupational lung diseases, Carcinoma of lungs)
6. Explain the causative factors, pathology, clinical features, diagnosis and management of Disorders of musculoskeletal system. (Arthritis: rheumatoid, degenerative, infective, metabolic. osteoporosis, pagets disease, osteogenesis imperfecta, osteomyelitis, a brief outline of bone tumors. Muscular dystrophy, myasthenia gravis, myositis.)

PM 3.2. Explain the causative factors, pathology, clinical features, diagnosis and management of Diseases of Nervous system. (Meningitis, encephalitis, vascular diseases of brain, peripheral nerve lesions. Degenerative diseases parkinsonism, Alzheimer's disease)

PM 3.3. Describe the causative factors, pathology, clinical features, diagnosis and management of Diseases endocrine system. (Diabetes Mellitus, Thyroiditis, Thyrotoxicosis, myxedema.)

PM 3.4. Describe the causative factors, pathology, clinical features, diagnosis and management of the Disorders of blood (anemias, Leukemia)

1. Describe the causative factors, pathology, clinical features, diagnosis and management of the Disorders atherosclerosis, thromboangitis obliterans, varicose vein, DVT

SECTION B**UNIT 4****Classify microorganisms**

PM 4.1. Discuss the type, source and mechanism of Infection

PM 4.2. Describe the prevention and management of common infections

PM 4.3. Describe the causative factors, and pathology of common Infectious diseases:

PM 4.4. Outline of the management of common infective diseases

PM 4.5. List the causative factors, pathology, clinical features, diagnosis and management of Bacterial disease (Diphtheria, Whooping Cough Tetanus Pyogenic, Diphtheria, Gram negative infection, bacillary dysentery. STD Gastroenteritis, Food Poisoning Tuberculosis, Leprosy, Syphilis)

PM 4.6. Describe the causative factors, pathology, clinical features, diagnosis and management of viral diseases: (Poliomyelitis, Herpes, Rabies, Measles, Rickets, Chlamydial infection, HIV infection. Chicken Pox, Measles, Mumps, Influenza)

PM 4.7. Describe the causative factors, pathology, clinical features, diagnosis and management of Fungal and opportunistic infections.

PM 4.8. Describe the causative factors, pathology, clinical features, diagnosis and management of: Malaria, Filariasis, Amoebiasis, Kala-azar, Cysticercosis, Hydatid cyst.

RECOMMENDED TEXT BOOKS

1. Cotran, Kumar & Robbins. Robbins Pathological Basis of Disease. W.B. Saunders.
2. Harsh Mohan. Text Book of Pathology. Jaypee Brothers.
3. Goodman and Boissonnault. Pathology: Implications for Physical Therapists. W.B. Saunders.
4. Bhatia & Lal. Essential of Medical Microbiology. Jaypee Brothers.
5. Mims. Medical Microbiology. Jaypee Brothers.

RECOMMENDED REFERENCE BOOKS

1. Walter & Israel. General Pathology. Churchill Livingstone.
2. Anderson. Muir's Textbook of Pathology. Edward Arnold Ltd.
3. Ackerman and Richards. Microbiology: An Introduction for the Health Sciences. W.B. Saunders.

PHARMACOLOGY (PC)

Course Code	M.P.T-102	L	P	C	Total sessions
Course Title	Pharmacology (PC)	90	-	6	90
Pre-requisite	Basic knowledge of Human Anatomy and Physiology, particularly the nervous, cardiovascular, respiratory, musculoskeletal and endocrine systems.				
Co-requisites	Pathology and Microbiology (PM), with concurrent understanding of disease processes and their clinical implications.				

Course Objective:

1. Understand the fundamental principles of pharmacology, including pharmacokinetics, pharmacodynamics, routes of administration, drug metabolism, excretion and adverse drug reactions.
2. Acquire knowledge of the pharmacological management of inflammatory, immune, musculoskeletal and neuromuscular disorders relevant to physiotherapy practice.
3. Understand the actions, therapeutic uses, adverse effects and clinical implications of drugs acting on the autonomic nervous system, cardiovascular system and vascular system.
4. Develop knowledge of drugs used in neurological, psychiatric and movement disorders and understand their implications for functional assessment and physiotherapy intervention.
5. Understand the pharmacological management of respiratory, gastrointestinal and endocrine disorders commonly encountered in clinical practice.
6. Recognize the effects of medications, adverse drug reactions and special pharmacological considerations in elderly patients and other clinical populations.
7. Apply pharmacological knowledge to recognize precautions, contraindications and possible drug-related influences on physiotherapy assessment and treatment.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the fundamental principles of pharmacology, including classification, sources, administration, pharmacokinetics, pharmacodynamics and factors influencing drug response.

CLO2: Describe the pharmacological management of inflammatory, immune-mediated, arthritic and neuromuscular disorders and identify their implications for physiotherapy practice.

CLO3: Explain the actions, therapeutic uses and adverse effects of drugs acting on the autonomic and cardiovascular systems.

CLO4: Discuss the pharmacological management of neuropsychiatric, movement and respiratory disorders and recognize their effects on patient function and rehabilitation.

CLO5: Describe drugs used in gastrointestinal and endocrine disorders, including pharmacological management of diabetes mellitus.

CLO6: Recognize adverse drug effects, drug-related precautions and special pharmacological considerations, particularly in elderly patients and during physiotherapy management.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge of basic medical sciences and physiotherapy principles relevant to health, disease and human functioning.

PLO2: Apply scientific knowledge and clinical reasoning in the assessment and management of individuals with health conditions and functional limitations.

PLO3: Demonstrate competency in planning and implementing safe, effective and evidence-informed physiotherapy interventions.

PLO4: Integrate knowledge from medical, biological and behavioural sciences into physiotherapy practice.

PLO5: Demonstrate effective communication and professional interaction with patients, caregivers and healthcare professionals.

PLO6: Recognize ethical, legal and professional responsibilities and ensure patient safety in physiotherapy practice.

PLO7: Demonstrate critical thinking, problem-solving and evidence-informed decision-making.

PLO8: Engage in lifelong learning and continuous professional development.

PLO9: Demonstrate teamwork and interdisciplinary collaboration in healthcare delivery.

PLO10: Demonstrate social responsibility and responsiveness to individual, community and national healthcare needs.

Program Specific Outcomes (PSOs):

PSO1: Apply knowledge of basic medical and clinical sciences to understand disease processes and their effects on movement, function and rehabilitation.

PSO2: Demonstrate the ability to assess patient conditions and identify factors influencing safe and effective physiotherapy management.

PSO3: Apply physiotherapy knowledge and clinical reasoning to plan safe, appropriate and patient-centred rehabilitation interventions.

PSO4: Recognize medical management, pharmacological influences, precautions and contraindications relevant to physiotherapy practice.

PSO5: Demonstrate professional communication, ethical practice, patient safety and interdisciplinary collaboration in healthcare settings.

Mapping:

CLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CLO1	3	2	–	3	–	1	2	1	–	–
CLO2	3	3	2	3	–	2	3	1	1	1
CLO3	3	3	2	3	–	3	3	1	1	–
CLO4	3	3	2	3	1	3	3	1	2	1
CLO5	3	3	2	3	–	2	3	1	1	1
CLO6	2	3	3	2	1	3	3	2	2	1

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION - A

UNIT 1: GENERAL PHARMACOLOGY AND INFLAMMATORY/IMMUNE DISEASES

PC 1.1. General Pharmacology

1. Define and classify drugs.
2. Describe the sources of drugs.
3. Describe the routes of drug administration.
4. Describe the distribution of drugs.
5. Discuss the metabolism and excretion of drugs.
6. Discuss pharmacokinetics and pharmacodynamics.
7. Discuss the factors modifying drug response.
8. Describe adverse drug effects.

PC 1.2. Inflammatory/Immune Diseases

1. Describe non-narcotic analgesics and nonsteroidal anti-inflammatory drugs, including:
 - Acetaminophen

- NSAIDs
 - Aspirin
 - Non-aspirin NSAIDs
 - Drug interactions with NSAIDs
2. Discuss the pharmacological uses of glucocorticoids.
 3. Discuss the adverse effects of glucocorticoids.
 4. Discuss the physiological uses of glucocorticoids.
 5. Discuss drugs used in the treatment of arthritic diseases, including:
 - Rheumatoid arthritis
 - Osteoarthritis
 - Gout

PC 1.3. Drugs Used in the Treatment of Neuromuscular Immune/Inflammatory Diseases

Discuss drugs used in the treatment of:

1. Myasthenia gravis
2. Idiopathic inflammatory myopathies
3. Systemic lupus erythematosus
4. Scleroderma
5. Demyelinating diseases

UNIT 2: AUTONOMIC NERVOUS SYSTEM AND CARDIOVASCULAR PHARMACOLOGY

PC 2.1. Autonomic Nervous System

Describe the general considerations of:

1. Sympathetic nervous system
2. Parasympathetic nervous system
3. Receptors
4. Somatic nervous system

PC 2.2. Drugs Acting on the Autonomic Nervous System

Discuss:

1. Cholinergic drugs
2. Anticholinergic drugs
3. Adrenergic drugs
4. Adrenergic blocking drugs
5. Peripheral muscle relaxants

PC 2.3. Cardiovascular Pharmacology

A. Drugs Used in the Treatment of Heart Failure

Describe:

1. Digitalis
2. Diuretics
3. Vasodilators
4. ACE inhibitors

B. Antihypertensive Drugs

Describe:

1. Diuretics
2. Beta blockers
3. Calcium channel blockers
4. ACE inhibitors

5. Centrally acting alpha agonists
6. Peripheral alpha antagonists
7. Direct-acting vasodilators

C. Antiarrhythmic Drugs

Describe antiarrhythmic drugs.

D. Drugs Used in the Treatment of Vascular Disease and Tissue Ischemia

Discuss:

1. Drugs used in vascular diseases
2. Drugs affecting hemostasis
3. Lipid-lowering agents
4. Antithrombotic drugs
5. Anticoagulants
6. Thrombolytic drugs

PC 2.4. Drugs Used in the Treatment of Ischemic Heart Disease

Discuss drugs used in the treatment of:

1. Ischemic heart disease, including:
 - Nitrates
 - Beta blockers
 - Calcium channel blockers
2. Cerebral ischemia
3. Peripheral vascular disease

SECTION – B

UNIT 3: NEUROPHARMACOLOGY, MOVEMENT DISORDERS AND RESPIRATORY PHARMACOLOGY

PC 3.1. Neuropharmacology

A. Sedative-Hypnotic Drugs

Discuss:

1. Barbiturates
2. Benzodiazepines

B. Antianxiety Drugs

Describe:

1. Benzodiazepines
2. Other anxiolytic drugs

C. Drugs Used in the Treatment of Mood Disorders

Discuss:

1. Monoamine oxidase inhibitors
2. Tricyclic antidepressants
3. Atypical antidepressants
4. Lithium

D. Antipsychotic Drugs

Describe antipsychotic drugs.

PC 3.2. Disorders of Movement

1. Discuss drugs used in the treatment of Parkinson's disease.
2. Describe antiepileptic drugs.
3. Discuss drugs used in the management of spasticity.
4. Discuss skeletal muscle relaxants.

PC 3.3. Respiratory Pharmacology

Discuss respiratory pharmacology and drugs used in the treatment of:

1. Obstructive airway diseases
2. Allergic rhinitis

UNIT 4: GASTROINTESTINAL AND ENDOCRINE PHARMACOLOGY**PC 4.1. Gastrointestinal Pharmacology**

Describe gastrointestinal pharmacology and drugs used in the treatment of:

1. Peptic ulcer disease
2. Constipation
3. Diarrhea

PC 4.2. Hormones and Drugs Affecting Endocrine Functions

Describe hormones and drugs affecting endocrine functions used in the treatment of diabetes mellitus, including:

1. Insulin
2. Oral hypoglycemic drugs

GERIATRICS**PC 5.1. Pharmacological Considerations in the Elderly**

Discuss adverse drug effects of special concern in elderly individuals, including:

1. Adverse drug effects in the elderly
2. Dementia
3. Postural hypotension

PC 5.2. Chemotherapeutic Agents

Describe chemotherapeutic agents.

RECOMMENDED TEXT BOOKS

1. Udaykumar P. Pharmacology for Physiotherapy. Jaypee Brothers Medical Publishers; 2011.
2. Ramesh KV, Shenoy KA. Pharmacology for Physiotherapists. Jaypee Brothers Medical Publishers Pvt. Limited; 2005.
3. Tripathi KD. Essentials of Medical Pharmacology. JP Medical Ltd.

RECOMMENDED REFERENCE BOOKS

1. Goodman and Gilman. The Pharmacological Basis of Therapeutics. MacMillan.
2. Satoskar RS, Rege N, Bhandarkar SD. Pharmacology and Pharmacotherapeutics. Elsevier India; 2017.

PUBLIC HEALTH & HEALTH PROMOTION (PH)

Course Code	BPT-203	L	P	C	Total sessions
Course Title	Public Health & Health Promotion (PH)	120	-	8	120
Pre-requisite	Basic knowledge of human health, disease, physiotherapy, biological sciences, and undergraduate healthcare concepts.				
Co-requisites	NIL				

Course Objective:

1. To understand the concepts of health, disease, well-being, determinants of health, and principles of prevention and control of diseases.
2. To develop knowledge of epidemiology, communicable and non-communicable diseases, screening, surveillance, and disease prevention strategies.
3. To understand the organization and administration of public health services and major national health programmes in India.
4. To acquire knowledge of community health, nutrition, environmental health, occupational health, maternal and child health, and health issues affecting vulnerable populations.
5. To develop competency in health promotion, health education, disaster management, preventive healthcare, and the application of exercise and physiotherapy in disease prevention and community health.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the concepts, determinants, dimensions, indicators, and spectrum of health and disease, and describe the principles of epidemiology, disease prevention, and control.

CLO2: Describe the epidemiology, prevention, and control of communicable and non-communicable diseases and apply principles of screening and preventive healthcare.

CLO3: Explain the organization of public health services, national health programmes, demographic concepts, family planning, and preventive healthcare for vulnerable population groups.

CLO4: Apply principles of nutrition, environmental health, occupational health, hospital waste management, disaster management, and mental health in promoting community health.

CLO5: Demonstrate knowledge of health education, health promotion, preventive medicine, and the role of exercise and physiotherapy in maintaining health and preventing disease across the lifespan.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy and rehabilitation across the lifespan.

PLO2: Apply evidence-based principles and clinical reasoning in the assessment, prevention, management, and rehabilitation of individuals and communities.

PLO3: Promote health, prevent disease and disability, and contribute to community-based rehabilitation through appropriate physiotherapy interventions.

PLO4: Demonstrate effective communication, leadership, health education, and interdisciplinary collaboration in professional practice.

PLO5: Utilize modern technology, information resources, and scientific knowledge for professional development and lifelong learning.

PLO6: Uphold ethical, legal, professional, and social responsibilities in physiotherapy practice and healthcare delivery.

PLO7: Contribute to public health, health promotion, preventive healthcare, community development, and advancement of physiotherapy practice.

Program Specific Outcomes (PSOs):

PSO1: Apply physiotherapy knowledge and preventive strategies to promote health, prevent disease and disability, and improve functional outcomes across individuals and communities.

PSO2: Assess community and population health needs and contribute effectively to health promotion, disease prevention, and rehabilitation programmes.

PSO3: Demonstrate effective communication and health education skills to promote healthy lifestyles, physical activity, exercise, and preventive healthcare.

PSO4: Participate effectively in multidisciplinary healthcare, public health, community-based rehabilitation, and national health initiatives.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	2	3	3	2	2	2	3	3	3	2	2
CLO2	3	3	3	2	2	2	3	3	3	2	3
CLO3	2	2	3	3	2	3	3	3	3	3	3
CLO4	3	3	3	2	2	3	3	3	3	3	3
CLO5	3	3	3	3	2	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**SECTION -A****Unit 1**

PH 1.1. Health and Disease: Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine,

PH 1.2. Epidemiology, definition and scope. Principles of Epidemiology and Epidemiological methods: Components and Aims, Basic measurements, Methods, Uses of Epidemiology, Infectious disease epidemiology, Dynamics and modes of disease transmission, Host defenses and Immunizing agents, Hazards of Immunization, Disease prevention and control, Disinfection. Screening for Disease: Concept of screening, Aims and Objectives, Uses and types of screening.

PH 1.3. Epidemiology of communicable disease: Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonoses, Surface infections, Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, Obesity, Blindness, Accidents and Injuries.

Unit 2

PH 2.1. Public health administration- an overview of the health administration set up at Central and state levels. The national health programme highlighting the role of social, economic and cultural factors in the implementation of the national programmes. Health problems of vulnerable groups- pregnant and lactating women, infants and pre-school children, occupational groups.

PH 2.2. Health programmes in India: Vector borne disease control programme, National leprosy eradication programme, National tuberculosis programme, National AIDS control

programme, National programme for control of blindness, Iodine deficiency disorders (IDD) programme, Universal Immunisation programme, Reproductive and child health programme, National cancer control programme, National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme, Minimum needs programme.

PH 2.3. Demography and Family Planning: Demographic cycle, Fertility, Family planning objectives of national family planning programme and family planning methods, A general idea of advantage and disadvantages of the methods.

PH 2.4. Preventive Medicine in Obstetrics, Paediatrics and Geriatrics: MCH problems, Antenatal, Intranatal and post-natal care, Care of children, Child health problems, Rights of child and National policy for children, MCH services and indicators of MCH care, Social welfare programmes for women and children, Preventive medicine and geriatrics.

SECTION -B

Unit 3

PH 3.1. Nutrition and Health: Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programmes.

PH 3.2. Environment and Health: Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology.

PH 3.3. Hospital waste management: Sources of hospital waste, Health hazards, Waste management.

PH 3.4. Disaster Management: Natural and man-made disasters, Disaster impact and response, Relief phase, Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness.

Unit 4

PH 4.1. Occupational Health: Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts.

PH 4.2. Mental Health: Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health. Role of Physiotherapist in mental health problems such as mental retardation.

PH 4.3. Health Education: Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education.

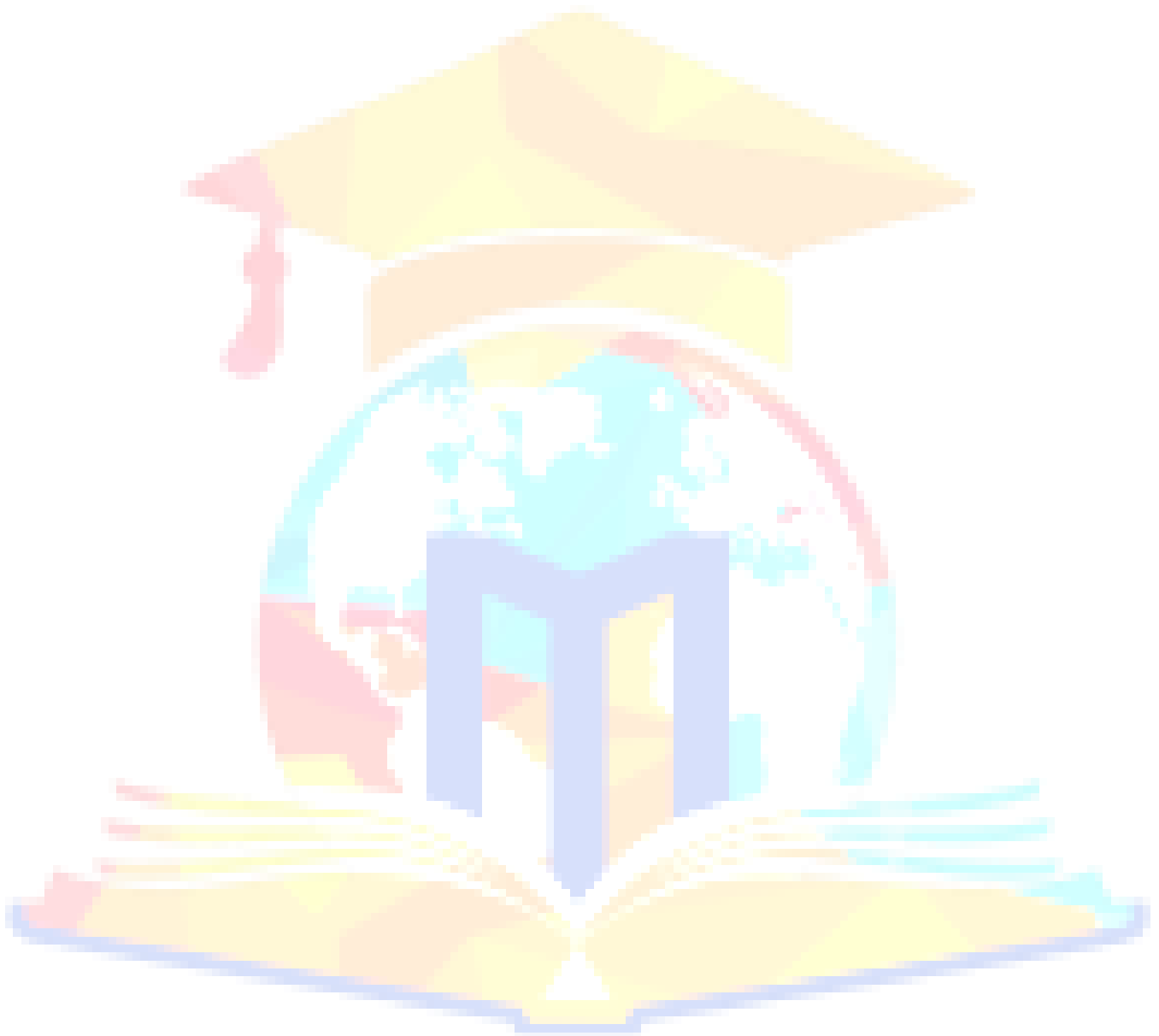
PH 4.4. Exercise as Preventive Medicine: for Old age, Working Population, Adolescents and Children. How to keep your Society fit.

Recommended text books

1. Park K: Park's textbook of preventive and social medicine. 24th Ed, M/s Banarasidas Bhanot, Jabalpur, 2017
2. Rao SB: Principles of community medicine. 4th Ed, AITBS Publishers & distributors, New Delhi, 2005.
3. Rahim A: Principles and practice of community medicine. 1st Ed, Jaypee brothers, New Delhi. 2008.
4. Gupta MC & Mahajan BK: Textbook of preventive and social medicine. 3rd Ed, Jaypee Brothers, New Delhi, 2003

Recommended reference books

1. Matzen RN, Lang RS: Clinical preventive medicine. Mosby, Missouri,
2. Abramson JH, Abramson ZH: Survey methods in community medicine, Churchill Livingstone, Edinburgh,
3. Jekel JF, Katz DL, Elmore JG: Epidemiology, Biostatistics and Preventive Medicine, 2nd Ed, Saunders, Philadelphia, 2001.



BASICS OF EMERGENCY CARE AND LIFE SUPPORT SKILLS (ECLS)

Course Code	BPT-204	L	P	C	Total sessions
Course Title	Basics Of Emergency Care and Life Support Skills (ECLS)	90	30	7	120
Pre-requisite	Basic knowledge of human anatomy, physiology, and fundamental healthcare and physiotherapy concepts.				
Co-requisites	NIL				

Course Objective:

1. To understand the principles of emergency care, first response, scene safety, and the roles and responsibilities of a first responder.
2. To develop knowledge and practical skills in airway management, ventilation, circulation support, cardiopulmonary resuscitation, and basic life support.
3. To develop competency in the initial assessment and management of common medical emergencies, bleeding, burns, soft tissue injuries, and musculoskeletal injuries.
4. To acquire practical skills in patient stabilization, wound management, bandaging, splinting, extrication, transportation, and spine protection.
5. To understand the principles of disaster preparedness, risk reduction, resource management, and safe emergency response while maintaining the well-being and personal protection of the first responder.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the principles of emergency care, the concept of the golden hour, ethical responsibilities, scene safety, and the duties and responsibilities of a first responder.

CLO2: Assess and manage airway, breathing, ventilation, circulation, foreign body airway obstruction, and demonstrate the principles and procedures of basic life support and CPR.

CLO3: Identify and provide initial management for bleeding, soft tissue injuries, burns, musculoskeletal injuries, and suspected bony and spinal injuries.

CLO4: Identify common medical emergencies and demonstrate appropriate first aid, stabilization, transportation, and spine protection techniques for emergency victims.

CLO5: Demonstrate essential emergency care and life support skills using mannequins and dummies, including airway and ventilation, CPR, injury stabilization, bandaging, extrication, stretcher use, and disaster preparedness principles.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy and rehabilitation across the lifespan.

PLO2: Apply evidence-based principles and clinical reasoning in the assessment, prevention, management, and rehabilitation of individuals and communities.

PLO3: Promote health, prevent disease and disability, and contribute to community-based rehabilitation through appropriate physiotherapy interventions.

PLO4: Demonstrate effective communication, leadership, health education, and interdisciplinary collaboration in professional practice.

PLO5: Utilize modern technology, information resources, and scientific knowledge for professional development and lifelong learning.

PLO6: Uphold ethical, legal, professional, and social responsibilities in physiotherapy practice and healthcare delivery.

PLO7: Contribute to public health, health promotion, preventive healthcare, community development, and advancement of physiotherapy practice.

Program Specific Outcomes (PSOs):

PSO1: Apply physiotherapy and healthcare knowledge and skills to assess, manage, and provide appropriate immediate care for patients with emergency conditions and injuries.

PSO2: Demonstrate competency in basic life support, patient stabilization, safe handling, transportation, and protection of individuals during medical and trauma emergencies.

PSO3: Apply principles of patient safety, ethical practice, communication, teamwork, and emergency preparedness in healthcare and rehabilitation settings.

PSO4: Participate effectively in multidisciplinary emergency care, disaster preparedness, community health, and rehabilitation services.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	2	2	2	3	1	3	2	2	2	3	3
CLO2	3	3	3	3	2	3	2	3	3	3	3
CLO3	3	3	3	2	2	3	2	3	3	3	3
CLO4	3	3	3	3	2	3	3	3	3	3	3
CLO5	3	3	3	3	2	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION -A

UNIT 1

ECLS 1.1. Emergent conditions and magnitude, Concept of golden hour, Duties and responsibilities of first responder

ECLS 1.2. Ethical issues and Gather information from observation, experience and reasoning.

Identification of rapidly changing situations and adapt accordingly. Planning and organization of work. Scene safety. Dealing with emotional reactions family members and bystanders

ECLS 1.3. Well-being of first responder Personal protection

1. Steps to be taken against airborne and blood-borne pathogens
2. Personal protective equipment necessary for each of the following situations:

Hazardous materials Rescue Operations Violent Scenes Crime scenes

3. Electricity, Water and ice
4. Exposure to blood-borne pathogens Exposure to airborne pathogens

UNIT 2

ECLS 2.1. Airway

1. Signs of inadequate breathing
2. Mechanism of injury to opening the airway
3. Steps in the head-tilt chin-lift
4. Steps in the jaw thrust
5. Taking out foreign body
6. Ensuring patent airway during seizures and vomiting.

ECLS 2.2. Ventilation

1. Of a patient with a mask or barrier device

2. Steps in providing mouth-to-mouth and mouth-to-stoma ventilation

ECLS 2.3. Circulation

1. Evaluate the cardiac status of the patient
2. Determine the need for and take necessary action to proper circulation
3. Steps for control of bleeding: Pressure bandage and tourniquet

ECLS 2.4. Clearing a foreign body airway obstruction**ECLS 2.5. CPR**

1. Implications of cardiac arrest
2. Cardiopulmonary resuscitation (CPR)
 - i. How it works
 - ii. Steps
 - iii. When to stop CPR
3. Brief overview of AED Automated external defibrillator (only demonstration –no hands on)

SECTION -B**UNIT 3****ECLS 3.1. Bleeding and Soft Tissue Injuries**

1. Difference between arterial and venous bleeding
2. Stopping external bleeding
3. Identification of Internal bleeding
4. types and Functions of dressings and bandages
5. How to help a victim of burn injury

ECLS 3.2. Injuries to Muscles and Bones

1. Suspecting bony/spinal injury
2. Splinting –materials used
3. Importance of splinting

UNIT 4**ECLS 4.1 Medical Emergencies****ECLS 4.2**

1. Identification of the patient steps in providing first aid to a patient with
 - i. A general medical complaint –Seizures
 - ii. Chest-pain
 - a. Shortness of breath
 - b. Exposure to heat
 - c. Including other medical complaints like allergy, diarrhea, fainting, low blood sugar, stroke
2. Drowning
3. Poisoning

ECLS 4.3 Transportation Importance of timely and proper transportation methods of transportation of victim from site of injury to ambulance. Importance of spine protection methods of spine protection during transportation**ECLS 4.4 Disaster preparedness -. Preparedness and risk reduction Incident command and institutional mechanisms Resource management****Practicals B.P.T. ECLS 204 (P)**

Student should practice on Mannequins and dummies and should be able to

ECLS (P) 5.1. Provide Airway & Ventilation

ECLS (P) 5.2. Perform Basic Life Support: CPR

ECLS (P) 5.3. Perform Initial management of Thermal injury, electric injury

ECLS (P) 5.4. Perform stabilizing injured extremity and wound management

ECLS (P) 5.5. Demonstrate bandaging techniques to various body parts

ECLS (P) 5.6. Demonstrate Extrication, Helmet removal and spine protection

ECLS (P) 5.7. Demonstrate Stretcher use

Recommended text books for ECLS

Indian red cross : INDIAN FIRST AID MANUAL 2016 (7th edition) available at

<https://www.indianredcross.org/publications/FA-manual.pdf>



EXERCISE THERAPY (ExT)

Course Code	BPT -205	L	P	C	Total sessions
Course Title	Exercise Therapy (ExT)	150	120	14	270
Pre-requisite	Basic knowledge of human anatomy, physiology, kinesiology, biomechanics, and fundamental physiotherapy concepts.				
Co-requisites	NIL				

Course Objective:

1. To understand the principles, physiological effects, indications, contraindications, and therapeutic applications of exercise therapy techniques in physiotherapy practice.
2. To develop competency in assessing movement, posture, muscle performance, coordination, functional ability, and physical impairments relevant to exercise prescription.
3. To acquire theoretical knowledge and practical skills in relaxation, suspension therapy, stretching, breathing exercises, functional re-education, aerobic exercise, coordination exercises, and therapeutic exercise programmes.
4. To develop knowledge and skills in manual therapy, joint mobilization, traction, proprioceptive neuromuscular facilitation, motor learning, and other advanced exercise therapy techniques.
5. To demonstrate competency in planning, prescribing, progressing, and evaluating safe and effective therapeutic exercise programmes for individuals with musculoskeletal, neurological, cardiopulmonary, and functional impairments.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the principles, physiological effects, indications, contraindications, precautions, and therapeutic applications of relaxation, suspension therapy, functional re-education, posture, breathing exercises, group exercises, and stretching.

CLO2: Assess joint and soft tissue impairments and apply appropriate principles and techniques of manual therapy, peripheral joint mobilization, spinal mobilization, traction, and related therapeutic interventions.

CLO3: Demonstrate appropriate use of therapeutic gymnasium equipment and apply the principles of aerobic exercise, coordination exercises, exercise testing, and conditioning programmes.

CLO4: Explain and apply principles of motor learning, motor control, functional re-education, proprioceptive neuromuscular facilitation, and walking aid prescription.

CLO5: Demonstrate competency in assessment, planning, prescription, progression, and safe performance of therapeutic exercise techniques for improving mobility, strength, coordination, posture, endurance, breathing, and functional independence.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy and rehabilitation across the lifespan.

PLO2: Apply evidence-based principles and clinical reasoning in the assessment, prevention, management, and rehabilitation of individuals and communities.

PLO3: Promote health, prevent disease and disability, and contribute to community-based rehabilitation through appropriate physiotherapy interventions.

PLO4: Demonstrate effective communication, leadership, health education, and interdisciplinary collaboration in professional practice.

PLO5: Utilize modern technology, information resources, and scientific knowledge for professional development and lifelong learning.

PLO6: Uphold ethical, legal, professional, and social responsibilities in physiotherapy practice and healthcare delivery.

PLO7: Contribute to public health, health promotion, preventive healthcare, community development, and advancement of physiotherapy practice.

Program Specific Outcomes (PSOs):

PSO1: Assess movement dysfunction, physical impairments, and functional limitations and apply appropriate physiotherapy interventions to restore mobility, strength, endurance, coordination, and functional independence.

PSO2: Design, prescribe, implement, progress, and evaluate evidence-based therapeutic exercise programmes for individuals with musculoskeletal, neurological, cardiopulmonary, and functional impairments.

PSO3: Demonstrate competency in the safe application of manual therapy, therapeutic exercise, movement re-education, physical conditioning, and assistive devices in physiotherapy practice.

PSO4: Apply clinical reasoning, communication, patient education, and professional skills while delivering individualized and safe physiotherapy interventions.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	2	2	2	2	3	3	3	3
CLO2	3	3	2	2	2	3	2	3	3	3	3
CLO3	3	3	3	2	2	2	2	3	3	3	3
CLO4	3	3	3	2	2	2	2	3	3	3	3
CLO5	3	3	3	3	2	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION-A

UNIT 1

ExT 1.1. RELAXATION

1. Discuss Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism,
2. Discuss the Indications of relaxation, Methods & techniques of relaxation-Principles & uses:
3. Demonstrate General, Local, Jacobson's, Mitchel's, additional methods

ExT 1.2. SUSPENSION THERAPY:

1. Discuss the principles, indications, contraindications and benefits of suspension therapy
2. Demonstrate types of suspension therapy – axial, vertical, pendulum; techniques of suspension therapy for upper limb & lower limb

ExT 1.3. FUNCTIONAL RE-EDUCATION

1. Discuss the muscle activities of Lying to sitting:
2. Demonstrate Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lower limb and Upper limb activities.

ExT 1.4. POSTURE

1. Discuss Active and Inactive Postures, Postural Mechanism, Patterns of Posture, Principles of re-education:
2. Demonstrate corrective methods and techniques

3. Demonstrate skills in Patient education

ExT 1.5. BREATHING EXERCISES:

1. Describe normal breathing
2. Discuss types, techniques, indications, contraindications, therapeutic effects and precautions of breathing exercises
3. Perform Chest expansion measurement and evaluation

ExT 1.6. Group Exercises

1. Discuss the advantages and Disadvantages of group exercises
2. Demonstrate skills in Organization of Group exercises; Recreational Activities and Sports.

Unit 2**ExT 2.1. STRETCHING**

1. Describe terms related to stretching;
2. Discuss Tissue response towards immobilization and elongation
3. Discuss the determinants of stretching exercise
4. Discuss the Effects of stretching, Inhibition and relaxation procedures,
5. Discuss the Precautions to be taken and contraindications of stretching.
6. Perform passive and active stretching for upper and lower limb muscles

ExT 2.2. MANUAL THERAPY & PERIPHERAL JOINT MOBILIZATION

1. Discuss Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn, Mulligan
 2. Discuss Biomechanical basis for mobilization,
 3. Explain the Effects of joint mobilisation, in terms of Indications and contraindications, Grades of mobilization, Principles of mobilization
 4. Identify red flags for mobilisation
 5. Perform mobilization for upper limb lower limb, and spine
- i. Demonstrate clinical reasoning skills in selection and application of manual therapy techniques
 - ii. Demonstrate skills in examining joint integrity, contractile and non-contractile tissues
 - iii. Identify accessory movements and end feel
 - iv. Demonstrate Assessment of articular & extra-articular soft tissue status
 - v. Myofascial assessment
 - vi. Acute & Chronic muscle hold
 - vii. Tightness
 - viii. Pain-original & referred
6. Discuss the principles, Indications, Contra-Indications and evidence for schools of mobilization (Maitland, Mulligan, McKenzie, Muscle Energy Technique, Myofascial stretching, Cyriax, Neuro Dynamics)
 7. Discuss the Principles, physiological and therapeutic effects of traction
 8. Discuss the types, indications, contraindications for traction
 9. Perform manual and mechanical tractions

SECTION - B**Unit 3****ExT 3.1. THERAPEUTIC GYMNASIUM:**

1. Identify the equipment used in the therapeutic gymnasium
2. Discuss the usage of identified equipment

3. Demonstrate skills in handling the equipment

ExT 3.2. AEROBIC EXERCISE

1. Explain the Physiological response to aerobic exercise
2. Discuss the methods of exercise testing
3. Explain the Normal and abnormal response to acute aerobic exercise
4. Discuss the Physiological changes that occur with training,
5. Apply the Principles of Aerobic conditioning program while prescribing exercise

ExT 3.3. CO-ORDINATION EXERCISE

1. Discuss the physiology of Co-ordination
2. Appreciate the causes and pathophysiology of Inco-ordination
3. Demonstrate Test for co-ordination: (equilibrium test, non-equilibrium test)
4. Discuss the Principles of co-ordination exercise.
5. Discuss Frenkel's Exercise in terms of its effects, mechanism, indications and Evidence
6. Demonstrate skills in prescribing Frenkel's exercise (Prescription progression, home exercise)

Unit 4**ExT 4.1. MOTOR LEARNING AND FUNCTIONAL RE-EDUCATION:**

1. Describe Motor Learning:
2. Classify of Motor skills
3. Discuss the methods of Measurement of Motor Performance
4. Discuss the Theories of motor control and its application

ExT 4.2. Discuss Learning under the following headings

1. Learning Environment:
2. Learning of skill
3. Instruction and augmented feedback Practice Conditions

ExT 4.3. Proprioceptive Neuromuscular Facilitation

1. Definitions & goals
2. Explain the neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb
3. Demonstrate skills in performing PNF components (timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal)
4. Demonstrate the following PNF techniques, Procedure: components of PNF
5. Demonstrate skills in performing PNF components (timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal)
6. Demonstrate the following PNF techniques
 - i. Mobility: Contract relax, Hold relax, Rhythmic initiation
 - ii. Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization Stability: Alternating isometric, rhythmic stabilization

ExT 4.4. WALKING AIDS

ET 7.1. Identify different types of walking aids (Crutches, Canes, Frames)

ET 7.2. Discuss Principles of prescribing walking aids

PRACTICAL: B.P.T. ExT 205 (P)

The students of exercise therapy are to be trained in Practical Laboratory work for all the topics discussed in theory.

List of practicals

Student shall be able to perform independently on human model

- ExT (P) 5.1. Demonstrate the PNF techniques – patterns [upper limb lower limb trunk], special techniques**
- ExT (P) 5.2. Demonstrate preparation for relaxation training**
- ExT (P) 5.3. Measure chest expansion and demonstrate various breathing exercises**
- ExT (P) 5.4. Demonstrate exercises for training co-ordination – Frenkel's exercise**
- ExT (P) 5.5. Demonstrate techniques for functional re-education lying to side lying, lying to sitting, sitting to standing**
- ExT (P) 5.6. Assess and train for using walking aids axillary crutch [3 point, 2 point 4-point gait}, elbow crutch walker**
- ExT (P) 5.7. Demonstrate to use the technique of suspension therapy for mobilizing and strengthening joints and muscles**
- ExT (P) 5.8. Demonstrate the techniques for muscle stretching**
- ExT (P) 5.9. Assess and evaluate posture and gait**
- ExT (P) 5.10. Design and conducts aerobic training programme**
- ExT (P) 5.11. Demonstrate techniques of strengthening muscles using resisted exercises**
- ExT (P) 5.12. Demonstrate techniques for measuring limb length and body circumference**
- Observation [Demonstration by the teacher]**
- ExT (P) 5.13. Techniques of hydrotherapy in hydrotherapy pool**
- ExT (P) 5.14. Special techniques of relaxation**

Recommended Text Books

1. Practical Exercise Therapy: Hollis, Blackwell, Scientific Publications.
2. Therapeutic Exercise: Foundations and Techniques, Kisner & Colby.
3. Principles Of Exercise Therapy: Gardiner
4. Manipulation and Mobilization: Extremities and Spinal Techniques, Edmond, Mosby.
5. Aquatic Exercise Therapy-Bates and Hanson -W.B. Saunders.
6. Hydrotherapy: Principles & Practices, Campion, Butterworth & Heinemann.

Recommended Reference Books

1. Proprioceptive Neuromuscular Facilitation: Voss et al, Williams & Wilkins
2. Orthopedic Physical Therapy: Woods, Churchill Livingstone
3. Manual Examination and Treatment of Spine & Extremities: Wadsworth, Lippincott.
4. Motor Control: Theory and Practical Applications, Shumway Walcott-Lippincott
5. Therapeutic Exercises: Basmajian, Williams & Wilkins.

ELECTROTHERAPY (ET)

Course Code	BPT-206	L	P	C	Total sessions
Course Title	Electrotherapy (ET)	150	120	140	270
Pre-requisite	Basic knowledge of human anatomy, physiology, pathology, physics, and fundamental physiotherapy concepts.				
Co-requisites	NIL				

Course Objective:

1. To understand the physical principles and physiological responses underlying the therapeutic application of electro physical agents.
2. To develop knowledge of the production, biophysical effects, therapeutic effects, indications, contraindications, precautions, and evidence related to various electro physical agents.
3. To acquire competency in the selection, dosage calculation, and safe application of therapeutic ultrasound, LASER, cryotherapy, intermittent compression therapy, and shockwave therapy.
4. To develop practical skills in the preparation, handling, maintenance, and safe use of electrotherapy equipment.
5. To apply clinical reasoning and evidence-based principles in selecting appropriate electro physical agents and designing management protocols based on patient impairments, activity limitations, and participatory restrictions.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the physical principles of heat transfer, electromagnetic radiation, and sound, and describe the physiological responses to heat gain and loss in various tissues of the body.

CLO2: Explain and apply the principles, production, biophysical effects, therapeutic effects, dosage, indications, contraindications, precautions, and techniques of application of therapeutic ultrasound.

CLO3: Explain and apply the principles, classification, production, biophysical effects, therapeutic effects, dosage, indications, contraindications, precautions, and evidence related to therapeutic LASER.

CLO4: Explain and safely apply cryotherapy, intermittent compression therapy, and shockwave therapy based on their principles, biophysical effects, therapeutic effects, indications, contraindications, precautions, and current evidence.

CLO5: Demonstrate competency in the safe handling, preparation, maintenance, application, and clinical selection of electro physical agents and design appropriate evidence-based management protocols for identified patient problems.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy and rehabilitation across the lifespan.

PLO2: Apply evidence-based principles and clinical reasoning in the assessment, prevention, management, and rehabilitation of individuals and communities.

PLO3: Promote health, prevent disease and disability, and contribute to community-based rehabilitation through appropriate physiotherapy interventions.

PLO4: Demonstrate effective communication, leadership, health education, and interdisciplinary collaboration in professional practice.

PLO5: Utilize modern technology, information resources, and scientific knowledge for professional development and lifelong learning.

PLO6: Uphold ethical, legal, professional, and social responsibilities in physiotherapy practice and healthcare delivery.

PLO7: Contribute to public health, health promotion, preventive healthcare, community development, and advancement of physiotherapy practice.

Program Specific Outcomes (PSOs):

PSO1: Apply physiotherapy knowledge and clinical reasoning to assess patient impairments and select appropriate evidence-based therapeutic interventions.

PSO2: Demonstrate competency in the safe and effective application of electro physical agents and other physiotherapy modalities for the management of pain, tissue injury, and functional impairments.

PSO3: Integrate scientific principles, current evidence, technology, and patient safety considerations in planning and delivering physiotherapy interventions.

PSO4: Demonstrate professional competence in patient assessment, treatment planning, therapeutic application, documentation, and evaluation of physiotherapy outcomes.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	1	3	2	2	3	3	3	2
CLO2	3	3	2	2	3	3	2	3	3	3	3
CLO3	3	3	2	2	3	3	2	3	3	3	3
CLO4	3	3	2	2	3	3	2	3	3	3	3
CLO5	3	3	3	2	3	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

Unit 1:

Introduction

ET 1.1. Explain the Physiological responses to heat gain or loss on various tissues of the body.

ET 1.2. Discuss the Physical principles of electromagnetic radiation.

ET 1.3. Discuss the Physics of sound including characteristics and propagation.

ET 1.4. Rationalize the use of electro physical agents as appropriate to the stage of healing

Unit 2:

Therapeutic Ultrasound

ET 2.1. Explain the mechanism of Production, biophysical effects, types, therapeutics types, indication, and contraindication, precautions, of therapeutic Ultra sound.

ET 2.2. Calculate dosage of ultrasound for various structures and types of injuries

ET 2.3. Demonstrate the skills in application of Therapeutic ultrasound

ET 2.4. Demonstrate the skills in handling the equipment including preparation, maintenance and safety.

UNIT 3 –

Therapeutic LASER

ET 3.1. Discuss the historical background and physical principles of LASER.

ET 3.2. Classify LASER

ET 3.3. Explain the Production, Biophysical effects, types, therapeutic effects, techniques of application, indication, contraindications, and precautions of LASER therapy

ET 3.4. Calculate dosage of LASER for various structures and types of injuries

ET 3.5. Demonstrate the skills in application of LASER

ET 3.6. Demonstrate the skills in handling the equipment including preparation, maintenance and safety

ET 3.7. Discuss the current evidence pertaining to LASER therapy

Unit 4:

Therapeutic Cold (Cryotherapy)

ET 4.1. Explain the Production, Biophysical effects, types, therapeutic effects, techniques of application, indication, contraindications, and precautions of cryotherapy

ET 4.2. Demonstrate the skills in application of cryotherapy

ET 4.3. Demonstrate the skills in handling the equipment including preparation, maintenance and safety

ET 4.4. Discuss the current evidence pertaining to cryotherapy

Unit 5:

Therapeutic mechanical pressure (Intermittent Compression Therapy)

ET 5.1. Discuss the Principles, biophysical effects, types, therapeutic effects, indications, and contraindications of intermittent compression therapy

ET 5.2. Demonstrate the skills in application of compression therapy

ET 5.3. Demonstrate the skills in handling the equipment including preparation, maintenance and safety.

ET 5.4. Discuss the current evidence pertaining to intermittent compression therapy

Unit 6:

Shockwave therapy

ET 6.1. Discuss the Principles, biophysical effects, types, therapeutic effects, indications, and contraindications of shockwave therapy

ET 6.2. Demonstrate the skills in application of shockwave therapy

ET 6.3. Demonstrate the skills in handling the equipment including preparation, maintenance and safety.

ET 6.4. Discuss the current evidence pertaining to intermittent shockwave therapy

Unit 7:

ET 7.1. Case Discussion on EPA: Design a management protocol for a client with identified impairments, activity limitations and participatory restrictions.

Recommended Text Books

1. Electrotherapy Explained: Principle and Practice, Low and Reed, Butterworth Heinemann.
2. Claytons Electrotherapy -Kitchen and Basin.
3. Principles and Practice of Electrotherapy -Kahn Church hill Livingstone.

Recommended reference books

1. Therapeutic Heat and Cold Lehman- Williams and Wilkins.
2. Electrotherapy: Clinics in Physical therapy- Wolf Churchill Livingstone.

BIOMECHANICS & KINESIOLOGY (BK)

Course Code	BPT-207	L	P	C	Total sessions
Course Title	Biomechanics & Kinesiology- (BK)	120	60	10	180
Pre-requisite	Basic knowledge of human anatomy, physiology, physics, and fundamental concepts of human movement.				
Co-requisites	NIL				

Course Objective:

1. To understand the fundamental principles and concepts of biomechanics, kinesiology, kinematics, kinetics, forces, motion, work, and mechanical analysis of human movement.
2. To develop knowledge of the structure, function, mobility, stability, and biomechanical characteristics of joints, connective tissues, and muscles.
3. To understand and analyze the biomechanics of the spine, thorax, chest wall, temporomandibular joint, and upper and lower extremity joints.
4. To develop competency in analyzing normal and abnormal posture, gait, and functional movements using principles of kinetics and kinematics.
5. To apply biomechanical and kinesiology principles in the assessment of movement, identification of abnormalities, prevention of musculoskeletal disorders, and clinical physiotherapy practice.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the fundamental principles of biomechanics and kinesiology, including kinematics, kinetics, forces, motion, equilibrium, work, levers, joint structure, connective tissues, and muscle function.

CLO2: Analyze the structure, function, stability, mobility, normal movement, and abnormal movement of the cervical spine, lumbar spine, pelvic complex, thorax, chest wall, and temporomandibular joint.

CLO3: Explain and analyze the biomechanics, normal and abnormal movements, stability, and common movement abnormalities of the upper extremity joints and complexes.

CLO4: Explain and analyze the biomechanics, normal and abnormal movements, stability, and common movement abnormalities of the lower extremity joints and complexes.

CLO5: Analyze normal and abnormal posture, gait, stair climbing, and activities of daily living using principles of kinetics, kinematics, muscle action, planes, axes, and biomechanical movement analysis.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy and rehabilitation across the lifespan.

PLO2: Apply evidence-based principles and clinical reasoning in the assessment, prevention, management, and rehabilitation of individuals and communities.

PLO3: Promote health, prevent disease and disability, and contribute to community-based rehabilitation through appropriate physiotherapy interventions.

PLO4: Demonstrate effective communication, leadership, health education, and interdisciplinary collaboration in professional practice.

PLO5: Utilize modern technology, information resources, and scientific knowledge for professional development and lifelong learning.

PLO6: Uphold ethical, legal, professional, and social responsibilities in physiotherapy practice and healthcare delivery.

PLO7: Contribute to public health, health promotion, preventive healthcare, community development, and advancement of physiotherapy practice.

Program Specific Outcomes (PSOs):

PSO1: Apply knowledge of human movement, biomechanics, and kinesiology to assess normal and abnormal movement, posture, gait, and functional activities.

PSO2: Analyze joint mechanics, muscle function, forces, movement patterns, and functional impairments to support physiotherapy assessment and intervention.

PSO3: Apply biomechanical principles and clinical reasoning to identify movement dysfunction, prevent musculoskeletal disorders, and improve functional performance.

PSO4: Demonstrate competency in movement analysis, posture analysis, gait analysis, and analysis of activities of daily living for physiotherapy practice.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	1	3	2	2	3	3	3	2
CLO2	3	3	2	2	2	2	2	3	3	3	3
CLO3	3	3	2	2	2	2	2	3	3	3	3
CLO4	3	3	2	2	2	2	2	3	3	3	3
CLO5	3	3	3	2	3	2	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**Unit 1:****BK 1.1. Basics of Bio-mechanics:**

Discuss the basic Concepts in Biomechanics: Kinematics and Kinetics in following terms

1. Types of Motion
2. Location of Motion
3. Direction of Motion
4. Magnitude of Motion
5. Definition of Forces
6. Force of Gravity
7. Reaction forces
8. Equilibrium
9. Objects in Motion
10. Force of friction
11. Concurrent force systems
12. Parallel force system
13. Work
14. Moment arm of force
15. Force components
16. Equilibrium of levers

BK 1.2. Introduction to Biomechanical Analysis:

1. Discuss the techniques of biomechanical analysis
2. Explain the importance of biomechanical analysis

BK 1.3. Explain Joint structure and Function in terms of

1. Joint design

2. Materials used in human joints
3. General properties of connective tissues
4. Human joint design
5. Joint function
6. Joint motion
7. General effects of disease, injury and immobilization.

BK 1.4. Discuss Muscle structure and function -

1. Mobility and stability functions of muscles
2. Elements of muscle structure
3. Muscle function
4. Effects of immobilization, injury and aging

Unit 2**BK 2.1. Biomechanics of spine:**

Discuss the Biomechanics of Cervical spine, Lumbar Spine and Pelvic complex in terms of

1. Structure and function of cervical spine,
2. Factors responsible for stability of cervical spine
3. Movements of cervical spine.
4. Structure and function of lumbar spine,
5. Factors responsible for stability of lumbar spine
6. Movements of lumbar spine.
7. Structure and function of pelvic complex- Sacro-iliac Joint, Sacrum, symphysis pubic joint and lumbo sacral joint

BK 2.2. Analyse the movement of spine**BK 2.3. Identify the abnormal movements of Spine****Unit: 3****BK 3.1. Biomechanics of the Thorax and Chest wall -**

Discuss Biomechanics of the Thorax and Chest wall in terms of

1. General structure and function
2. Rib cage and the muscles associated with the rib cage
3. Ventilator motions: its coordination and integration
4. Developmental aspects of structure and function
5. Changes in normal structure and function I relation to pregnancy, scoliosis and COPD

- i. Identify the abnormal movements of thoracic cage
- ii. Discuss the mechanics of abnormal thoracic movement
- iii. Describe the Temporomandibular Joint in terms of General features, structure, function and dysfunction
- iv. Discuss the mechanics of abnormal TMJ movements

Unit 4:**BK 4.1. Biomechanics of the upper extremity joints -**

1. Explain the shoulder complex in terms of Structure and components of the shoulder complex and their integrated function
2. Identify the normal and abnormal movements of shoulder
3. Discuss static and dynamic stability of Shoulder

4. Describe the common abnormalities of shoulder movement
5. Describe elbow complex in terms of Structure and function of the elbow joint – humero ulnar and humero radial articulations, superior and inferior radioulnar joints; mobility and stability of the elbow complex; the effects of immobilization and injury.
6. Identify the normal and abnormal movements of elbow joint
7. Describe the common abnormalities of elbow movement
8. Discuss wrist and hand complex in terms of : Structural components and functions of the wrist complex; structure of the hand complex; functional position of the wrist and hand.
9. Identify the normal and abnormal movements of wrist complex
10. Describe the common abnormalities of wrist complex

Unit 5:

BK 5.1. Biomechanics of the lower extremity joints

1. Explain The hip complex in terms of : structure and function of the hip joint; hip joint pathology- arthrosis, fracture, bony abnormalities of the femur
2. Identify the normal and abnormal movements of Hip joint
3. Discuss stability of Hip
4. Describe the common abnormalities of hip movement
5. Explain knee complex in terms of structure and function of the knee joint – tibiofemoral joint and patellofemoral joint; effects of injury and disease.
6. Identify the normal and abnormal movements of knee joint
7. Discuss stability of knee complex
8. Describe the common abnormalities of knee movement
9. Explain ankle and foot complex in terms of structure and function of the ankle joint, subtalar joint, talo calcaneo navicular joint, transverse tarsal joint, tarsometatarsal joints, metatarsophalangeal joints, interphalangeal joints,
10. Discuss the structure and function of the plantar arches, muscles of the ankle and foot, deviations from normal structure and function – Pes Planus and Pes Cavus

Unit 6:

BK 6.1. Posture

1. Define Posture
2. Explain normal posture
3. Discuss the factors affecting posture
4. Explain the causes for abnormal posture
5. Discuss kinetics and kinematics of posture
6. Identify postural abnormalities
7. Discuss the role of posture in preventing musculoskeletal disorders.
8. Describe ergonomics
9. Discuss the effects of age, pregnancy, occupation and recreation on posture.

Unit 7:

BK 7.1. Gait

1. Explain the normal gait cycle
2. Discuss the kinetics and kinematics of gait
3. Discuss the determinants of gait
4. Identify gait abnormalities

5. Discuss the energy recruitment of normal and abnormal gait
6. Explain the kinetic and kinematic analysis of stair climbing
7. Identify the effects of muscle weakness on gait

PRACTICAL: B.P.T. BK 207 (P)**BK 8.1. Describe Movement Analysis: ADL activities like sitting – to standing, lifting, various grips, pinches**

Shall be conducted for various joint movements and analysis of the same.

Demonstration may also be given as how to analyze posture and gait. The student shall be taught and demonstrated to analysis for activities of daily living – ADL – (like sitting to standing, throwing, lifting etc.) The student should be able to explain and demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced, and mention the axis and planes through which the movements occur. The demonstrations may be done on models or skeleton.

Recommended Text Books

1. Cynthia C, Norkin D, Pamela K. Joint structure and function. A comprehensive analysis.
2. Houghlum PA, Bertoti DB. Brunnstrom's clinical kinesiology. FA Davis; 2011.

Recommended Reference Books

1. Steindler A. Kinesiology of the human body under normal and pathological conditions. Springfield, IL. Charles C Thomas. Neumann DA. Kinesiology of the musculoskeletal system-e-book: foundations for rehabilitation. Elsevier Health Sciences;
2. Oatis CA. Kinesiology: the mechanics and pathomechanics of human movement. Lippincott Williams & Wilkins; 2009.
3. Hamill J, Knutzen KM. Biomechanical basis of human movement. Lippincott Williams & Wilkins; 2006 Oct 1.
4. Robert shawe P. Kapandji AI.: The Physiology of the Joints, Volume 3: The Spinal Column, Pelvic Girdle and Head. Journal of the Australian Traditional-Medicine Society. 2009 Sep 1; 15(3):178-9.
5. Margareta Nordin: Basic Biomechanics of Musculoskeletal System, 4th Edition

YOGA & SYSTEMS OF MEDICINE (AYUS)

Course Code	BPT-208	L	P	C	Total sessions
Course Title	Yoga & Systems Of Medicine (AYUS)	120	60	10	180
Pre-requisite	Basic knowledge of human anatomy, physiology, health, disease, and fundamental healthcare concepts.				
Co-requisites	NIL				

Course Objective:

1. To understand the philosophy, history, development, streams, and types of Yoga and its relevance to health and well-being.
2. To develop knowledge of the yogic concepts of body, health, disease, stress management, disease prevention, and promotion of positive health.
3. To understand the physiological effects and therapeutic relevance of Yogic practices including Shat kriyas, Asanas, Pranayamas, relaxation techniques, and meditation.
4. To develop practical competency in the safe performance and demonstration of selected Yogic exercises, Asanas, Pranayamas, relaxation techniques, and meditation practices.
5. To acquire introductory knowledge of the AYUSH systems of medicine and understand the need for integration of various systems of medicine in comprehensive healthcare.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the philosophy, history, development, streams, and different types of Yoga and describe its relevance to health and well-being.

CLO2: Explain the yogic concepts of body, health, disease, stress management, disease prevention, and promotion of positive health.

CLO3: Describe the physiological effects and therapeutic relevance of Shat kriyas, Asanas, Pranayamas, relaxation techniques, and meditation.

CLO4: Demonstrate selected Yogic practices, including Sukshma Vyayama/Sithilikarna Vyayama, Surya Namaskar, Yogasanas, Pranayamas, relaxation techniques, and meditation practices safely and appropriately.

CLO5: Describe the philosophy, principles, methods, and brief treatment techniques of Ayurveda, Naturopathy, Unani, Siddha, and Homeopathy and explain the need for integration of various systems of medicine.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy and rehabilitation across the lifespan.

PLO2: Apply evidence-based principles and clinical reasoning in the assessment, prevention, management, and rehabilitation of individuals and communities.

PLO3: Promote health, prevent disease and disability, and contribute to community-based rehabilitation through appropriate physiotherapy interventions.

PLO4: Demonstrate effective communication, leadership, health education, and interdisciplinary collaboration in professional practice.

PLO5: Utilize modern technology, information resources, and scientific knowledge for professional development and lifelong learning.

PLO6: Uphold ethical, legal, professional, and social responsibilities in physiotherapy practice and healthcare delivery.

PLO7: Contribute to public health, health promotion, preventive healthcare, community development, and advancement of physiotherapy practice.

Program Specific Outcomes (PSOs):

PSO1: Apply principles of physiotherapy, physical activity, Yoga, and health promotion to improve physical function, health, well-being, and quality of life.

PSO2: Demonstrate competency in the safe application and instruction of appropriate movement, breathing, relaxation, and health-promoting practices.

PSO3: Apply preventive and holistic healthcare principles while integrating appropriate knowledge from different systems of medicine into physiotherapy practice.

PSO4: Demonstrate effective communication, patient education, interdisciplinary collaboration, and professional responsibility in promoting health and well-being.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	2	3	2	2	2	3	3	2	3	2
CLO2	3	3	3	2	2	2	3	3	3	3	3
CLO3	3	3	3	2	3	2	3	3	3	3	2
CLO4	3	3	3	3	2	3	3	3	3	3	3
CLO5	2	2	3	3	3	3	3	3	2	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**SECTION A: Yoga****Unit 1: Foundations of Yoga**

AYUS 1.1. Introduction to Yoga and its philosophy

AYUS 1.2. Brief history, development of Yoga

AYUS 1.3. Streams & types of Yoga

Unit 2: Yoga and Health

AYUS 2.1. Concept of body in yoga – Pancha kosha theory

AYUS 2.2. Concept of Health and Disease in yoga

AYUS 2.3. Stress management through yoga

AYUS 2.4. Disease prevention and promotion of positive health through yoga

Unit 3: Physiological effects of Yoga practices

AYUS 3.1. Physiological effects of Shat kriyas

AYUS 3.2. Physiological effects of Asanas

AYUS 3.3. Physiological effects of Pranayamas

AYUS 3.4. Physiological effects of Relaxation techniques and Meditation

SECTION B: Other Systems of Medicine**Unit 4: Other Systems of Medicine and Need for integration of various system of medicine**

AYUS 4.1. Introduction to AYUSH system of medicine

AYUS 4.2. Introduction to Ayurveda.[Philosophy and Principals, Methods and Brief Treatment Techniques].

AYUS 4.3. Naturopathy [Philosophy and Principals, Methods and Brief Treatment Techniques]

AYUS 4.4. Unani [Philosophy and Principals, Methods and Brief Treatment Techniques].

AYUS 4.5. Siddha [Philosophy and Principals, Methods and Brief Treatment Techniques].

AYUS 4.6. Homeopathy [Philosophy and Principals, Methods and Brief Treatment Techniques].

PRACTICAL: B.P.T. AYUS 208 (P)

List of Practical / Demonstrations (30 hours)

AYUS (P) 5.1. Sukshma Vyayama/Sithilikarna Vyayama and Surya Namaskar: (3 hours)

Loosening exercises of each part of the body particularly of the joints

12 step Surya namaskar

AYUS (P) 5.2. Yogic kriyas [Observation/ demonstration only] (3 hours)

1. Neti (Jala Neti, Sutra Neti)
2. Dhauti (Vamana Dhauti, Vastra Dhauti)
3. Trataka
4. Shankaprakshalana (Laghu & Deergha)

AYUS (P) 5.3. Yogasanas:

1. Standing postures (4 hours)

- i. Tadasana (Upward stretch posture)
- ii. Ardha Chakrasana (Half wheel posture)
- iii. Ardha Katichakrasana (Half lumber wheel posture)
- iv. Utkatasana (Chair posture)
- v. Pada Hastasana (Hand to toes posture)
- vi. Trikonasana (Triangle posture)
- vii. Parshva Konasana (Side angle posture)
- viii. Garudasana (Eagle posture)
- ix. Vrikshasana (Tree posture)

2. Prone positions (4 hours)

- i. Makarasana (Crocodile posture)
- ii. Bhujangasana (Cobra posture)
- iii. Salabhasana (Locust posture)
- iv. Dhanurasana (Bow posture)
- v. Naukasana (Boat posture)
- vi. Marjalarasana (Cat posture)

3. Supine postures (4 hours)

- i. Ardha halasana/ Uttana Padasana
- ii. Sarvangasana (All limb posture)
- iii. Pawana muktasana (Wind releasing posture)
- iv. Matsyasana (Fish posture)
- v. Halasana (plough posture)
- vi. Chakrasana (Wheel posture)
- vii. Setu Bandhasana (Bridge posture)
- viii. Shavasana (Corpse posture)

4. Sitting postures

- i. Parvatasana (Mountain posture)
- ii. Bhadrasana (Gracious posture)
- iii. Vajrasana (Adamantine posture)
- iv. Paschimottanasana (Back stretching posture)
- v. Janushirasana (Head to knee posture)
- vi. Simhasana (Lion posture)

- vii. Gomukhasana (Cow head posture)
- viii. Ushtrasana (Camel posture)
- ix. Ardha Matsyendrasana (Half matsyendra spine twist posture)
- x. Vakrasana (Spinal twist posture)
- xi. Kurmasana (Turtle posture)
- xii. Shashankasana (Rabbit posture)
- xiii. Mandukasana (Frog Posture)

5. Meditative postures and Meditation techniques (2 hours)

- i. Siddhasana (Accomplished pose)
- ii. Padmasana (Lotus posture)
- iii. Samasana

6. Swastikasana (Auspicious posture)

AYUS (P) 5.4. Pranayamas:

- 1. The practice of correct breathing and Yogic deep breathing
- 2. Kapalabhati
- 3. Bhastrika
- 4. Sitali
- 5. Sitkari
- 6. Sadanta
- 7. Ujjayi
- 8. Surya Bhedana
- 9. Chandra Bhedana
- 10. Anuloma-Viloma/Nadishodana
- 11. Bhramari

AYUS (P) 5.5. Relaxation Techniques

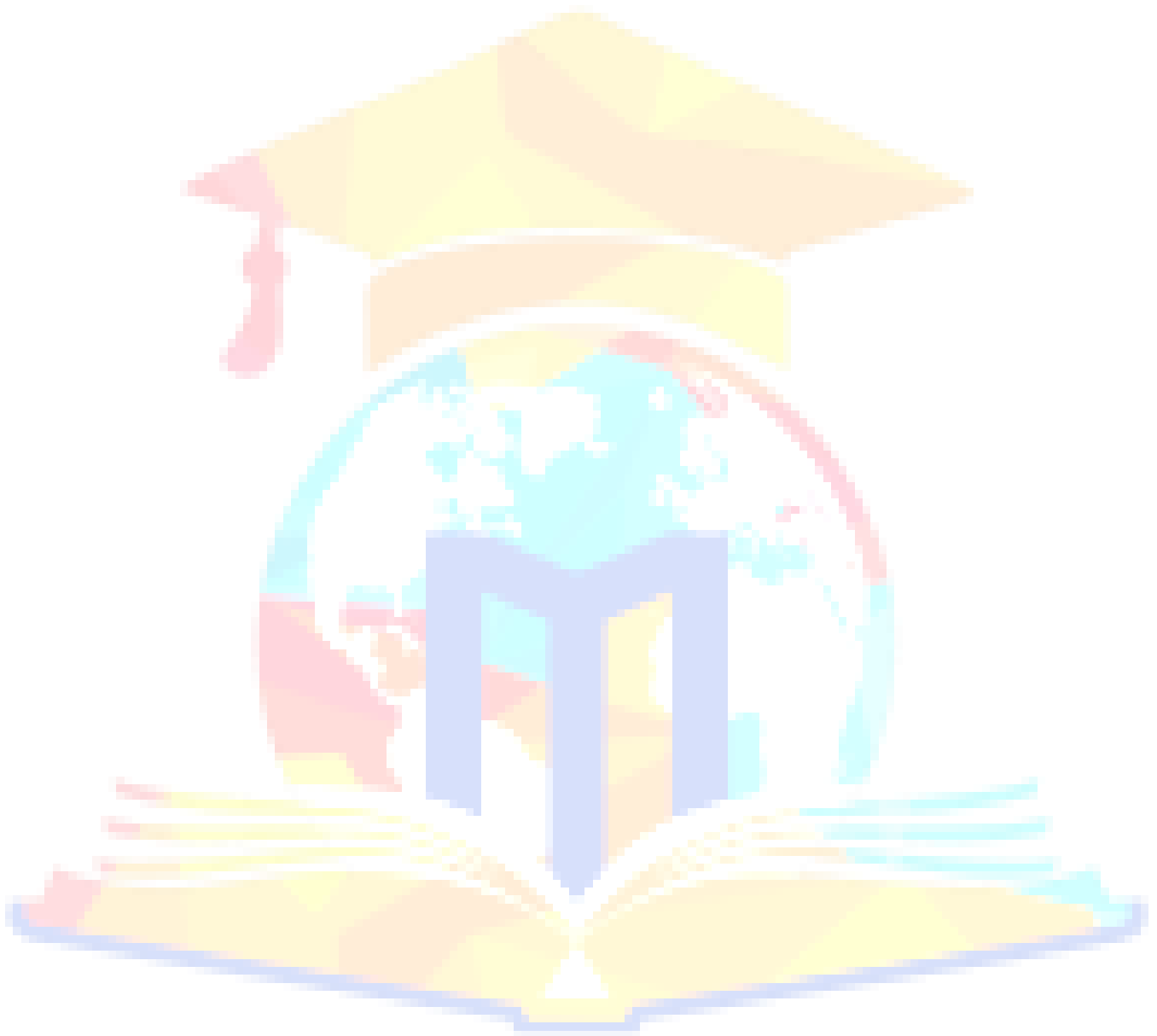
- 1. Shavasana
- 2. Yoga Nidra

Recommended text books

- 1. Lights on yoga by BKS Iyengar
- 2. Lights on pranayam by BKS Iyengar
- 3. Anatomy and Physiology of Yogic Practices - M.M Ghore, Kaivalyadhama, Lonavala, Pune.
- 4. A Systematic course in the ancient tantric techniques of yoga and kriya - Bihar School of Yoga, Munger.
- 5. Yoga for different ailments - series published by SVYASA, Bangalore and Bihar Yoga Bharati.
- 6. Yoga for common ailments : Robin Monro, Nagarathna & Nagendra - Guia Publication, U.K.
- 7. Yoga therapy : by Swami Kuvalayanand, Kaivalaya dhama, Lonavala.
- 8. Yogic therapy : Swami Shivananda, Umachal Yoga Ashram, Kamakhya, Assam.

CLINICAL OBSERVATION (COB)

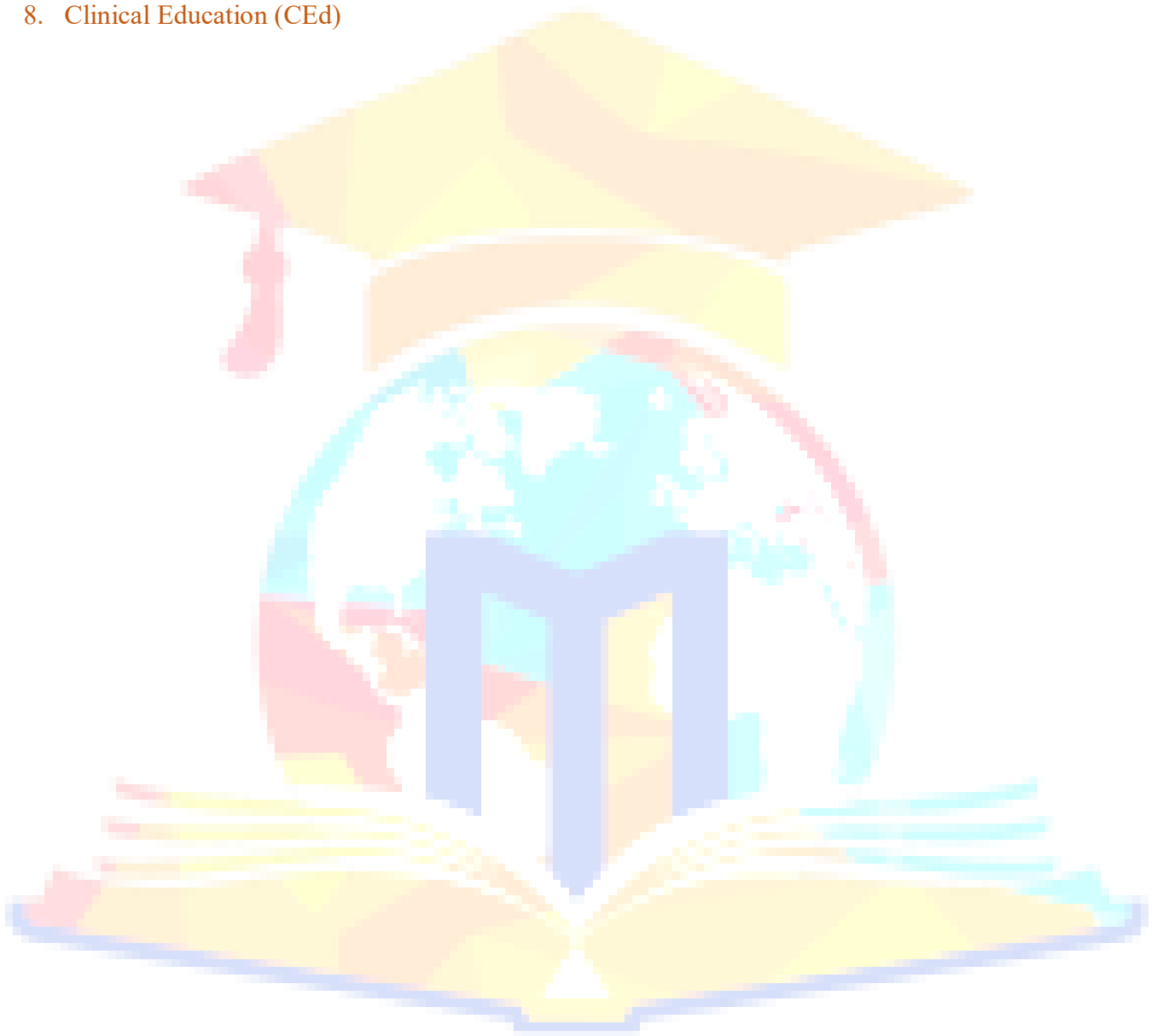
Students will be posted in rotation in the physiotherapy OPDs and various wards of hospitals attached with the college. The students will observe the process of providing physiotherapy care for the patients. They may assist the clinical staff as well in executing non clinical aspects of service delivery. Each student shall maintain a case portfolio / diary to record the various activities performed during clinical posting. This diary should be presented before the final exam and the grade should be awarded by the college.





COURSE TITLES

1. Medicine and Pediatrics (MP)
2. Surgery (GS)
3. Orthopedics (O)
4. Physiotherapy in Adult and Pediatric Medical and Surgical Conditions (PMS)
5. Physiotherapy in Adult and Orthopedic Conditions (PTO)
6. Functional & Professional Diagnosis (FDP)
7. Research, Biostatistics and Evidence-Based Practice (RBP)
8. Clinical Education (CEd)



GENERAL MEDICINE AND PEDIATRICS (GMP)

Course Code	BPT-301	L	P	C	Total sessions
Course Title	General Medicine And Pediatrics (GMP)	90	30	7	120
Pre-requisite	Basic knowledge of human anatomy, physiology, pathology, microbiology, and fundamental concepts of health and disease.				
Co-requisites	NIL				

Course Objective:

1. To develop comprehensive knowledge of the etiology, clinical features, diagnosis, complications, prevention, and medical management of common infectious, metabolic, nutritional, respiratory, cardiovascular, digestive, renal, and skin diseases.
2. To understand the pathophysiology, clinical presentation, and medical management of common systemic diseases relevant to physiotherapy practice.
3. To develop knowledge of common pediatric conditions, including congenital abnormalities, developmental disorders, neurological conditions, and their medical management.
4. To develop an understanding of common diseases and degenerative disorders affecting the geriatric population and their clinical presentation and course.
5. To enable students to recognize medical conditions, complications, and clinical presentations relevant to safe physiotherapy assessment, treatment planning, referral, prevention, and rehabilitation.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the etiology, transmission, prevention, clinical features, diagnosis, complications, and medical management of common communicable, infectious, metabolic, deficiency, and endocrine diseases.

CLO2: Describe the etiology, clinical features, diagnosis, complications, and medical management of common respiratory and circulatory system diseases.

CLO3: Explain the nutritional requirements, clinical features, complications, and management of nutritional and deficiency disorders and obesity.

CLO4: Describe the etiology, clinical features, diagnosis, complications, and medical management of common digestive, hepatobiliary, renal, urinary, and skin diseases.

CLO5: Explain the causes, clinical manifestations, complications, investigations, and medical management of common pediatric conditions and common diseases and degenerative disorders affecting the geriatric population.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy and rehabilitation across the lifespan.

PLO2: Apply evidence-based principles and clinical reasoning in the assessment, prevention, management, and rehabilitation of individuals and communities.

PLO3: Promote health, prevent disease and disability, and contribute to community-based rehabilitation through appropriate physiotherapy interventions.

PLO4: Demonstrate effective communication, leadership, health education, and interdisciplinary collaboration in professional practice.

PLO5: Utilize modern technology, information resources, and scientific knowledge for professional development and lifelong learning.

PLO6: Uphold ethical, legal, professional, and social responsibilities in physiotherapy practice and healthcare delivery.

PLO7: Contribute to public health, health promotion, preventive healthcare, community development, and advancement of physiotherapy practice.

Program Specific Outcomes (PSOs):

PSO1: Apply knowledge of medical, pathological, and physiological conditions in planning safe and appropriate physiotherapy interventions.

PSO2: Demonstrate competency in recognizing clinical features, complications, precautions, and contraindications relevant to physiotherapy practice.

PSO3: Apply preventive, rehabilitative, and health-promoting principles in the management of individuals across the lifespan.

PSO4: Demonstrate effective clinical communication, interdisciplinary collaboration, and appropriate referral in the management of patients with medical conditions.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	3	2	2	3	3	3	3	3	2
CLO2	3	3	3	2	2	3	3	3	3	3	3
CLO3	3	3	3	2	2	2	3	3	3	3	2
CLO4	3	3	3	2	2	3	3	3	3	3	3
CLO5	3	3	3	3	2	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION -A

Unit 1: Infections

GMP 1.1. Classify communicable diseases

GMP 1.2. Discuss the importance of prevention of communicable diseases

GMP 1.3. Discuss the physiological changes caused due to infection.

GMP 1.4. Describe the methods of spreading the infections

GMP 1.5. Discuss different types vaccination used in Infections

GMP 1.6. Discuss the importance of vaccination

GMP 1.7. Discuss the clinical features, Diagnosis, Complications and medical management of

1. Food poisoning and gastroenteritis
2. Sexually transmitted diseases
3. Tuberculosis Leprosy
4. Rheumatic fever
5. Tetanus, Typhoid, Diphtheria
6. Pneumonia
7. Influenza Herpes – simplex and zoster, Varicella, Measles, Mumps, Hepatitis B & C, HIV infections and AIDS.

Unit 2:

GMP 2.1. Metabolic and Deficiency Diseases: Discuss etiology, clinical features, diagnosis, complications and treatment

1. Diabetes
2. Anemia
3. Vitamin & Mineral Deficiency diseases

4. diseases of the endocrine glands

Unit 3:

GMP 3.1. Diseases of Respiratory System: Explain the Etiology, clinical features, diagnosis, complications and treatment of the following conditions:

1. Asthma
2. Bronchitis
3. Tuberculosis
4. Massive collapse of lungs
5. Bronchiectasis
6. Bronchial Pneumonia
7. lung abscess
8. Emphysema
9. Pleural effusion
10. Pneumothorax & vocal cords
11. chronic infection of larynx and trachea
12. Abnormalities of trachea
13. infract of lungs
14. chronic obstructive pulmonary disease
15. chest wall deformities

Unit 4:

GMP 4.1. Diseases of Circulatory System: Explain the Etiology, clinical features, diagnosis, complications and treatment of the following conditions

1. Atherosclerosis, Thrombosis, Embolism, Hemorrhage, various diseases of arteries,
2. Vascular diseases
3. ischemic heart disease
4. rheumatic heart disease
5. congenital heart disease
6. cardiac arrest
7. Hypertension

SECTION -B**Unit 5: Nutritional Disorders**

GMP 5.1. Describe in details about Nutritional and Energy requirements

GMP 5.2. Explain detail clinical Features and treatment of Deficiency diseases (Protein, Vitamin)

GMP 5.3. Discuss Management of Obesity – diet, exercise and medications

Unit 6:

GMP 6.1. Diseases of Digestive and renal Systems: Discuss etiology, clinical features, diagnosis, complications and treatment of the following:

1. Reflux Esophagitis, Achalasia Cardia, Carcinoma of Esophagus, GI bleeding, Peptic Ulcer disease, Carcinoma of Stomach, Pancreatitis, Malabsorption Syndrome, Ulcerative Colitis, Peritonitis, Infections of Alimentary Tract
2. Viral Hepatitis, Wilson's disease, Alpha1-antitrypsin deficiency, Tumors of the Liver, Gall stones, Cholecystitis.
3. Renal Failure, Nephrotic Syndrome, Nephritis, Urinary tract infections, Urinary calculi.

Unit 7:

GMP 7.1. Diseases of Skin: Discuss the Causes, clinical features and management of the following skin conditions:

Acne, Boil, Carbuncles, Impetigo, Herpes, Urticaria, Psoriasis, Warts, Corn, Psoriasis, Fungal infections, Leprosy, Dermatitis, Eczema, Venereal diseases.

Unit 8: Pediatrics

GMP 8.1. Enumerate the problems and management LOW Birth Weight Babies

GMP 8.2. Describe the common congenital Abnormalities with causes and its management.

GMP 8.3. Explain the causes, types, complications, clinical manifestations, and medical management of cerebral palsy

GMP 8.4. Explain the causes, types, complications, clinical manifestations, and medical management of spinal malformations

GMP 8.5. Describe the causes, types, complications, clinical manifestations, and medical management of epilepsies

GMP 8.6. Discuss the causes, clinical manifestations, investigation procedures and medical management of autism spectrum disorders.

GMP 8.7. Discuss the causes, clinical manifestations, investigation procedures and management of hydrocephalus (Including surgical)

Unit 9: Geriatrics

GMP 9.1. Discuss the epidemiology, pathogenesis, clinical evolution, presentation and course of common diseases in the elderly

GMP 9.2. Discuss the causes, signs and symptoms degenerative disorders of the aging population (Neurological and musculoskeletal)

Recommended text books

1. Davidson's principles and Practices of Medicine – Edward – Churchill Livingstone.
2. Hutchinson's Clinical Methods – Swash – Bailliere Tindall.
3. A Short Text book of Medicine – Krishna Rao – Jaypee Brothers.
4. A Short Text book of Psychiatry – Ahuja Niraj – Jaypee Brothers.
5. Shah SN: API text book of Medicine. Vol I & II, 8th Ed, The Association of Physicians of India, Mumbai, 2008.
6. Golwalla SA, Golwalla AF: Medicine for students. 21st Ed, National book depot, Mumbai, 2005.
7. Das PC: Textbook of medicine. 4th Ed, Current books international, Kolkata, 2000.
8. Mehta PJ, Joshi SR, Mehta NP: Practical Medicine. 17th Ed, National Book Depot, New Delhi, 2005.

Recommended reference books

1. Fauci, Braunwald, Kasper, Longo, Jameson, Loscalzo: Harrison's principles of internal medicine. Vol I & II, 17th Ed, McGraw Hill, New York, 2008.
2. McPhee, Papadakis, Tierney: Current medical diagnosis and treatment. 46th Ed, McGraw Hill, New York, 2007.
3. Ogilvie & Evans: Chamberlain's symptoms and signs in clinical medicine – An introduction to medical diagnosis. 12th Ed, Butterworth Heinmann, oxford,
4. Douglas, Nicol & Robertson: Macleod's clinical examination. 11th Ed, Elsevier – Churchill Livingstone, Edinburgh, 2005

GENERAL SURGERY (GS)

Course Code	BPT-302	L	P	C	Total sessions
Course Title	General Surgery (GS)	90	30	7	120
Pre-requisite	Basic knowledge of human anatomy, physiology, pathology, microbiology, and fundamental concepts of medical sciences and patient care.				
Co-requisites	NIL				

Course Objective:

1. To understand the fundamental principles of general surgery, including wound healing, surgical procedures, anesthesia, incision and suturing, and post-operative management.
2. To develop knowledge of common abdominal, pelvic, thoracic, burn, plastic, and soft tissue surgical procedures relevant to physiotherapy practice.
3. To understand the physiological consequences, complications, precautions, and post-operative considerations associated with common surgical procedures.
4. To develop the ability to recognize the physiotherapy implications and role of physiotherapy in the pre-operative and post-operative management of surgical patients.
5. To develop basic competency in surgical patient assessment through history taking, clinical examination, interpretation of bedside charts, and identification of relevant equipment and post-operative precautions.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the principles of surgery, wound healing, management of non-healing wounds, incision and suturing, anesthesia, complications of general anesthesia, and post-operative management.

CLO2: Describe common abdominal and pelvic surgical procedures, their surgical considerations, and associated physiotherapy implications.

CLO3: Explain common thoracic and cardiothoracic surgical procedures, their surgical considerations, and associated physiotherapy implications.

CLO4: Describe the assessment, medical and surgical management of burns and explain common plastic surgery, skin grafting procedures, and the role of physiotherapy following skin grafts.

CLO5: Explain the principles and common procedures of tendon transfer surgeries and demonstrate basic competency in clinical assessment, post-operative care considerations, and identification of physiotherapy implications in surgical patients.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy and rehabilitation across the lifespan.

PLO2: Apply evidence-based principles and clinical reasoning in the assessment, prevention, management, and rehabilitation of individuals and communities.

PLO3: Promote health, prevent disease and disability, and contribute to community-based rehabilitation through appropriate physiotherapy interventions.

PLO4: Demonstrate effective communication, leadership, health education, and interdisciplinary collaboration in professional practice.

PLO5: Utilize modern technology, information resources, and scientific knowledge for professional development and lifelong learning.

PLO6: Uphold ethical, legal, professional, and social responsibilities in physiotherapy practice and healthcare delivery.

PLO7: Contribute to public health, health promotion, preventive healthcare, community development, and advancement of physiotherapy practice.

Program Specific Outcomes (PSOs):

PSO1: Apply knowledge of surgical, medical, and pathological conditions in planning safe and appropriate physiotherapy interventions.

PSO2: Demonstrate competency in recognizing post-operative complications, precautions, contraindications, and physiotherapy implications in surgical patients.

PSO3: Apply preventive, rehabilitative, and functional restoration principles in the management of patients undergoing surgical procedures.

PSO4: Demonstrate effective clinical communication, patient education, interdisciplinary collaboration, and appropriate referral in surgical patient management.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	2	2	3	2	3	3	2	2
CLO2	3	3	3	2	2	3	2	3	3	3	3
CLO3	3	3	3	2	2	3	2	3	3	3	3
CLO4	3	3	3	3	2	3	2	3	3	3	3
CLO5	3	3	3	3	2	3	2	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**SECTION -A****Unit 1: Introduction to General Surgery**

GS 1.1. Discuss the principles of surgeries

GS 1.2. Explain the process of wound healing

GS 1.3. Discuss the surgical management of non-healing wounds

GS 1.4. Explain the principles of incision and suturing

GS 1.5. Discuss the types of anesthesia

GS 1.6. Explain the complications of general anesthesia on various systems

GS 1.7. Discuss the Principles of Post-operative management

Unit 2: Abdominal surgeries

GS 2.1. Explain the common abdominal incisions

GS 2.2. Discuss the common abdominal and pelvic organ surgical procedures and its Physiotherapy implications (Herniorrhaphy, Colostomy, Ileostomy, Hysterectomy, Prostatectomy, cystectomy, Appendectomy and Cholecystectomy)

SECTION -B**Unit 3: Thoracic surgeries**

GS 3.1. Explain the common thoracic incisions

GS 3.2. Discuss the common thoracic organ surgical procedures and its Physiotherapy implications (CABG, Cardiac transplantation, Valve surgeries, Thoracotomy, Pleural surgeries, Lobectomy, Lung Volume reduction surgeries, Lung transplantation)

Unit 4: Burns and Plastic Surgery

GS 4.1. Explain the types of burns

GS 4.2. Explain the assessment procedures followed in standard burn care unit

- GS 4.3. Discuss the medical and surgical management of Burns
GS 4.4. Discuss the common procedures used in plastic surgery and skin grafting
GS 4.5. Discuss the role of Physiotherapy following skin grafts

Unit 5: Soft tissue surgeries

- GS 5.1. Discuss the principles of tendon transfer surgeries
GS 5.2. Discuss the common tendon transfer surgery procedures in terms of indications, prognosis, postoperative care and Physiotherapy role.

Practical/ clinical

Long case/ short case/ viva voce : focusing on history taking clinical examination interpretation of bedside charts, OSPE for equipments

Recommended text Books

1. S. Das: A concise textbook of surgery. 3rd Ed, Dr. S.Das, Calcutta, 2001.
2. S. Das: A manual on clinical surgery. 6th Ed, Dr. S. Das, Calcutta, 2004.
3. Dutta DC: Text book of obstetrics / Textbook of gynecology. 5th / 6th Ed, New central book agency (P) ltd, Kolkata, 2003/2004.
4. Basak KS: Essentials of ophthalmology. 3rd Ed, Current books international, Kolkata, 2004.
5. Bhargava KB, Bhargava SK & Shah TM: A short textbook of E.N.T diseases. 7th Ed, Usha publications, Mumbai, 2005

Recommended reference books

1. Russell RCG, Williams NS, Bulstrode CJK: Bailey & Love's short practice of surgery. 24th Ed, Arnold, London, 2004.
2. Mowschenson PM: Aids to undergraduate surgery. 3rd Ed, Churchill Livingstone, Edinburgh,
3. Farquharson M & Moran B: Farquharson's textbook of operative general surgery. 9th Ed, Hodder Arnold, London, 2005.
4. Lumley JSP: Hamilton Bailey's demonstrations of physical signs in clinical surgery. Butterworth Heinman, Oxford,
5. Doherty MG: Current surgical diagnosis and treatment. 12th Ed, Lange medical books, New York, 2006.

ORTHOPEDICS (OR)

Course Code	BPT-303	L	P	C	Total sessions
Course Title	Orthopedics (OR)	90	30	7	120
Pre-requisite	Basic knowledge of human anatomy, physiology, pathology, biomechanics, kinesiology, and fundamental concepts of medical sciences.				
Co-requisites	NIL				

Course Objective:

1. To understand the fundamental principles of orthopedics, traumatology, clinical examination, investigative procedures, and radiological evaluation of orthopedic conditions.
2. To develop knowledge of the causes, clinical features, complications, and medical and surgical management of fractures, dislocations, soft tissue injuries, and traumatic conditions affecting the musculoskeletal system.
3. To understand congenital and acquired deformities, diseases of bones and joints, neuromuscular disorders, and spinal pathologies relevant to physiotherapy practice.
4. To develop knowledge of common orthopedic surgeries, regional musculoskeletal conditions, and their clinical and functional implications.
5. To develop competency in orthopedic clinical assessment, including history taking, observation, palpation, special tests, interpretation of radiographs, differential diagnosis, and identification of orthopedic equipment.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the fundamental principles of orthopedics and traumatology, including clinical examination, investigative and imaging procedures, inflammation and repair, fracture healing, fractures, dislocations, and their conservative and surgical management.

CLO2: Describe the causes, mechanism of injury, clinical features, complications, and management of fractures, dislocations, and soft tissue injuries affecting the upper limb, lower limb, spine, thorax, and rib cage.

CLO3: Explain the clinical features, complications, and medical and surgical management of amputations, traumatic spinal cord injuries, congenital and acquired deformities, and diseases of bones and joints.

CLO4: Describe the causes, clinical features, investigations, complications, and management of orthopedic syndromes, neuromuscular disorders, cervical and lumbar pathologies, and common regional musculoskeletal conditions.

CLO5: Demonstrate competency in orthopedic clinical assessment through history taking, observation, palpation, special tests, identification of abnormalities in radiographs, diagnosis, differential diagnosis, and identification of orthopedic equipment.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy and rehabilitation across the lifespan.

PLO2: Apply evidence-based principles and clinical reasoning in the assessment, prevention, management, and rehabilitation of individuals and communities.

PLO3: Promote health, prevent disease and disability, and contribute to community-based rehabilitation through appropriate physiotherapy interventions.

PLO4: Demonstrate effective communication, leadership, health education, and interdisciplinary collaboration in professional practice.

PLO5: Utilize modern technology, information resources, and scientific knowledge for professional development and lifelong learning.

PLO6: Uphold ethical, legal, professional, and social responsibilities in physiotherapy practice and healthcare delivery.

PLO7: Contribute to public health, health promotion, preventive healthcare, community development, and advancement of physiotherapy practice.

Program Specific Outcomes (PSOs):

PSO1: Apply knowledge of orthopedic, traumatic, and musculoskeletal conditions in the assessment and planning of safe and appropriate physiotherapy interventions.

PSO2: Demonstrate competency in identifying clinical features, complications, precautions, contraindications, and functional limitations associated with orthopedic conditions.

PSO3: Apply principles of prevention, rehabilitation, functional restoration, and disability management in orthopedic and musculoskeletal conditions.

PSO4: Demonstrate effective clinical communication, patient education, interdisciplinary collaboration, clinical reasoning, and appropriate referral in orthopedic practice.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	2	2	3	2	3	3	2	2
CLO2	3	3	3	2	2	3	2	3	3	3	3
CLO3	3	3	3	2	2	3	2	3	3	3	3
CLO4	3	3	3	3	2	3	2	3	3	3	3
CLO5	3	3	2	3	3	3	2	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION -A

Unit 1

OR 1.1. Introduction

1. Introduction to orthopedics.
2. Clinical examination in an orthopedic patient.
3. Common investigative procedures.
4. Radiological and Imaging techniques in Orthopedics.
5. Inflammation and repair, Soft tissue healing.

OR 1.2. Traumatology

1. Fracture: definition, types, signs and symptoms.
2. Fracture healing.
3. Complications of fractures.
4. Conservative and surgical approaches.
5. Principles of management – reduction (open/closed, immobilization etc.).
6. Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative).

OR 1.3. Fractures and Dislocations of Upper Limb

1. Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:
2. Fractures of clavicle and scapula.
3. Fractures of greater tuberosity and neck of humerus.

4. Fracture shaft of humerus.
5. Supracondylar fracture of humerus.
6. Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles.
7. Side swipe injury of elbow.
8. Both bone fractures of ulna and radius.
9. Fracture of forearm – Monteggia, Galeazzi fracture – dislocation.
10. Chauffeur's fracture.
11. Colle's fracture.
12. Smith's fracture.
13. Scaphoid fracture.
14. Fracture of the metacarpals.
15. Bennett's fracture.
16. Fracture of the phalanges. (Proximal and middle.)

OR 1.4. Dislocations of Upper Limb –

1. Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates maneuver), surgical management (putti plat, Bankart's) etc.
2. Recurrent dislocation of shoulder.
3. Posterior dislocation of shoulder – mechanism of injury, clinical features and management.
4. Posterior dislocation of elbow – mechanism of injury, clinical feature, complications & management.
5. Hand Injuries - mechanism of injury, clinical features, and management of the following –
6. Crush injuries.
7. Flexor and extensor injuries.
8. Burn injuries of hand

UNIT 2

OR 2.1. Fracture of Spine

1. Fracture of Cervical Spine - Mechanism of injury, clinical feature, complications (quadriplegia); Management-immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia).
2. Clay shoveller's fracture.
3. Hangman's fracture.
4. Fracture odontoid.
5. Fracture of atlas.

OR 2.2. Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, and management— conservative and surgical of common fractures around thoracic and lumbar regions

OR 2.3. Fracture of coccyx.

OR 2.4. Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.

OR 2.5. Fractures and Dislocations of Lower Limb

1. Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:
2. Fracture of pelvis.

3. Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical.
4. Fractures of trochanters.
5. Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical.
6. Supracondylar fracture of femur.
7. Fractures of the condyles of femur.
8. Fracture patella.
9. Fractures of tibial condyles.
10. Both bones fracture of tibia and fibula.
11. Dupuytren's fracture
12. Maisonneuve's fracture.
13. Pott's fracture – mechanism of injury, management.
14. Bimalleolar fracture
15. Trimalleolar fracture
16. Fracture calcaneum – mechanism of injury, complications and management.
17. Fracture of talus.
18. Fracture of metatarsals—stress fractures Jones's fracture.
19. Fracture of phalanges.

OR 2.6. Dislocations of Lower Limb - mechanism of injury, clinical features, complications, management of the following dislocations of lower limb.

1. Anterior dislocation of hip.
2. Posterior dislocation of hip.
3. Central dislocation of hip.
4. Dislocation of patella.
5. Recurrent dislocation of patella.

OR 2.7. Soft Tissue Injuries - Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis.

OR 2.8. Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries:

1. Meniscal injuries of knee.
2. Cruciate injuries of knee.
3. Medial and lateral collateral injuries of knee.
4. Lateral ligament of ankle.
5. Wrist sprains.
6. Strains- quadriceps, hamstrings, calf, biceps, triceps etc.
7. Contusions- quadriceps, gluteal, calf, deltoid etc.
8. Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc.

SECTION -B

UNIT 3

OR 3.1. Amputations - Definition, levels of amputation of both lower and upper limbs, indications, complications.

OR 3.2. Traumatic Spinal Cord Injuries - Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia.

OR 3.3. Deformities - clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities.

1. Congenital Deformities –

- i. CTEV.
- ii. CDH.
- iii. Torticollis.
- iv. Scoliosis.
- v. Flat foot.
- vi. Vertical talus.
- vii. Hand anomalies- syndactyly, polydactyly and ectrodactyly. Arthrogryposis multiplex congenita (amyoplasia congenita).
- viii. Limb deficiencies- Amelia and Phocomelia. Klippel feil syndrome. Osteogenesis imperfecta(fragile ossium).
- ix. Cervical rib.

2. Acquired Deformities –

- i. Acquired Torticollis.
- ii. Scoliosis.
- iii. Kyphosis.
- iv. Lordosis.
- v. Genu varum.
- vi. Genu valgum.
- vii. Genu recurvatum
- viii. Coxa vara.
- ix. Pes cavus.
- x. Hallux rigidus.
- xi. Hallux valgus.
- xii. Hammer toe.
- xiii. Metatarsalgia.

OR 3.4. Disease of Bones and Joints: Causes, Clinical features, Complications, Management medical and surgical of the following conditions:

1. Infective conditions: Osteomyelitis (Acute / chronic). Brodie's abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc.
2. Arthritic conditions: Pyogenic arthritis. Septic arthritis. Syphilitic infection of joints.
3. Bone Tumors: classification, clinical features, management - medical and surgical of the following tumors: Osteoma. Osteosarcoma, Osteochondroma. Enchondroma. Ewing's sarcoma. Giant cell tumor. Multiple myeloma. Metastatic tumors.
4. Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis.
5. Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia. Osteoporosis.
6. Inflammatory and Degenerative Conditions: causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions:
7. Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis Gouty arthritis. Psoriatic arthritis. Hemophilic arthritis. Still's disease (juvenile rheumatoid arthritis). Charcot's joints.
8. Connective Tissue Disorders- Systemic Lupus Erythematosus, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)

UNIT 4

OR 4.1. Syndromes: Causes, Clinical features, complications, management- conservative and surgical of the following:

1. Cervico brachial syndrome.

2. Thoracic outlet syndrome. Vertebro- basilar syndrome.
3. Scalene syndrome.
4. Costo clavicular syndrome.
5. Levator scapulae syndrome.
6. Piriformis syndrome.

OR 4.2. Neuromuscular Disorders: Definition, causes, clinical feature, complications, management. (Multidisciplinary approach) medical and surgical of the following conditions:

1. Cerebral palsy.
2. Poliomyelitis.
3. Spinal Dysraphism.
4. Leprosy.

OR 4.3. Cervical and Lumbar Pathology: Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following:

1. Prolapsed intervertebral disc (PID),
2. Spinal Canal Stenosis
3. Spondylosis (cervical and lumbar)
4. Spondylolysis.
5. Spondylolisthesis.
6. Lumbago/ Lumbosacral strain.
7. Sacralisation.
8. Lumbarisation.
9. Coccydynia.
10. Hemivertebra.

OR 4.4. Orthopedic Surgeries: Indications, Classification, Types, Principles of management of the following Surgeries:

1. Arthrodesis.
2. Arthroplasty (partial and total replacement).
3. Osteotomy,
4. External fixators.
5. Spinal stabilization surgeries (Harrington's, Luque's, Steffi plating) etc ,
6. Limb re-attachments.

OR 4.5. Regional Conditions: Definition, Clinical features and management of the following regional conditions

1. Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis.

Supraspinatus Tendinitis. Infrapinatus Tendinitis. Bicipital Tendinitis. Subacromial Bursitis.

2. Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow). Triceps Tendinitis.

3. Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture.

4. Pelvis and Hip: IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis.

5. Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome).

6. Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma.

Practical / Clinical

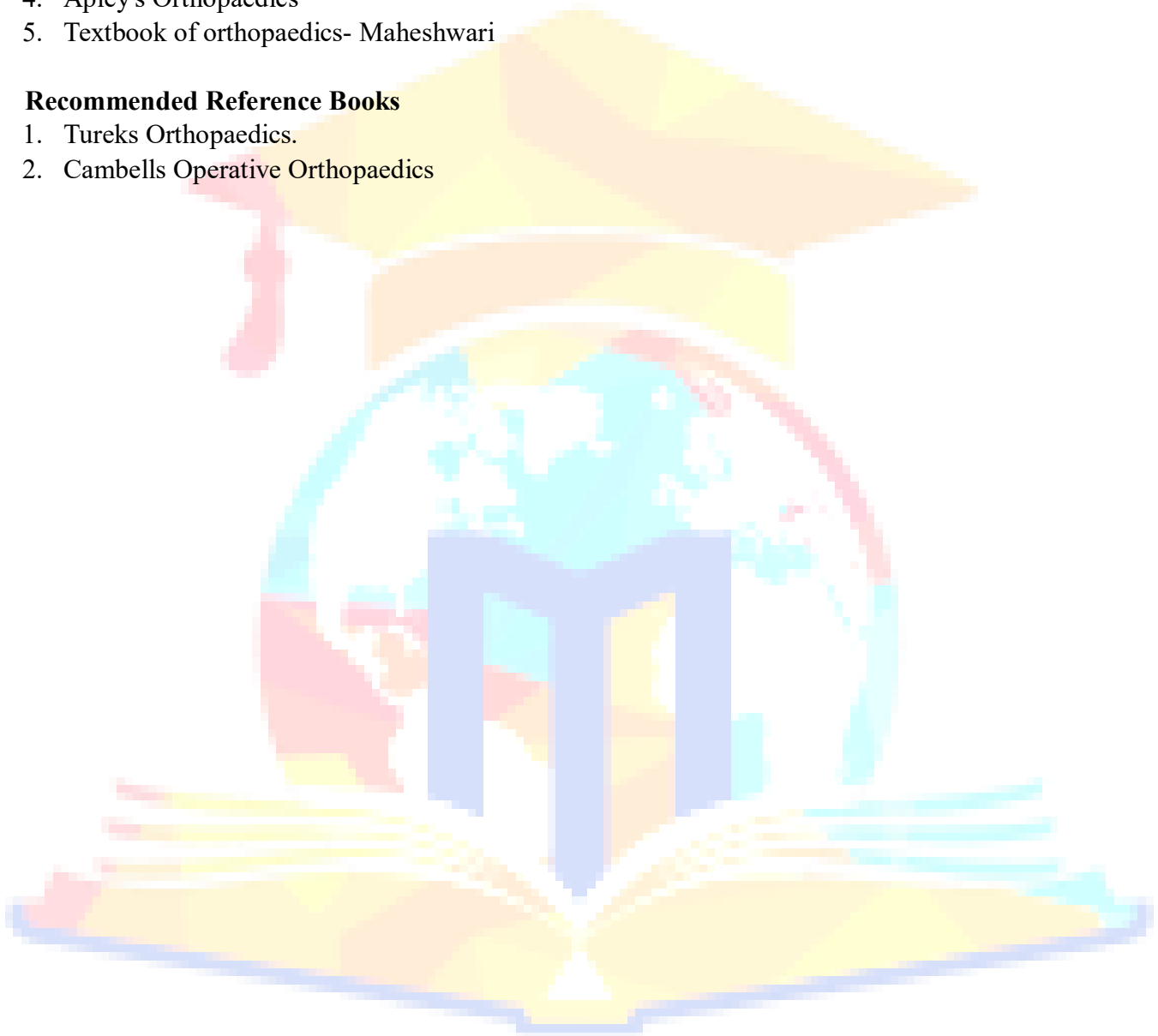
Long /short case examination of patient focusing on history taking examination observation, palpation, special tests, identification of abnormalities in radiograph diagnosis differential diagnosis, OSPE on equipments

Recommended Text Books

1. Outline of Fracture-Adams
2. Outline of Orthopaedics-Adams
3. Orthopaedics and Traumatology-Natrajan
4. Apley's Orthopaedics
5. Textbook of orthopaedics- Maheshwari

Recommended Reference Books

1. Tureks Orthopaedics.
2. Cambells Operative Orthopaedics



PHYSIOTHERAPY IN ADULT AND PAEDIATRIC GENERAL MEDICAL AND SURGICAL CONDITIONS (PTMS)

Course Code	BPT-304	L	P	C	Total sessions
Course Title	Physiotherapy In Adult and Paediatric General Medical and Surgical Conditions (PTMS)	180	120	16	300
Pre-requisite	Basic knowledge of Anatomy, Physiology, Pathology, Exercise Therapy, Electrotherapy, General Medicine, General Surgery and basic Physiotherapy assessment and treatment principles				
Co-requisites	NIL				

Course Objective:

1. To develop knowledge and understanding of physiotherapy assessment and management in adult and paediatric general medical and surgical conditions.
2. To develop competency in planning and implementing pre-operative and post-operative physiotherapy management for patients undergoing various surgical procedures.
3. To understand and apply physiotherapy principles in the management of burns, wounds, skin conditions, vestibular disorders, obstetric and gynecological conditions, oncology and palliative care.
4. To develop skills in assessment and physiotherapy management of geriatric, metabolic, ENT, paediatric and other general medical conditions.
5. To enable students to identify impairments, activity limitations and participation restrictions and formulate safe, effective, patient-centered and evidence-based physiotherapy management programmes.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the principles of physiotherapy assessment and management in adult and paediatric general medical and surgical conditions including wounds, oedema, skin conditions, burns and reconstructive procedures.

CLO2: Apply appropriate pre-operative and post-operative physiotherapy interventions for patients undergoing abdominal and other surgical procedures and manage associated complications.

CLO3: Assess and formulate physiotherapy management programmes for vestibular, obstetric and gynecological, oncology and palliative care conditions.

CLO4: Evaluate and manage geriatric, metabolic, ENT and paediatric conditions using appropriate physiotherapy assessment and intervention strategies.

CLO5: Demonstrate competency in clinical reasoning, identification of impairments, activity limitations and participation restrictions, and planning and executing safe, functional and evidence-based physiotherapy management programmes.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy assessment, diagnosis, planning and management across various health conditions and populations.

PLO2: Apply evidence-based physiotherapy principles and clinical reasoning in assessment and decision-making.

PLO3: Demonstrate competency in planning, implementing and evaluating safe, effective and patient-centered physiotherapy interventions.

PLO4: Demonstrate effective communication, leadership and interdisciplinary collaboration in healthcare and rehabilitation settings.

PLO5: Utilize modern technology, assessment tools, therapeutic modalities and information resources for professional practice and lifelong learning.

PLO6: Uphold ethical, legal and professional standards in physiotherapy practice.

PLO7: Promote health, functional independence, rehabilitation, quality of life and participation through physiotherapy practice and community-based rehabilitation.

Program Specific Outcomes (PSOs):

PSO1: Assess and manage individuals with general medical and surgical conditions using appropriate physiotherapy evaluation and intervention strategies.

PSO2: Apply therapeutic exercise, electrotherapy, respiratory techniques, functional training and rehabilitation principles to address impairments, activity limitations and participation restrictions.

PSO3: Demonstrate clinical reasoning and evidence-based decision-making in planning individualized physiotherapy management programmes for adult and paediatric populations.

PSO4: Promote health, functional independence, participation and quality of life through patient-centered, ethical and interdisciplinary physiotherapy practice.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	2	3	2	2	2	3	3	3	2	3
CLO2	3	3	3	2	2	3	3	3	3	3	3
CLO3	3	3	3	3	2	3	3	3	3	3	3
CLO4	3	3	3	3	2	3	3	3	3	3	3
CLO5	3	3	3	3	3	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION -A

Unit 1

PTMS 1.1. Oedema-Traumatic, Obstructive, Paralytic, oedema due to poor muscle and laxity of fascia Lymphedema

PTMS 1.2. Role of Physiotherapy in wounds and local infections 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.

PTMS 1.3. Physiotherapy in skin conditions 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 Hyperhydrosis. Massage maneuvers for cosmetic purpose of skin; use of specific oil as medium; Care of anesthetic hand and foot;

Unit 2

PTMS 2.1. Principles of Pre and post operative Physiotherapy in abdominal surgeries common Complication, Abdominal incisions assessment,

PTMS 2.2. Physiotherapy in pre and post-operative stages of Operations on upper G.I.T.- oesophagus, stomach, duodenum, Operations on large and small intestine – Appendicectomy, cholecystectomy, partial colectomy, ileostomy, hernia and herniotomy, herniorrhaphy, hernioplasty.

PTMS 2.3. Physiotherapy in burns, skin grafts, and reconstructive surgeries

SECTION -B**Unit 3**

PTMS 3.1. Vestibular Rehabilitation: Role of vestibular system in postural control Assessment of Balance and vestibular ocular reflex Benign Paroxysmal Positional Vertigo, Unilateral Vestibular Loss, Bilateral Vestibular Disorder– Assessment and management of Posterior Canal, Anterior Canal, Horizontal Cana Treatment theory, goals of management and progression Exercise Prescription in Vertigo

PTMS 3.2. Physiotherapy in obstetrics & gynecology :Physiotherapy in mother and child care – ante and post-natal management, early intervention and stimulation therapy in child care (movement therapy Physiotherapy in mother and child care – ante and post-natal management, early intervention and stimulation therapy in child care (movement therapy) Complication of pregnancy Labour training Antenatal and post-natal training Abdominal and pelvic floor muscles exercise Prolapse Uterus Pelvic Inflammatory Conditions Stress Incontinence, Yoga in Obstetric and Gynecological conditions

PTMS 3.3. Physiotherapy in Oncology and palliative care Introduction and common symptoms of cancer Breast Cancer Head and neck cancer Lung Cancer Oral Cavity Bone Cancer Pre and post-surgical evaluation Lymphedema managements Palliative care Common Physiotherapy approaches

Unit 4

PTMS 4.1. Geriatric Physiotherapy I: Normal Ageing – Definition, the anatomical, physiological and cognitive changes related to aging. Epidemiology and socio-economic impact of aging. The examination and assessment of a geriatric patient Diet and nutritional requirement of the elderly, Falls in the elderly Dementia – types and principles of management

PTMS 4.2. Physiotherapy in metabolic disorders: Role of Physiotherapy in Hypertension Role of Physiotherapy in Diabetes

PTMS 4.3. Ear, Nose and Throat conditions: Otitis Media, Sinusitis mastoidectomy, chronic rhinitis, laryngectomy, pharyngeolaryngectomy, facial palsy. Physiotherapy in dentistry – TMJ rehabilitation

Unit 5

PTMS 5.1. Abdominal Surgeries

PTMS 5.2. Cleft lip and Cleft Palate

PTMS 5.3. Health Fitness and Promotion: Fitness Evaluation, Analysis of Body composition, Evaluation and prescription of Exercise, Factors affecting exercise Performance, Exercise Prescription for Children.

PTMS 5.4. CBR in paediatrics

PTMS 5.5. Evidence based practice (desirable to know)

PRACTICAL/ clinical –B.P.T. Physiotherapy in Adult and Paediatric General Medical and Surgical Conditions: 304 Practical : PTMS (P)

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

PTMS (P) 6.1. Bedside case presentations and case discussions

PTMS (P) 6.2. Lab sessions consisting of evaluation and assessment methods and treatment techniques on student models/ simulation.

PTMS (P) 6.3. Identification of impairment activity limitation and participation restriction and Planning and execution of management protocol for various medical and surgical conditions with respect to

1. Active exercise regimen
2. RESPIRATORY techniques
3. Passive mobilization and stretching procedures
4. Selection of electrotherapeutic modalities
5. Patient and caregiver education and training
6. Functional training programme
7. Bladder bowel training
8. Integumentary care

PTMS (P) 6.4. Prescription and training of suitable aids appliances and Orthotic devices

PTMS (P) 6.5. Ergonomic advice

Recommended text books

1. Physiotherapy in Gynecological & Obstetrical conditions–Mantle
2. Text of Physiotherapy for obstetrics and Gynecology – G.B. Madhuri&Pruthvish
3. Physical Rehabilitation-Susan B O’Sullivan, Thomas. J. Schmitz
4. Multani and Verma – Principles of Geriatric Physiotherapy
5. Tidys Textbooks of Physiotherapy. Elsevier
6. Cash Textbook of Physiotherapy in Medical and Surgical Conditions.
7. Physical Rehabilitation, Assessment and management; Susan Sullivan
8. Physiotherapy in Obstetrics and Gynaecology, Polden

Recommended reference books

1. Women’s Health – Sapsford
2. Geriatric Physical therapy- Andrew A. Guccione

PHYSIOTHERAPY IN ADULT AND PAEDIATRIC ORTHOPEDIC CONDITIONS (PTO)

Course Code	BPT-305	L	P	C	Total sessions
Course Title	Physiotherapy in Adult and Paediatric Orthopedic Conditions (PTO)	180	120	16	300
Pre-requisite	Basic knowledge of Human Anatomy, Physiology, Biomechanics, Kinesiology, Exercise Therapy, Electrotherapy, Orthopedics, and basic principles of physiotherapy assessment and management.				
Co-requisites	NIL				

Course Objective:

1. To develop comprehensive knowledge and skills in physiotherapy assessment, clinical examination, documentation, and functional diagnosis of adult and paediatric orthopedic conditions.
2. To understand the principles of conservative, pre-operative, peri-operative, and post-operative physiotherapy management for common orthopedic conditions and surgeries.
3. To develop competency in the assessment and physiotherapy management of traumatic, degenerative, inflammatory, infective, congenital, acquired, and developmental musculoskeletal conditions.
4. To develop clinical skills in planning and implementing physiotherapy interventions for conditions affecting the upper limb, lower limb, spine, bones, joints, and soft tissues.
5. To develop competency in the rehabilitation of fractures, dislocations, amputations, deformities, pediatric orthopedic conditions, and orthopedic surgical conditions.
6. To enable students to prescribe appropriate exercise programmes, electrotherapeutic modalities, orthotic and prosthetic interventions, functional training, ergonomic advice, patient education, and home programmes.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Demonstrate systematic physiotherapy assessment, clinical examination, documentation, functional diagnosis, and goal setting for adult and paediatric orthopedic conditions.

CLO2: Explain the pathology, clinical features, investigations, orthopedic management, and physiotherapy principles related to fractures, dislocations, degenerative, inflammatory, infective, and soft tissue conditions.

CLO3: Assess and formulate evidence-informed physiotherapy management programmes for traumatic and non-traumatic conditions affecting the upper limb, lower limb, and spine.

CLO4: Demonstrate competency in pre-operative, peri-operative, and post-operative physiotherapy management following common orthopedic and musculoskeletal surgical procedures.

CLO5: Apply appropriate physiotherapy management principles for amputations, congenital and acquired deformities, paediatric orthopedic conditions, sports injuries, and rehabilitation following orthopedic procedures.

CLO6: Plan and execute comprehensive rehabilitation programmes incorporating therapeutic exercise, mobilization, electrotherapy, orthotic and prosthetic training, functional rehabilitation, ergonomic advice, patient education, and home programmes.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive theoretical knowledge and clinical competence in physiotherapy assessment, diagnosis, treatment, and rehabilitation.

PLO2: Apply scientific principles, clinical reasoning, and evidence-based practice in physiotherapy decision-making.

PLO3: Assess impairments, activity limitations, and participation restrictions and formulate appropriate patient-centered physiotherapy management plans.

PLO4: Demonstrate effective communication, patient education, professional collaboration, and teamwork in healthcare settings.

PLO5: Utilize appropriate therapeutic technologies, clinical assessment tools, rehabilitation equipment, orthotic and prosthetic devices, and information resources.

PLO6: Practice physiotherapy with ethical, legal, professional, and patient-safety responsibilities.

PLO7: Engage in lifelong learning, professional development, innovation, and continuous improvement in physiotherapy practice.

Program Specific Outcomes (PSOs):

PSO1: Demonstrate competency in comprehensive assessment and evidence-informed physiotherapy management of musculoskeletal and orthopedic conditions across the lifespan.

PSO2: Apply therapeutic exercise, manual therapy principles, electrotherapy, functional rehabilitation, orthotic and prosthetic interventions for restoring mobility and function.

PSO3: Demonstrate clinical reasoning in the identification and management of impairments, functional limitations, and participation restrictions in orthopedic conditions.

PSO4: Plan, implement, evaluate, and modify individualized rehabilitation programmes for adult and paediatric orthopedic conditions in diverse clinical settings.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	3	2	2	3	2	3	2	3	3
CLO2	3	3	3	2	2	2	2	3	3	3	3
CLO3	3	3	3	2	3	2	3	3	3	3	3
CLO4	3	3	3	3	3	3	2	3	3	3	3
CLO5	3	3	3	3	3	2	3	3	3	3	3
CLO6	3	3	3	3	3	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION – A

UNIT 1: FUNDAMENTALS OF ORTHOPEDIC PHYSIOTHERAPY ASSESSMENT AND MANAGEMENT

PTO 1.1. Physiotherapy Assessment for Orthopedic Conditions

- SOAP format of assessment and documentation.
- Subjective assessment:
 - History taking.
 - Informed consent.
 - Personal history.
 - Past history.
 - Medical history.
 - Socioeconomic history.
 - Chief complaints.
 - History of present illness.
- Pain assessment:
 - Intensity.
 - Character.

- Aggravating factors.
- Relieving factors.
- Site and location.
- Objective assessment.

Observation

- Body build.
- Swelling.
- Muscle atrophy.
- Deformities.
- Posture.
- Gait.

Palpation

- Tenderness and grading of tenderness.
- Muscle spasm.
- Swelling and methods of swelling assessment.
- Bony prominences.
- Soft tissue texture and integrity.
- Warmth.
- Vasomotor disturbances.

Physical Examination

- Range of motion:
 - Active movements.
 - Passive movements.
- Resisted isometric tests.
- Limb length measurement:
 - Apparent limb length.
 - True limb length.
 - Segmental limb length.
- Girth measurement.
- Muscle length testing:
 - Tightness.
 - Contracture.
 - Flexibility.
- Manual muscle testing.
- Peripheral neurological examination:
 - Dermatomes.
 - Myotomes.
 - Reflexes.
- Special tests.
- Functional tests.
- Prescription of home programmes.
- Documentation of case records.
- Follow-up assessment.

PTO 1.2. Fractures

- Types of fractures.
- Classification of fractures.
- Signs and symptoms.
- Complications of fractures.

Fracture Healing

- Stages and principles of fracture healing.
- Factors affecting fracture healing.

Principles of Fracture Management

- Reduction:
 - Open reduction.
 - Closed reduction.
- Immobilization:
 - Sling.
 - Cast.
 - Brace.
 - Slab.
- Traction:
 - Manual traction.
 - Mechanical traction.
 - Skin traction.
 - Skeletal traction.
 - Lumbar traction.
 - Cervical traction.

- External fixation.

- Functional cast bracing.

Physiotherapy Management of Fracture Complications

Early and late complications including:

- Shock.
- Compartment syndrome.
- VIC.
- Fat embolism.
- Delayed union.
- Malunion.
- Reflex sympathetic dystrophy.
- Myositis ossificans.
- Avascular necrosis.
- Pressure sores.

Physiotherapy Management in Fractures

- Physiotherapy assessment in fracture cases.
- Aims of physiotherapy management.
- Short-term goals.
- Long-term goals.
- Principles of physiotherapy management.
- Guidelines for fracture rehabilitation during immobilization.
- Guidelines for rehabilitation after the immobilization period.

PTO 1.3. Principles of Various Schools of Thought in Manual Therapy

- Introduction to various approaches to manual therapy.
- Basic principles of:
 - Maitland approach.
 - McKenzie approach.

PTO 1.4. Physiotherapy in Orthopedic Surgeries

Principles of:

- Pre-operative physiotherapy assessment.
- Post-operative physiotherapy assessment.
- Goal setting.
- Precautions.
- Physiotherapy management.

Physiotherapy implications in:

- Arthrodesis.
- Osteotomy.
- Arthroplasty:
 - Partial arthroplasty.
 - Total arthroplasty.
 - Excision arthroplasty.
 - Excision arthroplasty with implant.
 - Interpositional arthroplasty.
 - Total joint replacement.
- Tendon transplant.
- Soft tissue release:
 - Tenotomy.
 - Myotomy.
 - Lengthening procedures.
- Arthroscopy.
- Spinal stabilization.
- Re-attachment of limbs.
- External fixators.
- Synovectomy.

PTO 1.5. Degenerative and Inflammatory Conditions

For the following conditions:

- Definition.
- Signs and symptoms.
- Clinical features.
- Pathophysiology.
- Radiological features.
- Deformities.
- Medical management.
- Surgical management.
- Physiotherapy assessment.
- Physiotherapy management.
- Home programme.

Conditions include:

- Osteoarthritis, with emphasis on:
 - Knee.
 - Hip.
 - Hand.
- Rheumatoid arthritis.
- Ankylosing spondylitis.
- Gout.
- Perthes disease.

- Periarthritic shoulder.

PTO 1.6. Infective Conditions

For the following conditions:

- Definition.
- Signs and symptoms.
- Clinical features.
- Pathophysiology.
- Radiological features.
- Medical management.
- Surgical management.
- Physiotherapy assessment.
- Physiotherapy management.

Conditions include:

- Acute osteomyelitis.
- Chronic osteomyelitis.
- Septic arthritis.
- Pyogenic arthritis.
- Tuberculosis of the spine.
- Tuberculosis of major joints:
 - Knee.
 - Hip.

UNIT 2: PHYSIOTHERAPY IN UPPER-LIMB ORTHOPEDIC CONDITIONS

Conservative and Peri-operative Physiotherapy Management

PTO 2.1. Traumatic Conditions of the Upper Limb

Conditions involving:

- Shoulder.
- Arm.
- Elbow.
- Forearm.
- Wrist.
- Hand.

Management of:

- Upper-limb fractures.
- Upper-limb dislocations.
- Sprains.
- Hand injuries.
- Flexor tendon injuries.
- Extensor tendon injuries.
- Compartment syndrome.
- Reflex sympathetic dystrophy.

PTO 2.2. Non-traumatic Conditions of the Upper Limb

Conservative and post-operative physiotherapy management of:

- Shoulder instability.
- Thoracic outlet syndrome.
- Reflex sympathetic dystrophy.
- Impingement syndrome.

- Acromioclavicular joint injuries.
- Rotator cuff tears.
- Subacromial decompression.
- Carpal tunnel syndrome.
- Upper-limb deformities.

PTO 2.3. Pre- and Peri-operative Physiotherapy Following Upper-Limb Surgeries

- Total shoulder replacement.
- Shoulder hemi-replacement.
- Repair of ruptured extensor tendons.
- Total wrist arthroplasty.
- Flexor tendon lacerations.
- Extensor tendon lacerations.
- Excision of radial head.
- Total elbow arthroplasty.

PTO 2.4. Amputations of the Upper Limb

- Definition.
- Levels of amputation.
- Indications.
- Types of amputation.
- Physiotherapy assessment.
- Goals and aims of rehabilitation.
- Pre-operative physiotherapy management.
- Post-operative physiotherapy management.
- Stump care.
- Stump bandaging.
- Pre-prosthetic training.
- Post-prosthetic training.
- Prosthetic checking.
- Complications of amputation.
- Management of complications.

SECTION – B

UNIT 3: PHYSIOTHERAPY IN LOWER-LIMB ORTHOPEDIC CONDITIONS

Conservative and Peri-operative Physiotherapy Management

PTO 3.1. Traumatic Conditions of the Lower Limb

Conditions involving:

- Pelvis.
- Hip.
- Knee.
- Ankle.
- Foot.

Management of:

- Fractures.
- Dislocations.

PTO 3.2. Non-traumatic Conditions of the Lower Limb

Conditions involving:

- Hip.
- Knee.
- Ankle.
- Foot.

Management of:

- Tendinitis.
- Bursitis.
- Plica syndrome.
- Patellar dysfunction.
- Hoffa's syndrome.

Deformities of the Lower Limb

- CTEV.
- CDH.
- Pes planus.
- Pes cavus.
- Coxa vara.
- Genu varum.
- Genu valgum.
- Genu recurvatum.

PTO 3.3. Pre- and Peri-operative Physiotherapy Following Lower-Limb Surgeries

- Hemi hip replacement.
- Total hip replacement.
- Lateral retinacular release.
- Chondroplasty.
- ACL reconstruction.
- PCL reconstruction.
- Realignment of extensor mechanism.
- Meniscectomy.
- Meniscal repair.
- Total knee replacement.
- Patellectomy.
- Ligamentous tear surgeries.

PTO 3.4. Amputations of the Lower Limb

- Definition.
- Levels.
- Indications.
- Types.
- Physiotherapy assessment.
- Aims of physiotherapy management.
- Pre-operative management.
- Post-operative management.
- Stump care.
- Stump bandaging.
- Pre-prosthetic training.
- Post-prosthetic training.
- Prosthetic checking.
- Complications of amputation.

- Management of complications.

UNIT 4: PHYSIOTHERAPY IN SPINAL CONDITIONS

Conservative and Peri-operative Physiotherapy Management

PTO 4.1. Traumatic Conditions of the Spine

- Spinal fractures:
 - Cervical spine.
 - Thoracic spine.
 - Lumbar spine.
- Spinal cord injury.
- Intervertebral disc prolapse.
- Spinal sprain.
- Spinal contusion.

PTO 4.2. Non-traumatic Conditions of the Spine

Cervical and Lumbar Spinal Disorders

- Cervical spondylosis.
- Lumbar spondylosis.
- Spondylolisthesis.
- Spinal canal stenosis.
- Spondylolysis.
- Sacroiliac joint dysfunction.
- Sacralisation.
- Lumbarisation.
- Intervertebral disc prolapse.
- Coccydynia.
- Spina bifida occulta.
- Thoracic outlet syndrome.
- Tuberculosis of the spine.
- Non-specific low back pain.
- Ankylosing spondylitis.
- Scoliosis.
- Kyphosis.
- Lordosis.
- Sway back.
- Torticollis.

PTO 4.3. Pre- and Peri-operative Physiotherapy Following Spinal Surgeries

- Principles of physiotherapy assessment.
- Pre-operative preparation.
- Peri-operative precautions.
- Post-operative rehabilitation.
- Functional recovery and training.

PTO 4.4. Concepts of the McKenzie School and Back School

- Concepts of the McKenzie school in spinal disorders.
- Principles and concepts of back school.
- Patient education and self-management principles.

UNIT 5: PAEDIATRIC ORTHOPEDIC CONDITIONS**PTO 5.1. Congenital and Acquired Deformities**

Review of:

- Causes.
- Clinical features.
- Complications.
- Radiological features.
- Medical management.
- Surgical management.

A. Congenital Deformities

- CTEV.
- CDH.
- Torticollis.
- Scoliosis.
- Flat foot.
- Vertical talus.
- Hand anomalies:
 - Syndactyly.
 - Polydactyly.
 - Ectrodactyly.
- Arthrogryposis multiplex congenita.
- Amyoplasia congenita.
- Limb deficiencies:
 - Amelia.
 - Phocomelia.
- Klippel-Feil syndrome.
- Osteogenesis imperfecta.

B. Acquired Deformities

- Acquired torticollis.
- Scoliosis.
- Kyphosis.
- Lordosis.
- Genu varum.
- Genu valgum.
- Genu recurvatum.
- Coxa vara.
- Pes cavus.

PTO 5.2. Diseases of Bones and Joints

For the following conditions:

- Introduction.
- Causes.
- Clinical features.
- Types.
- Complications.
- Investigations.
- Medical management.
- Surgical management.

Infective Conditions

- Osteomyelitis.
- Tuberculosis of the spine.
- Tuberculosis of other major joints.

Other Conditions

- Perthes disease.
- Slipped capital femoral epiphysis.
- Avascular necrosis.

Metabolic Conditions

- Rickets.
- Osteomalacia.

PTO 5.3. Soft Tissue Injuries in Paediatrics

- Overview.
- Investigations.
- Management.

PTO 5.4. Fractures and Dislocations in Paediatrics

- Fractures of the upper extremity.
- Fractures of the lower extremity.
- Fractures of the spine.
- Dislocations.
- Introduction.
- Investigations.
- Orthopedic management.

PTO 5.5. Low Back Pain and Neck Pain in Paediatrics

- Introduction.
- Causes.
- Types.
- Investigations.
- Management.

PTO 5.6. Paediatric Sports Injuries

- Introduction.
- Types.
- Investigations.
- Management.

PTO 5.7. Amputations and Ilizarov Procedures

- Principles and management of amputations.
- Introduction to Ilizarov procedures and rehabilitation implications.

PTO 5.8. Surgeries for Cerebral Palsy

Physiotherapy implications following:

- Rhizotomy.
- Tendon lengthening.
- Osteotomies.
- Arthrodesis.

PRACTICAL / CLINICAL**B.P.T. PHYSIOTHERAPY IN ADULT AND PAEDIATRIC ORTHOPEDIC CONDITIONS: PTO 305 (P)**

Practical training shall be conducted for all relevant topics discussed in theory through the following methods:

PTO (P) 6.1. Bedside Case Presentations and Case Discussions

- Clinical case presentations.
- Case discussions.
- Clinical reasoning and management planning.

PTO (P) 6.2. Laboratory Sessions

Laboratory sessions consisting of:

- Evaluation methods.
- Assessment methods on student models.
- Demonstration of treatment techniques.
- Supervised practice sessions.

PTO (P) 6.3. Independent Clinical Procedures

The student shall be able to independently perform procedures on self, human models, or patients, including:

- History taking.
- Examination.
- Observation.
- Palpation.
- Clinical tests.
- Interpretation of investigations.
- Diagnosis.
- Functional diagnosis.
- Identification of:
 - Impairments.
 - Functional restrictions.
 - Activity limitations.
- Documentation.

PTO (P) 6.4. Planning and Execution of Management Protocols

Planning and execution of physiotherapy management protocols for conditions involving:

- Upper limb.
- Lower limb.
- Spine.

Management shall address both:

- Adult orthopedic conditions.
- Paediatric orthopedic conditions.

PTO (P) 6.5. Active Exercise Regimen

- Selection and prescription of appropriate active exercises.
- Progression of exercise programmes according to functional goals.

PTO (P) 6.6. Passive Mobilization and Electrotherapeutic Modalities

- Demonstration of passive mobilization procedures.

- Selection of appropriate electrotherapeutic modalities.

PTO (P) 6.7. Patient Education

- Education regarding condition and rehabilitation.
- Precautions.
- Activity modification.
- Home programmes.
- Self-management.

PTO (P) 6.8. Functional Training Programme

- Functional assessment.
- Functional exercise prescription.
- Activity-specific rehabilitation.
- Return to functional activities.

PTO (P) 6.9. Orthotic and Prosthetic Training and Ergonomic Advice

- Orthotic checking.
- Prosthetic checking.
- Orthotic training.
- Prosthetic training.
- Functional use of orthotic and prosthetic devices.
- Ergonomic advice.

RECOMMENDED TEXTBOOKS

1. Orthopaedic Physiotherapy – Robert A. Donatelli, Churchill Livingstone.
2. Tidy's Physiotherapy – Ann Thomson, Varghese Publishing House.
3. Physical Rehabilitation: Assessment and Treatment – Susan O'Sullivan, Jaypee Brothers.
4. Textbook of Orthopaedics – John Ebnezar, Jaypee Brothers.
5. Textbook of Orthopaedics and Rheumatology for Physiotherapists – Patricia A. Downie.
6. Orthopedic Physical Assessment – David Magee.
7. Clinical Orthopaedic Diagnosis – Surishwar Pandey.
8. Orthopaedics for Physiotherapists – Jayant Joshi.
9. Therapeutic Exercise: Foundations and Techniques – Carolyn Kisner and Colby.

RECOMMENDED REFERENCE BOOKS

1. Apley's System of Orthopaedics and Fractures – Louis Solomon and David J. Warwick, Arnold Publishers, London.
2. Turek's Orthopaedics: Principles and Their Application – Weinstein SL and Buckwalter JA, Lippincott.
3. Clinical Orthopaedic Rehabilitation – Brent Brotzman.
4. Peripheral Mobilisation – G.D. Maitland, Butterworth.
5. Vertebral Mobilisation – G.D. Maitland, Butterworth and Heinemann Publication.
6. Manual Therapy: NAGs, SNAGs and MWMs – Brian Mulligan.
7. Neural Tissue Mobilization – Butler.
8. Therapeutic Exercise: Moving Toward Function – Carrie M. Hall and Lori Thein Brody.
9. Manual Mobilization of Extremity Joints – Kaltenborn.
10. Clinical Orthopaedic Rehabilitation – Brotzman.

PHYSICAL & FUNCTIONAL DIAGNOSIS AND PRESCRIPTION (PFDP)

Course Code	BPT-306	L	P	C	Total sessions
Course Title	Physical & Functional Diagnosis and Prescription (PFDP)	120	60	10	180
Pre-requisite	Basic knowledge of Human Anatomy, Physiology, Biomechanics, Kinesiology, Exercise Therapy, Electrotherapy, and fundamental clinical assessment principles.				
Co-requisites	NIL				

Course Objective:

1. To develop knowledge and skills in assessing impairments, activity limitations, and participation restrictions using the International Classification of Functioning, Disability and Health (ICF) framework.
2. To develop competency in the physical and functional assessment of musculoskeletal, neurological, cardiovascular, and pulmonary dysfunction.
3. To develop skills in subjective and objective examination, including pain assessment, special tests, neurological examination, functional assessment, and clinical measurement.
4. To develop the ability to interpret diagnostic investigations, including electrodiagnostic tests, radiological imaging, pulmonary function tests, ECG, and other relevant clinical investigations.
5. To enable students to formulate a functional diagnosis and prescribe appropriate physiotherapy management based on clinical findings and evidence-informed clinical reasoning.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain and apply the International Classification of Functioning, Disability and Health (ICF) framework in the assessment and functional diagnosis of patients with musculoskeletal and neurological dysfunction.

CLO2: Perform systematic assessment of musculoskeletal dysfunction, including flexibility, joint mobility, muscle strength and endurance, posture, gait, pain, accessory movements, end feel, and relevant special tests.

CLO3: Perform neurological assessment, including higher mental functions, cranial nerves, sensory and motor examination, reflexes, tone, coordination, balance, functional status, electrodiagnostic assessment, and standardized clinical scales.

CLO4: Assess cardiovascular and pulmonary dysfunction using appropriate clinical examination methods, functional capacity tests, physiological measurements, and interpretation of relevant investigation reports.

CLO5: Interpret commonly used diagnostic imaging and clinical investigations and integrate assessment findings to formulate a functional diagnosis and appropriate physiotherapy prescription.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge of basic medical sciences, physiotherapy sciences, and clinical principles relevant to physiotherapy practice.

PLO2: Perform systematic patient assessment and formulate an appropriate physiotherapy diagnosis based on clinical findings.

PLO3: Plan and implement safe, effective, evidence-informed, and patient-centered physiotherapy interventions.

PLO4: Demonstrate clinical reasoning, problem-solving, and decision-making skills in the management of individuals with health conditions and functional limitations.

PLO5: Demonstrate effective communication, documentation, patient education, and professional collaboration skills.

PLO6: Utilize appropriate assessment tools, diagnostic investigations, technology, and evidence for improving physiotherapy practice and lifelong learning.

PLO7: Uphold ethical, legal, professional, and safety standards while delivering physiotherapy services.

Program Specific Outcomes (PSOs):

PSO1: Demonstrate competency in comprehensive assessment, identification of impairments, activity limitations, and participation restrictions in individuals with various health conditions.

PSO2: Apply clinical reasoning and functional diagnosis to develop appropriate physiotherapy management and prescription.

PSO3: Demonstrate competency in performing and interpreting musculoskeletal, neurological, cardiovascular, and pulmonary assessments using standardized clinical tools and diagnostic investigations.

PSO4: Integrate clinical findings, functional assessment, diagnostic investigations, and evidence-informed practice for safe and effective physiotherapy decision-making.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	3	2	2	2	3	3	3	3
CLO2	3	3	3	3	2	2	3	3	3	3	3
CLO3	3	3	3	3	2	3	3	3	3	3	3
CLO4	3	3	3	3	2	3	3	3	3	3	3
CLO5	3	3	3	3	3	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION A

Unit 1: Physical and Functional Assessment

PFDP 1.1. Introduction to International Classification of Functioning, Disability and Health (ICF)

Introduction to the International Classification of Functioning, Disability and Health (ICF) as a basis for functional diagnosis, including:

- Impairment
- Activity limitation
- Participation restriction

Assessment of musculoskeletal dysfunction including:

- Soft tissue flexibility
- Joint mobility
- Muscle strength and endurance
- Trick movements
- Sensations
- Limb length
- Abnormal posture
- Gait deviations due to musculoskeletal dysfunction
- Special tests

Cervical Spine:

- Foraminal compression test
- Distraction test
- Shoulder depression test
- Vertebral artery test
- Dizziness tests

Shoulder:

- Yergason's test
- Speed's test
- Drop-arm test
- Supraspinatus test
- Impingement tests
- Anterior apprehension test
- Posterior apprehension test
- Allen's test
- Adson's test

Elbow:

- Cozen's test
- Mill's test
- Tinel's sign

Forearm, Wrist and Hand:

- Phalen's test
- Bunnel-Littler test
- Froment's sign

Lumbar Spine:

- Schober's test
- Straight Leg Raising test
- Prone knee bending test
- Slump test

Sacroiliac Joint:

- FABER/Patrick's test
- Gaenslen's test
- Gillet's test
- March test

Hip:

- Nelaton's line
- Bryant's triangle
- Thomas test
- Ober's test
- Tripod sign
- Trendelenburg sign

Knee:

- Valgus stress test
- Varus stress test
- Lachman test
- Drawer tests
- McMurray's test
- Fluctuation test
- Patellar tap test
- Q-angle assessment
- Clarke's test

Ankle and Foot:

- Anterior drawer test
- Talar tilt test
- Homan's test
- Moses test

PFDP 1.2. Assessment of Pain

Types of pain:

- Somatic pain
- Somatic referred pain
- Neurogenic pain
- Visceral pain

Subjective assessment of pain:

- Location
- Duration
- Progression
- Distribution
- Quality
- Diurnal variation
- Modifying factors
- Severity
- Nature of pain
- Tissue irritability

Objective measurement and documentation:

- Visual Analogue Scale (VAS)
- Numerical Rating Scale (NRS)
- Modified McGill Pain Questionnaire
- Body charts

PFDP 1.3. Basics in Manual Therapy with Clinical Reasoning

- Assessment of articular and extra-articular soft tissue status
- Assessment of contractile tissues
- Assessment of non-contractile tissues
- Examination of joint integrity
- Assessment of accessory movements
- Assessment of end feel
- Subjective examination
- Objective examination
- Special tests
- Functional diagnosis using the ICF framework

PFDP 1.4. Neurological Assessment and Movement Dysfunction

Assessment of:

- Higher functions
- Cranial nerves
- Sensations
- Sensory organization and body image
- Joint mobility
- Muscle tone
- Superficial and deep reflexes
- Voluntary control
- Muscle strength
- Coordination
- Balance

- Endurance
- Trick movements
- Limb length
- Postural deviations
- Gait deviations due to neurological dysfunction
- Functional diagnosis using ICF

Electrodiagnostic assessment:

- Faradic galvanic test
- Strength-duration curve tests
- Tests for sensory threshold
- Pain threshold and pain tolerance assessment

PFDP 1.5. Electromyography and Nerve Conduction Studies**Electromyography (EMG):**

- Definition
- Instrumentation
- Basic components:
 - Cathode Ray Oscilloscope (CRO)
 - Filters
 - Amplifiers
 - Preamplifiers
- Types of electrodes

Normal and abnormal EMG patterns:

- At rest
- During minimal contraction
- During maximal contraction

Nerve Conduction Studies:

- Principles
- Techniques
- F-wave
- H-reflex

Routine biochemical investigations.**PFDP 1.6. Standardized Clinical Scales**

- Berg Balance Scale
- Modified Ashworth Scale
- Functional Independence Measure (FIM)
- Barthel Index
- Glasgow Coma Scale (GCS)
- Dynamic Gait Index (DGI)
- Mini Mental State Examination (MMSE)
- STREAM
- ASIA Scale

SECTION B**Unit 2: Developmental, Cardiopulmonary and Diagnostic Assessment****PFDP 2.1. General Principles of Human Development and Maturation****Aspects of development:**

- Physical

- Motor
- Sensory
- Cognitive and perceptive
- Emotional
- Social

Factors influencing human development and growth:

- Biological factors
- Environmental factors
- Hereditary factors

Principles of maturation and anatomical directional patterns:

- Cephalocaudal pattern
- Proximodistal pattern
- Centrolateral pattern
- Mass to specific pattern
- Gross to fine motor development
- Reflex maturation tests

Development in specific fields:

- Oromotor development
- Sensory development
- Neurodevelopment of hand function

PFDP 2.2. Assessment of Cardiovascular and Pulmonary Dysfunction

Cardiorespiratory assessment and management techniques including:

- Vital parameters
- Chest expansion
- Symmetry of chest movement
- Breath-holding test
- Breath sounds
- Rate of Perceived Exertion (RPE)
- Six-Minute Walk Test
- Auscultation
- Breathing exercises
- Postural drainage
- Thoracic expansion exercises
- Rib mobilization
- Respiratory PNF

PFDP 2.3. Evaluation of Functional Capacity

Evaluation of functional capacity using submaximal tests, including:

- Exercise tolerance assessment
- Six-Minute Walk Test

Theoretical basis of maximal exercise testing protocols:

- Bruce Protocol
- Modified Bruce Protocol
- Balke Protocol

Interpretation of clinical reports:

- Arterial Blood Gas (ABG)
- Pulmonary Function Tests (PFT)
- Peak Expiratory Flow Rate (PEFR)

- Electrocardiogram (ECG)
 - Normal ECG
 - Variations due to ischemia and infarction
- Chest X-ray
- Biochemical reports

Vascular and anthropometric assessment:

- Ankle-Brachial Index
- Tests for peripheral arterial circulation
- Tests for peripheral venous circulation
- Body Mass Index (BMI)
- Waist-Hip Ratio
- Skinfold caliper assessment
- Girth measurements

PFDP 2.4. Diagnostic Imaging**1. Radiological Studies**

Radiological investigations in:

- Musculoskeletal conditions
- Neurological conditions
- Cardiovascular conditions
- Respiratory conditions

2. X-Ray

- Basic principles
- Instrumentation
- Interpretation and observations related to musculoskeletal, neurological, cardiovascular, and respiratory conditions

3. Ultrasonography

- Principles
- Instrumentation
- Observations in vascular disorders
- Gynecological conditions
- Recent advances in musculoskeletal ultrasonography

4. CT Scan and MRI

- Principles
- Instrumentation
- Observations related to musculoskeletal conditions
- Neurological conditions
- Cardiovascular conditions
- Respiratory conditions

5. Interventional Radiology

Introduction to principles and clinical applications.

PRACTICAL: B.P.T. PFDP 306 (P)

The student shall be able to independently perform and demonstrate the assessment procedures and tests included in the syllabus on self and/or human models.

The student shall be able to:

PFDP (P) 3.1. Demonstrate musculoskeletal assessment procedures, including assessment of joint mobility, muscle strength, flexibility, limb length, posture, gait, and special tests.

- PFDP (P) 3.2.** Demonstrate subjective and objective assessment of pain and document findings using standardized pain assessment tools.
- PFDP (P) 3.3.** Demonstrate examination of articular and extra-articular soft tissues, accessory movements, end feel, and functional diagnosis using the ICF framework.
- PFDP (P) 3.4.** Demonstrate comprehensive neurological assessment, including higher functions, cranial nerves, sensory and motor examination, reflexes, tone, coordination, balance, posture, gait, and functional assessment.
- PFDP (P) 3.5.** Demonstrate the use and interpretation of relevant standardized clinical scales.
- PFDP (P) 3.6.** Demonstrate cardiovascular and pulmonary assessment, including vital signs, chest expansion, chest movement, breath sounds, auscultation, RPE, and Six-Minute Walk Test.
- PFDP (P) 3.7.** Demonstrate assessment of functional exercise capacity and interpret relevant clinical reports including ABG, PFT, PEFR, ECG, chest X-ray, and biochemical investigations.
- PFDP (P) 3.8.** Demonstrate assessment of peripheral arterial and venous circulation and perform anthropometric measurements including BMI, waist-hip ratio, skinfold measurement, and girth measurement.
- PFDP (P) 3.9.** Demonstrate basic electrodiagnostic procedures and interpretation of findings related to Faradic-Galvanic testing, strength-duration curves, sensory threshold, pain threshold, and pain tolerance.
- PFDP (P) 3.10.** Interpret X-ray images and identify relevant observations related to musculoskeletal, neurological, cardiovascular, and respiratory conditions.
- PFDP (P) 3.11.** Demonstrate the ability to integrate subjective findings, objective assessment, standardized measures, and diagnostic investigations to formulate a functional diagnosis and appropriate physiotherapy prescription.

Recommended Text Books Magee – Orthopaedic Physical Examination.

1. Nelson and Currier – Clinical Electrotherapy, Appleton & Lange Publications.
2. Mishra – Clinical Electromyography.
3. Susan B. O'Sullivan – Physical Rehabilitation: Assessment and Treatment.
4. John Patten – Neurological Examination.
5. Thomas J. Vogl, Wolfgang Reith and Ernst J. Rummeny – Diagnostic and Interventional Radiology.
6. William Herring – Learning Radiology.
7. Carl Mottram – Ruppel's Manual of Pulmonary Function Testing, 10th Edition.
8. P. S. Shankar – Pulmonary Function Tests and Interpretation in Health and Diseases, 3rd Edition.
9. World Health Organization – International Classification of Functioning, Disability and Health (ICF).

Recommended Reference Books

1. Maitland's Book on Manual Therapy.
2. Kaltenborn – Mobilisation of Extremities.
3. Kimura – Clinical Electromyography.
4. Donatelli – Orthopaedic Physical Therapy.
5. Brian Mulligan – NAGS, SNAGS and MWMS.
6. Trombly and Scott – Physical Dysfunction.
7. Jan Piek – Infant Motor Development.
8. Janett Howle – Neuro-developmental Therapy.
9. David Sutton – Textbook of Radiology and Imaging.

RESEARCH METHODOLOGY, BIOSTATISTICS AND EVIDENCE BASED PRACTICE (RMB)

Course Code	BPT-307	L	P	C	Total sessions
Course Title	Research Methodology, Biostatistics and Evidence Based Practice (RMB)	120	-	8	120
Pre-requisite	Basic knowledge of undergraduate physiotherapy subjects, fundamental research concepts, and basic computer applications.				
Co-requisites	NIL				

Course Objective:

1. To develop a fundamental understanding of biostatistics and its application in health sciences and physiotherapy research.
2. To develop knowledge and skills in research methodology, including formulation of research problems, research design, sampling, measurement, and data collection.
3. To enable students to understand and apply appropriate statistical methods for data presentation, analysis, interpretation, and hypothesis testing.
4. To develop competency in evidence-based physiotherapy through formulation of clinical questions, literature searching, critical appraisal, and application of research evidence.
5. To develop the ability to critically evaluate research studies, outcome measures, systematic reviews, clinical practice guidelines, and other evidence for informed clinical decision-making.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the fundamental concepts of biostatistics, including data presentation, descriptive statistics, probability, sampling, hypothesis testing, and statistical analysis.

CLO2: Apply the principles of research methodology in formulating research problems, developing hypotheses, selecting appropriate research designs, sampling procedures, measurement tools, and methods of data collection.

CLO3: Apply appropriate statistical methods and interpret statistical findings in physiotherapy and health science research.

CLO4: Formulate focused clinical questions, search for relevant evidence, and critically appraise research literature using evidence-based practice principles.

CLO5: Evaluate and apply evidence from diagnostic, prognostic, outcome, intervention, systematic review, meta-analysis, and clinical practice guideline studies for informed physiotherapy practice.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy assessment, diagnosis, intervention, rehabilitation, and professional practice.

PLO2: Apply scientific principles, clinical reasoning, and evidence-based practice in physiotherapy assessment and management.

PLO3: Demonstrate competency in research methodology, data analysis, interpretation, and application of research findings in physiotherapy practice.

PLO4: Demonstrate effective communication, teamwork, leadership, and interdisciplinary collaboration in healthcare and rehabilitation settings.

PLO5: Utilize modern technology, digital tools, information resources, and scientific methods for professional development and lifelong learning.

PLO6: Uphold ethical, legal, professional, and social responsibilities in physiotherapy practice, research, and healthcare.

PLO7: Contribute to quality improvement, innovation, research, and advancement of physiotherapy and rehabilitation services.

Program Specific Outcomes (PSOs):

PSO1: Apply physiotherapy knowledge, assessment skills, clinical reasoning, and evidence-based principles to identify impairments, activity limitations, and participation restrictions.

PSO2: Plan, prescribe, implement, and evaluate safe and effective physiotherapy interventions based on scientific evidence and individual patient needs.

PSO3: Demonstrate competency in research, critical appraisal, outcome measurement, documentation, and interpretation of scientific evidence relevant to physiotherapy practice.

PSO4: Demonstrate professional competence, ethical practice, communication, and lifelong learning for advancement in physiotherapy and rehabilitation.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	2	3	3	1	3	2	2	3	2	3	2
CLO2	2	3	3	2	2	3	3	3	2	3	2
CLO3	2	3	3	2	3	2	3	2	3	3	2
CLO4	3	3	3	2	3	3	3	3	3	3	3
CLO5	3	3	3	2	3	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION A – BIOSTATISTICS AND EVIDENCE BASED PRACTICE

UNIT 1: INTRODUCTION TO BIOSTATISTICS AND EVIDENCE BASED PRACTICE

RMB 1.1. Introduction to Biostatistics

- Introduction to biostatistics.
- Definition and characteristics of statistics.
- Importance of the study of statistics.
- Branches of statistics.
- Statistics and health sciences, including physiotherapy.
- Parameters and estimates.
- Descriptive and inferential statistics.
- Variables and their types.
- Measurement scales.

RMB 1.2. Tabulation of Data

- Basic principles of tabulation.
- Graphical representation of data.
- Types of diagrams:
 - Histograms.
 - Frequency polygons.
 - Smooth frequency polygon.
 - Cumulative frequency curve.
 - Normal probability curve.
 - Pie chart.

RMB 1.3. Measures of Central Tendency

- Need for measures of central tendency.
- Definition and calculation of mean for ungrouped and grouped data.
- Meaning, interpretation, and calculation of median for ungrouped and grouped data.
- Meaning and calculation of mode.
- Comparison of mean, median, and mode.
- Guidelines for the use of various measures of central tendency.

RMB 1.4. Probability and Standard Distributions

- Meaning of probability.
- Standard distribution.
- Binomial distribution.
- Normal distribution.
- Divergence from normality:
 - Skewness.
 - Kurtosis.

RMB 1.5. Sampling Techniques

- Sampling techniques.
- Sample size.
- Calculation of sample size for survey research.
- Calculation of sample size for experimental research designs.
- Sampling variation.
- Tests of significance.
- Type I and Type II errors.
- Power.

RMB 1.6. Testing of Hypothesis

- Basic concepts concerning hypothesis testing.
- Procedure of hypothesis testing.
- Measuring the power of a hypothesis test.
- Tests of hypothesis.
- Parametric and non-parametric tests for:
 - Difference.
 - Correlation.
 - Association.

RMB 1.7. Analysis of Variance and Covariance

- Analysis of Variance (ANOVA).
- Meaning and principles of ANOVA.
- ANOVA techniques.
- Analysis of Covariance (ANCOVA).

RMB 1.8. Evidence Based Practice

- Definition of Evidence Based Practice.
- Importance of EBP in physiotherapy practice.
- Process of EBP.
- Formulation of clinical questions for evidence search using structured formats:
 - PICO.
 - PICOT.
 - SPDER.
 - SPICE.
- Evidence relating to:
 - Aetiology.

- Prevention.
- Intervention.
- Diagnosis.
- Importance of evidence searching.
- Levels of evidence.
- Process of literature searching.
- Identification of primary and secondary databases for literature searching.
- Skills in searching primary and secondary databases.
- Internal and external validity of evidence.

RMB 1.9. Systematic Review and Meta-analysis

- Process of systematic review.
- Meta-analysis.
- Critical appraisal of evidence using appropriate critical appraisal tools for:
 - Randomized Controlled Trials.
 - Systematic Reviews.
 - Cohort Studies.

RMB 1.10. Outcome Measures

- Importance of outcome measures.
- Identification of appropriate outcome measures.
- Sensitivity.
- Specificity.
- Minimal Clinical Significance Difference.

RMB 1.11. Clinical Practice Guidelines

- Importance of Clinical Practice Guidelines.
- Searching for CPGs through common databases and search engines.
- Appraisal of CPGs using appropriate tools.
- Challenges and barriers in implementing Evidence Based Practice.

SECTION B – RESEARCH METHODOLOGY

UNIT 2: RESEARCH METHODOLOGY

RMB 2.1. Introduction to Research Methodology

- Meaning of research.
- Objectives of research.
- Motivation in research.
- Types of research and research approaches.
- Research methods versus research methodology.
- Criteria for good research.
- Ethics of research.

RMB 2.2. Research Problem

- Statement of research problem.
- Statement of purpose.
- Objectives of the research problem.
- Necessity of defining the problem.
- Hypothesis.
- Limitations.
- Delimitations.
- Significance of the study.

RMB 2.3. Research Design

- Meaning of research design.
- Need for research design.
- Features of a good research design.
- Different research designs.
- Basic principles of research design.

RMB 2.4. Sampling

- Sampling fundamentals.
- Need for sampling.
- Fundamental definitions related to sampling.
- Important sampling distributions.
- Criteria for selecting a sampling procedure.
- Implications for sample design.
- Steps in sampling design.
- Characteristics of a good sample design.
- Different types of sample design.

RMB 2.5. Measurement and Scaling Techniques

- Measurement in research.
- Measurement scales.
- Sources of error in measurement.
- Reliability.
- Validity.
- Sensitivity.
- Specificity of a measurement tool.
- Techniques for developing measurement tools.
- Meaning of scaling.
- Classification of scaling.
- Important scaling techniques.

RMB 2.6. Methods of Data Collection

- Collection of primary data.
- Collection of data through questionnaires and schedules.
- Difference between questionnaires and schedules.

RMB 2.7. Format of Scientific Documents

- Structure of research protocols.
- Formats for reporting in scientific journals.
- Formats for systematic reviews.
- Formats for meta-analysis.

RMB 2.8. Computer Technology

- Introduction to computers.
- Computer applications in research.
- Introduction to data analysis software.

SECTION C – BIOSTATISTICS

UNIT 3: APPLICATION OF BIOSTATISTICS

RMB 3.1. Introduction

- Meaning and definition of statistics.
- Characteristics of statistics.
- Importance of the study of statistics.
- Branches of statistics.

- Statistics in health sciences, including physiotherapy.
- Parameters and estimates.
- Descriptive and inferential statistics.
- Variables and their types.
- Measurement scales.

RMB 3.2. Tabulation of Data

- Basic principles of tabulation.
- Graphical representation.
- Types of diagrams:
 - Histograms.
 - Frequency polygons.
 - Smooth frequency polygon.
 - Cumulative frequency curve.
 - Normal probability curve.
 - Pie chart.

RMB 3.3. Measures of Central Tendency

- Need for measures of central tendency.
- Definition and calculation of mean for ungrouped and grouped data.
- Meaning, interpretation, and calculation of median.
- Meaning and calculation of mode.
- Comparison of mean, median, and mode.
- Guidelines for selection and use of measures of central tendency.

RMB 3.4. Probability and Standard Distributions

- Meaning of probability.
- Standard distribution.
- Binomial distribution.
- Normal distribution.
- Divergence from normality:
 - Skewness.
 - Kurtosis.

RMB 3.5. Sampling Techniques

- Sample size.
- Calculation of sample size for survey research.
- Calculation of sample size for experimental research designs.
- Sampling variation.
- Tests of significance.
- Type I and Type II errors.
- Power.

RMB 3.6. Testing of Hypothesis

- Basic concepts of hypothesis testing.
- Procedure of hypothesis testing.
- Measuring the power of hypothesis tests.
- Tests of hypothesis.
- Parametric tests.
- Non-parametric tests for:
 - Difference.
 - Correlation.
 - Association.

RMB 3.7. Analysis of Variance and Covariance

- Analysis of Variance (ANOVA).
- Meaning of ANOVA.
- Basic principles of ANOVA.
- ANOVA techniques.
- Analysis of Covariance (ANCOVA).

SECTION D – EVIDENCE BASED PRACTICE

UNIT 4: PRINCIPLES OF EVIDENCE BASED PRACTICE

RMB 4.1. Introduction to Evidence Based Practice

- Definition of Evidence Based Practice.
- Background of Evidence Based Practice.
- Importance of Evidence Based Practice.
- Model of Evidence Based Physiotherapy.
- Role of an evidence-based practitioner.

RMB 4.2. Searching for Evidence

- Asking clinical questions.
- Identifying different sources of evidence.
- Electronic bibliographic databases.
- World Wide Web.
- Conducting a literature search.
- Step-by-step searching for evidence.

RMB 4.3. Exploring Different Terminologies

- Validity.
- Reliability.
- Randomized Controlled Trial.
- Systematic Review.
- Meta-analysis.
- Case Study.
- Diagnostic Research Study.
- Prognostic Research Study.
- Intervention Research Study.

RMB 4.4. Assessing the Evidence

- Evaluating the evidence.
- Levels of evidence in research using quantitative methods.
- Levels of evidence classification systems.

RMB 4.5. Using the Evidence

- Building evidence into practice.
- Critically Appraised Topics (CATs).
- CAT format.
- Using CATs.
- Drawbacks of CATs.

UNIT 5: CRITICAL APPRAISAL AND APPLICATION OF EVIDENCE

RMB 5.1. Evidence About Diagnostic Tests

- Appraisal of the quality of studies.
- Interpretation of study results.
- Techniques for extracting summaries from studies.
- Communication of evidence about diagnostic tests.

- Diagnostic tests and processes in physiotherapy.

RMB 5.2. Evidence About Prognosis

- Concept of prognosis.
- Research designs relevant to prognostic studies.
- Process of assessing the quality of prognostic studies.

RMB 5.3. Evidence About Outcome Measures

- Elements of outcome measures.
- Methods of determining validity and reliability.
- Extracting and interpreting evidence related to outcome measures.

RMB 5.4. Evidence About Intervention

- Concept of various types of interventions in physiotherapy.
- Research designs related to intervention studies.
- Assessment of strengths and weaknesses of intervention studies.

RMB 5.5. Evidence About Systematic Reviews and Other Research Designs

- Overview of systematic reviews.
- Meta-analysis.
- The Cochrane Collaboration.
- Stages and techniques involved in systematic reviews.
- Procedures for critical appraisal.
- Extraction of relevant results for valid clinical decision-making.
- Introduction to case studies.
- Introduction to qualitative research.
- Evaluating the robustness and fragility of research studies.

RMB 5.6. Practice Guidelines, Algorithms, and Clinical Pathways

- Recent trends in healthcare.
- Clinical Practice Guidelines.
- Algorithms.
- Clinical pathways.
- Legal implications of clinical pathways and CPGs.
- Comparison of:
 - Clinical Practice Guidelines.
 - Algorithms.
 - Clinical Pathways.

Recommended Text Books

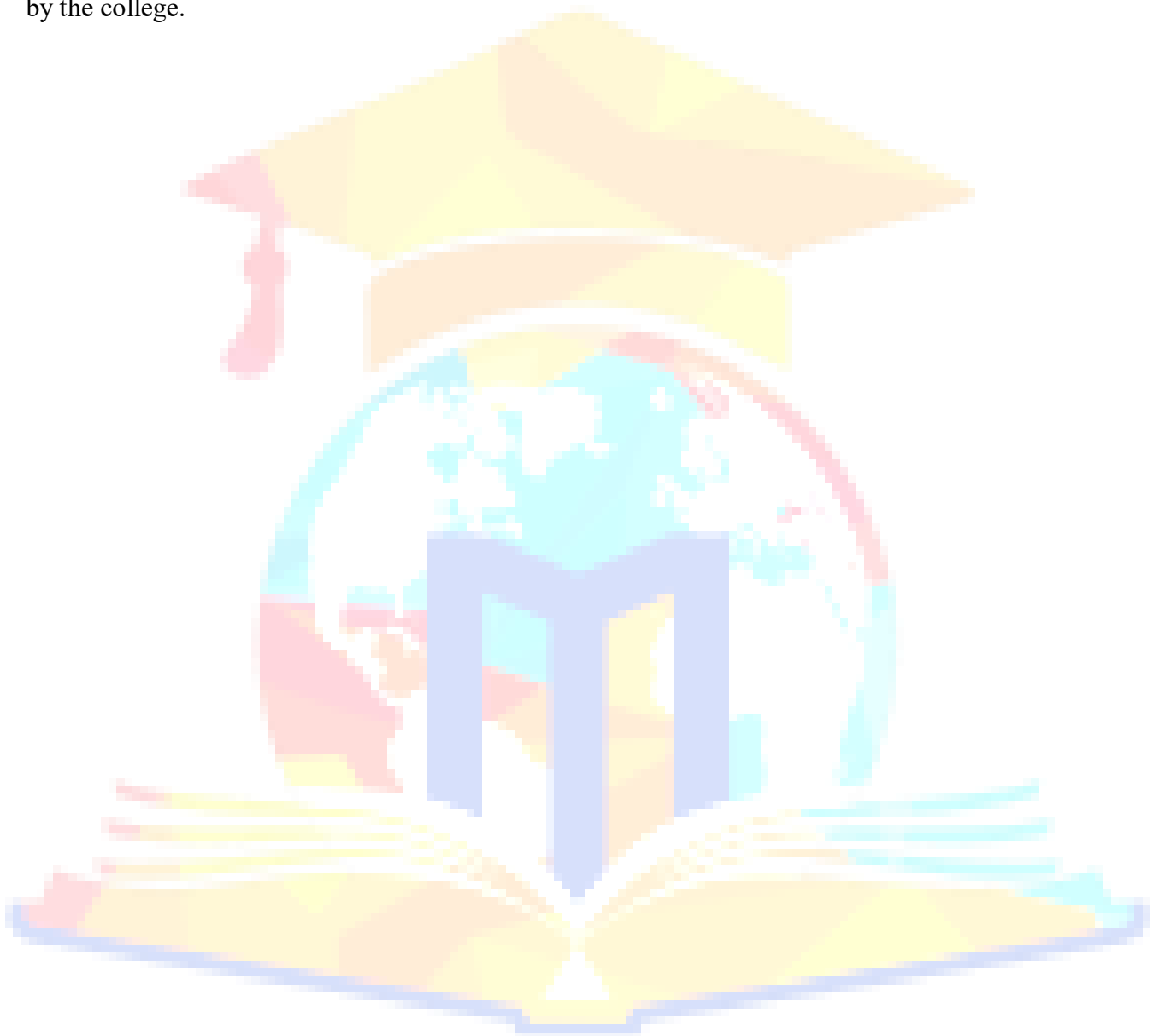
1. Mahajan, B. K. Methods in Biostatistics. Jaypee Brothers Publishers.
2. Hicks, C. Research for Physiotherapists: Project Design and Analysis. Churchill Livingstone.
3. Herbert, Robert; Jamtvedt, Gro; Hagen, Kåre Birger; Mead, Judy; and Chalmers, Sir Iain. Practical Evidence-Based Physiotherapy.
4. Bajpai, S. R. Methods of Social Survey and Research. Kitab Ghar, Kanpur.
5. Mohsin, S. M. Research Methods in Behavioral Sciences. Orient Publications, New Delhi.
6. Gupta, S. P. Statistical Methods. Sultan Chand and Sons Publishers, New Delhi.

Recommended Reference Books

1. Fettes, Linda and Tilson, Julie. Evidence Based Physical Therapy.
2. Jewell, Dianne V. Guide to Evidence-Based Physical Therapy Practice.
3. Bailey, N. T. J. Statistical Methods in Biology. The English University Press, London.
4. Colton. Statistics in Medicine. Little Brown Company, Boston.
5. Goulden, C. H. Methods of Statistical Analysis. Asia Publishing House, New Delhi.
6. Snedecor, G. W. Statistical Methods. Allied Pacific Pvt. Ltd., London.

CLINICAL EDUCATION (CED)

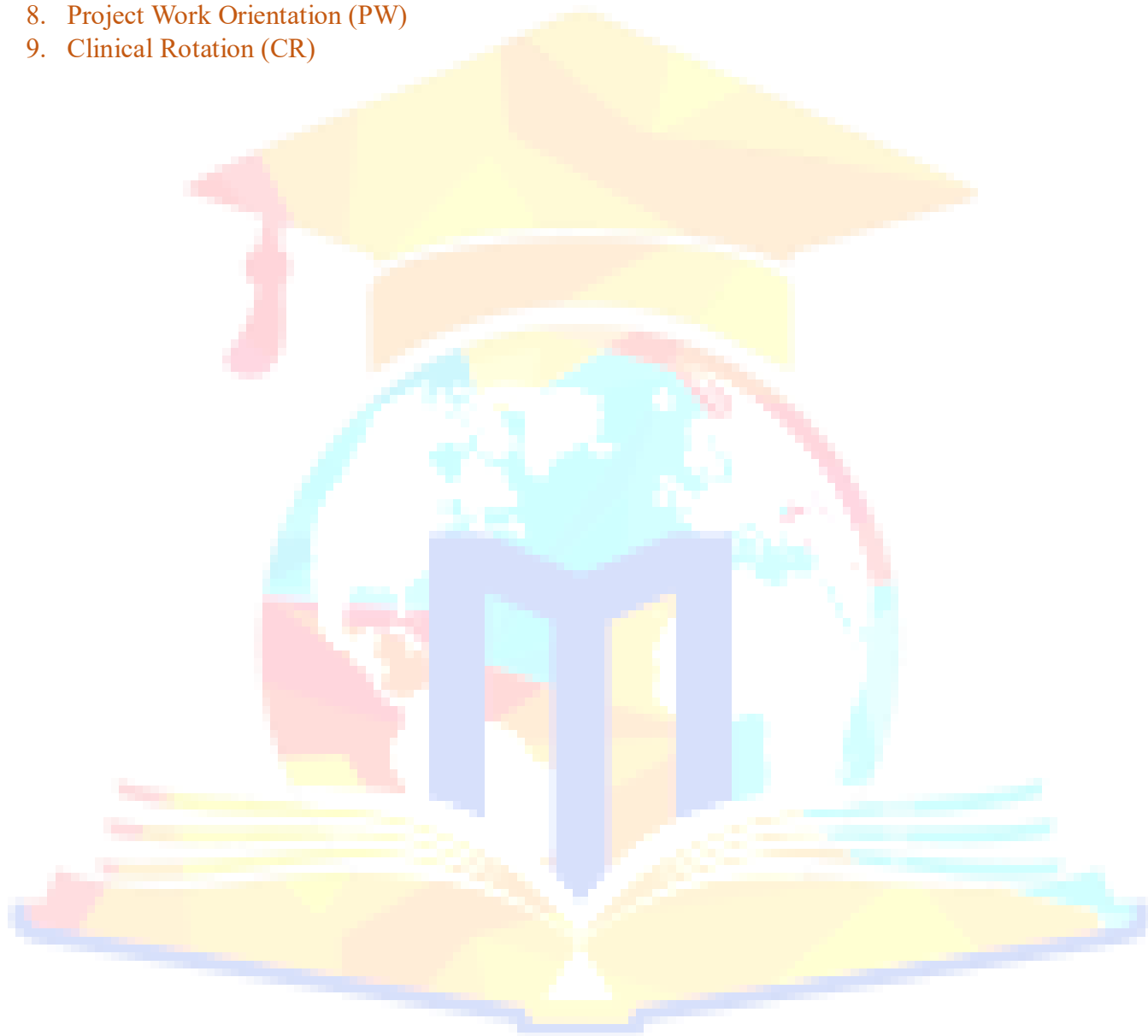
Students will be posted in rotation in the various wards hospitals and physiotherapy OPDs attached with the college. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training. Critique Enquiry, Case Presentation, and Case Discussion shall be essential part of posting. Each student shall maintain a case portfolio / diary to record the various activities performed during clinical posting. This diary should be presented before the final exam and the grade should be awarded by the college.





COURSE TITLES

1. Neurology, Psychiatry and Neurosurgery (NPNS)
2. Physiotherapy in Adult and Pediatric Neurological and Neurosurgical Conditions (PTN)
3. Cardiothoracic Diseases and Surgeries (CTD)
4. Physiotherapy in Adult and Pediatric Cardiothoracic Conditions and Surgical Conditions (PTC)
5. Sports Physiotherapy & Exercise Prescription (PTS)
6. PT Ethics, Medico Legal Aspects, Management & Administration (PTLM)
7. Community Physiotherapy & Rehabilitation (CPTR)
8. Project Work Orientation (PW)
9. Clinical Rotation (CR)



NEUROLOGY INCLUDING PSYCHIATRY AND NEUROSURGERY (NPNS)

Course Code	BPT-401	L	P	C	Total sessions
Course Title	Neurology Including Psychiatry and Neurosurgery (NPNS)	90	30	7	120
Pre-requisite	Basic knowledge of human anatomy, physiology, neuroscience, pathology, general medicine, and physical and functional assessment.				
Co-requisites	NIL				

Course Objective:

1. To develop a comprehensive understanding of the anatomy, physiology, pathophysiology, clinical manifestations, investigations, and management of neurological disorders.
2. To enable students to understand disorders affecting the brain, spinal cord, peripheral nervous system, neuromuscular junction, muscles, and vestibular system.
3. To develop competency in neurological history taking, clinical examination, interpretation of neurological signs, symptoms, and investigative findings.
4. To provide knowledge of common psychiatric disorders, their etiology, clinical manifestations, treatment approaches, and relevance to physiotherapy practice.
5. To develop an understanding of neurosurgical procedures, their indications, complications, and implications for the management and rehabilitation of neurological patients.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the anatomy, neurophysiology, pathophysiology, classification, clinical manifestations, investigations, and management principles of disorders affecting the central nervous system.

CLO2: Assess and interpret neurological dysfunction through systematic history taking, examination of higher mental functions, cranial nerves, motor and sensory systems, tone, reflexes, coordination, posture, gait, and diagnostic investigations.

CLO3: Explain the etiology, pathophysiology, clinical features, investigations, differential diagnosis, and management of disorders affecting the spinal cord, peripheral nerves, neuromuscular junction, and skeletal muscles.

CLO4: Describe the clinical features and management principles of paediatric neurological disorders, psychiatric disorders, traumatic neurological conditions, and toxic, metabolic, and environmental neurological disorders.

CLO5: Demonstrate the ability to clinically evaluate neurological patients, interpret investigative findings, formulate differential diagnoses, and understand the indications and complications of common neurosurgical procedures.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive theoretical knowledge and clinical competence in the assessment and management of individuals with physiotherapy and rehabilitation needs.

PLO2: Apply scientific knowledge, clinical reasoning, and evidence-based principles in the assessment, diagnosis, planning, and management of patients.

PLO3: Demonstrate competency in performing systematic patient assessment, identifying impairments, activity limitations, and participation restrictions, and formulating appropriate management plans.

PLO4: Communicate effectively with patients, caregivers, healthcare professionals, and multidisciplinary teams.

PLO5: Utilize appropriate diagnostic tools, technology, scientific information, and contemporary knowledge for professional practice and lifelong learning.

PLO6: Uphold ethical, legal, professional, and patient-safety principles in physiotherapy practice.

PLO7: Demonstrate commitment to professional development, research, interdisciplinary collaboration, and advancement of physiotherapy and rehabilitation practice.

Program Specific Outcomes (PSOs):

PSO1: Demonstrate competency in the assessment, clinical reasoning, and physiotherapy management of neurological and neurosurgical conditions.

PSO2: Apply knowledge of neurological, psychiatric, and medical sciences for identifying dysfunction and planning appropriate rehabilitation strategies.

PSO3: Demonstrate skills in neurological examination, interpretation of diagnostic investigations, differential diagnosis, and clinical decision-making.

PSO4: Integrate multidisciplinary, evidence-based, ethical, and patient-centered approaches in neurological rehabilitation and physiotherapy practice.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	1	2	2	2	3	3	2	2
CLO2	3	3	3	2	3	3	2	3	3	3	3
CLO3	3	3	3	2	2	3	2	3	3	3	3
CLO4	3	3	2	3	2	3	2	3	3	2	3
CLO5	3	3	3	2	3	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION A

Unit 1

NPNS 1.1. Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping. Classification of neurological involvement depending on level of lesion.

NPNS 1.2. Review in brief the neurophysiologic basis of tone and disorders of tone and posture, bladder control, muscle conduction, movement and pain, management of pain, electrical stimulation of brain and spinal cord.

NPNS 1.3. Trauma – Broad localization, first aid and management.

NPNS 1.4. Neurological Assessment:

Principles of clinical diagnosis, higher mental function, assessment of brain and spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system.

1. Basic history taking to determine whether the brain, spinal cord or peripheral nerve is involved.
2. Assessment of higher mental function such as orientation, memory, attention, speech and language.
3. Assessment of cranial nerves.
4. Assessment of motor system.
5. Assessment of sensory function – touch, pain and position.
6. Assessment of tone – spasticity, rigidity and hypotonia.
7. Assessment of cerebral function.
8. Assessment of higher cortical function – apraxia.
9. Assessment of gait abnormalities.

NPNS 1.5. Investigations:

Principles, methods, views, normal and abnormal values/features, and types of the following investigative procedures:

- Skull X-ray
- CT
- MRI
- Evoked potentials
- Lumbar puncture
- CSF examination
- EMG
- NCV

NPNS 1.6. Deafness, Vertigo and Imbalance:

Physiology, tests of vestibular function, vertigo, peripheral vestibular disorders and central vestibular vertigo.

NPNS 1.7. Cerebrovascular Diseases:

Define:

- Stroke
- TIA
- RIA
- Stroke in evolution
- Multi-infarct dementia
- Lacunar infarct

Classification of stroke:

- Ischemic stroke
- Hemorrhagic stroke
- Venous infarcts

Risk factors, causes of ischemic stroke, causes of hemorrhagic stroke, classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndromes, investigations, differential diagnosis, medical management and surgical management.

NPNS 1.8. Spinal Cord Disorders:

Functions of tracts, definition, etiology, risk factors, pathophysiology, classification, clinical signs and symptoms, investigations, differential diagnosis, medical management, surgical management and complications of:

- Spinal cord injury
- Brain injury
- Compression by space occupying lesion
- Infections of brain and related neurological disorders

NPNS 1.9.

- IVD prolapse
- Spinal epidural abscess
- Transverse myelitis
- Viral myelitis
- Syringomyelia
- Spina bifida
- Subacute combined degeneration of the cord
- Hereditary spastic paraplegia
- Radiation myelopathy
- Progressive encephalomyelitis
- Conus medullaris syndrome
- Bladder and bowel dysfunction

- Sarcoidosis

NPNS 1.10. Motor Neuron Diseases:

Etiology, pathophysiology, classification, clinical signs and symptoms, investigations, differential diagnosis, medical management and complications of:

- Amyotrophic lateral sclerosis
- Spinal muscular atrophy
- Hereditary bulbar palsy
- Neuromyotonia
- Post-irradiation lumbosacral polyradiculopathy

Unit 2**NPNS 2.1. Brain Tumors and Spinal Tumors:**

Classification, clinical features, investigations, medical management and surgical management.

NPNS 2.2. Movement Disorders:

Definition, etiology, risk factors, pathophysiology, classification, clinical signs and symptoms, investigations, differential diagnosis, medical management, surgical management and complications of:

- Parkinson's disease
- Dystonia
- Chorea
- Ballism
- Athetosis
- Tics
- Myoclonus
- Wilson's disease

NPNS 2.3. Multiple Sclerosis:

Etiology, pathophysiology, classification, clinical signs and symptoms, investigations, differential diagnosis, medical management and complications.

NPNS 2.4. Cerebellar and Coordination Disorders:

Etiology, pathophysiology, classification, clinical signs and symptoms, investigations, differential diagnosis and management of:

- Congenital ataxia
- Friedreich's ataxia
- Ataxia telangiectasia
- Metabolic ataxia
- Hereditary cerebellar ataxia
- Tabes dorsalis
- Syphilis

NPNS 2.5. Higher Cortical, Neuropsychological and Neurobehavioral Disorders:

Causes of blackouts, physiological nature of epilepsy, classification, clinical features, investigations, medical and surgical management of:

- Non-epileptic attacks of childhood
- Epilepsy in childhood
- Seizures
- Epilepsy syndromes in adults

Classification and clinical features of:

- Dyssomnias
- Parasomnias
- Dementia
- Obsessive-compulsive disorders

Neural basis of consciousness, causes and investigations of coma, criteria for diagnosis of brain death. Etiology, pathophysiology, classification, clinical signs and symptoms, investigations, differential diagnosis and management of:

- Perceptual disorders
- Speech disorders
- Alzheimer disease

Unit 3

NPNS 3.1. Disorders of Neuromuscular Junction:

Etiology, classification, signs and symptoms, investigations and management of:

- Myasthenia gravis
- Eaton-Lambert syndrome
- Botulism

NPNS 3.2. Muscle Diseases:

Classification, investigations, imaging methods, muscle biopsy, management of muscle diseases and genetic counseling.

Classification, etiology, signs and symptoms of:

- Muscular dystrophy
- Myotonic dystrophy
- Myopathy
- Non-dystrophic myotonia

NPNS 3.3. Polyneuropathy:

Classification of polyneuropathies, including:

- Hereditary motor sensory neuropathy
- Hereditary sensory and autonomic neuropathies
- Amyloid neuropathy
- Acute idiopathic polyneuropathies

Guillain-Barré syndrome:

- Causes
- Clinical features
- Management

Chronic idiopathic polyneuropathies, diagnosis of polyneuropathy and nerve biopsy.

NPNS 3.4. Focal Peripheral Neuropathy:

Clinical diagnosis of focal neuropathy:

- Neurotmesis
- Axonotmesis
- Neuropraxia

Etiology, risk factors, classification, neurological signs and symptoms, investigations and management of:

- RSD
- Nerve tumors
- Brachial plexus palsy
- Thoracic outlet syndrome
- Lumbosacral plexus lesions
- Phrenic and intercostal nerve lesions
- Median nerve palsy
- Ulnar nerve palsy
- Radial nerve palsy
- Musculocutaneous nerve palsy

- Anterior and posterior interosseous nerve palsy
- Axillary nerve palsy
- Long thoracic nerve palsy
- Suprascapular nerve palsy
- Sciatic nerve palsy
- Tibial nerve palsy
- Common peroneal nerve palsy
- Femoral nerve palsy
- Obturator nerve palsy
- Pudendal nerve palsy

NPNS 3.5. Paediatric Neurology:

Neural development, etiology, pathophysiology, classification, clinical signs and symptoms, investigations, differential diagnosis, medical management, surgical management and complications of:

- Cerebral palsy
- Hydrocephalus
- Arnold-Chiari malformation
- Basilar impression
- Klippel-Feil syndrome
- Achondroplasia
- Cerebral malformations
- Autism
- Dandy-Walker syndrome
- Down syndrome

NPNS 3.6. Toxic, Metabolic and Environmental Disorders:

Etiology, risk factors, classification, neurological signs and symptoms, investigations and management of:

- Encephalopathy
- Alcohol toxicity
- Recreational drug abuse
- Toxic gases and asphyxia
- Therapeutic and diagnostic agent toxicity
- Metal toxicity
- Pesticide poisoning
- Environmental and physical insults
- Plant and fungal poisoning
- Animal poisons
- Complications of organ transplantation

NPNS 3.7. Head Injury:

Etiology, classification, clinical signs and symptoms, investigations, differential diagnosis, medical management, surgical management and complications.

NPNS 3.8. Introduction, Indications and Complications of Neurosurgical Procedures:

- Craniotomy
- Cranioplasty
- Stereotactic surgery
- Deep brain stimulation
- Burr-hole procedures
- Shunting
- Laminectomy
- Hemilaminectomy

- Rhizotomy
- Microvascular decompression surgery
- Endarterectomy
- Embolization
- Pituitary surgery
- Ablative surgery
- Thalamotomy
- Pallidotomy
- Coiling of aneurysm
- Clipping of aneurysm
- Neural implantation

Unit 4

NPNS 4.1. Psychiatric Disorders:

Classifications, causes, clinical manifestations and treatment methods used in psychiatry.

Modalities of psychiatric treatment, psychiatric illness and physiotherapy.

Brief description of etiopathogenesis, manifestations and management of:

- Anxiety neurosis
- Depression
- Obsessive compulsive neurosis
- Psychosis
- Maniac-depressive psychosis
- Post-traumatic stress disorder
- Psychosomatic reactions
- Stress and health
- Theories of stress and illness

NPNS 4.2.

Etiopathogenesis, manifestations and management of psychiatric illness.

NPNS 4.3.

- Drug dependence and alcoholism
- Somatoform disorders
- Dissociative disorders
- Conversion reactions
- Somatization
- Dissociative amnesia
- Dissociative fugue
- Personality disorders

NPNS 4.4. Child Psychiatry:

Manifestations and management of childhood disorders:

- Mental retardation
- Attention deficit syndrome
- Behavioral disorders

PRACTICAL / CLINICAL

Long case and short case examination of neurological patients with emphasis on:

1. History taking.
2. Motor examination.
3. Sensory examination.
4. Reflex examination.

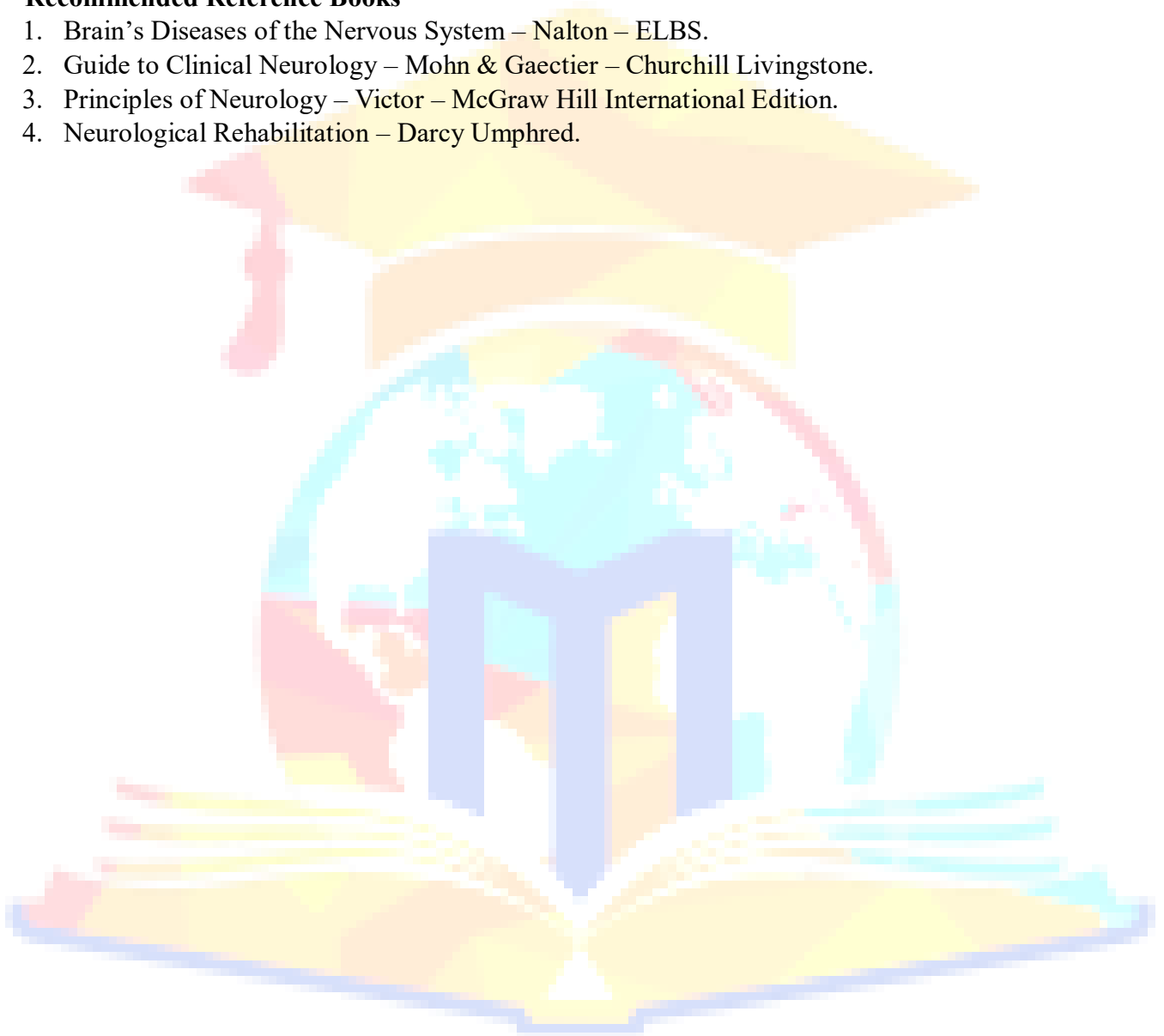
5. Interpretation of investigative findings.
6. Clinical diagnosis.
7. Differential diagnosis.

Recommended Text Books

1. Davidson's Principles and Practice of Medicine – Edward – Churchill Livingstone.
2. API Text Book of Medicine, 5th Edition.
3. Medicine and Neurology by Golwalla.

Recommended Reference Books

1. Brain's Diseases of the Nervous System – Nalton – ELBS.
2. Guide to Clinical Neurology – Mohn & Gaectier – Churchill Livingstone.
3. Principles of Neurology – Victor – McGraw Hill International Edition.
4. Neurological Rehabilitation – Darcy Umphred.



PHYSIOTHERAPY IN ADULT AND PAEDIATRIC NEUROLOGICAL AND NEUROSURGICAL CONDITIONS (PTN)

Course Code	BPT-402	L	P	C	Total sessions
Course Title	Physiotherapy In Adult and Paediatric Neurological and Neurosurgical Conditions (PTN)	150	90	13	240
Pre-requisite	Basic knowledge of human anatomy, physiology, neuroscience, pathology, exercise therapy, biomechanics, physical and functional diagnosis, and principles of neurological assessment.				
Co-requisites	NIL				

Course Objective:

1. To develop comprehensive knowledge and clinical competency in the assessment and physiotherapy management of adult and paediatric neurological and neurosurgical conditions.
2. To enable students to perform systematic neurological examination and functional diagnosis using appropriate assessment tools and outcome measures.
3. To develop competency in identifying impairments, activity limitations, participation restrictions, complications, and rehabilitation needs in neurological conditions.
4. To enable students to apply appropriate neurophysiological, motor learning, task-oriented, exercise-based, and functional rehabilitation approaches.
5. To develop clinical reasoning skills for planning, implementing, progressing, and evaluating individualized physiotherapy management programmes.
6. To develop competency in the assessment and management of neurological gait, balance, coordination, mobility, functional independence, bladder and bowel dysfunction, and associated complications.
7. To develop knowledge and practical skills in the physiotherapy management of brain, spinal cord, peripheral nerve, muscle, developmental, paediatric neurological, and neurosurgical conditions.
8. To promote patient-centred care, caregiver education, interdisciplinary rehabilitation, safe prescription of aids and orthotic devices, and evidence-informed neurological physiotherapy practice.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Perform comprehensive neurological assessment including history taking, higher mental function examination, motor and sensory examination, reflex testing, balance, coordination, gait, functional analysis, and appropriate use of neurological assessment tools and scales.

CLO2: Apply appropriate neurophysiological, motor control, motor learning, task-oriented, and contemporary rehabilitation approaches in the management of neurological dysfunction.

CLO3: Assess, formulate functional diagnosis, establish short- and long-term goals, and plan physiotherapy management for adult neurological and neurosurgical conditions affecting the brain, spinal cord, cerebellum, and muscles.

CLO4: Assess and manage paediatric neurological conditions, developmental disorders, high-risk infants, cerebral palsy, developmental delay, and neurological gait disorders using appropriate developmental and functional assessment approaches.

CLO5: Evaluate and manage peripheral nerve injuries, neuromuscular disorders, spinal disorders, and pre- and post-neurosurgical conditions using appropriate physiotherapy interventions and clinical reasoning.

CLO6: Design and implement comprehensive neurological rehabilitation programmes incorporating therapeutic exercise, facilitation and inhibitory techniques, mobility training, functional training, bladder and bowel training, integumentary care, assistive devices, orthotic devices, ergonomic advice, and patient/caregiver education.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive theoretical knowledge and clinical competence in the assessment and management of individuals with health conditions requiring physiotherapy intervention.

PLO2: Apply scientific principles, clinical reasoning, and evidence-informed practice in physiotherapy assessment, diagnosis, planning, intervention, and outcome evaluation.

PLO3: Demonstrate competency in identifying impairments, activity limitations, participation restrictions, and functional needs using appropriate assessment frameworks and outcome measures.

PLO4: Plan and implement safe, effective, patient-centred, and individualized physiotherapy interventions across the lifespan.

PLO5: Demonstrate effective communication, patient and caregiver education, documentation, and interdisciplinary collaboration in healthcare practice.

PLO6: Demonstrate professional, ethical, legal, and responsible behaviour in physiotherapy practice.

PLO7: Engage in lifelong learning, critical reflection, research awareness, innovation, and continuous professional development.

Program Specific Outcomes (PSOs):

PSO1: Perform comprehensive physiotherapy assessment and functional diagnosis of individuals with musculoskeletal, neurological, cardiorespiratory, paediatric, and other health-related conditions.

PSO2: Design and implement evidence-informed physiotherapy interventions to improve movement, function, independence, participation, health, and quality of life.

PSO3: Demonstrate competency in therapeutic exercise, neurorehabilitation, functional training, electrotherapy application, assistive technology, and rehabilitation techniques.

PSO4: Demonstrate professional competency in patient-centred care, clinical decision-making, prevention, rehabilitation, health promotion, and interdisciplinary physiotherapy practice.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	3	2	2	2	2	3	2	3	2
CLO2	3	3	3	3	2	2	2	3	3	3	3
CLO3	3	3	3	3	2	3	2	3	3	3	3
CLO4	3	3	3	3	3	3	2	3	3	3	3
CLO5	3	3	3	3	2	3	2	3	3	3	3
CLO6	3	3	3	3	3	3	2	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**SECTION-A****UNIT 1****PTN 1.1. Neurological Assessment**

Neurological assessment including:

- Chief complaints.
- History taking – present, past, medical, familial, and personal histories.
- Observation and palpation.
- Higher mental function assessment:
 - Consciousness

- 
- Orientation
 - Wakefulness
 - Memory
 - Speech
 - Reading
 - Language
 - Writing
 - Calculations
 - Perception
 - Left-right confusion
 - Reasoning
 - Judgment
 - Motor examination:
 - Muscle power
 - Muscle tone
 - Spasticity
 - Flaccidity
 - Reflexes
 - Reflex examination:
 - Developmental reflexes
 - Deep tendon reflexes
 - Superficial reflexes
 - Sensory examination:
 - Superficial sensations
 - Deep sensations
 - Cortical sensations
 - Special tests:
 - Romberg's test
 - Kernig's sign
 - Brudzinski sign
 - Tinel's sign
 - Slump test
 - Lhermitte's sign
 - Bell's phenomenon
 - Gower's sign
 - Sun-set sign
 - Battle's sign
 - Glabellar tap sign
 - Other relevant neurological tests
 - Balance examination.
 - Coordination examination.
 - Gait analysis:
 - Kinetics
 - Kinematics
 - Quantitative analysis
 - Qualitative analysis
 - Functional analysis.
 - Assessment tools and scales:
 - Modified Ashworth Scale

- Berg Balance Scale
- Functional Independence Measure (FIM)
- Barthel Index
- Glasgow Coma Scale
- Mini Mental State Examination
- Rancho Los Amigos Scale for head injury
- APGAR score
- ASIA Scale
- Reflex grading
- Differential diagnosis.

PTN 1.2. Neurophysiological Techniques

Concepts, principles, techniques, and effects of the following neurophysiological approaches:

- Neurodevelopmental Therapy (NDT).
- Proprioceptive Neuromuscular Facilitation (PNF).
- Rood's Sensory Motor Approach.
- Sensory Integration Approach.
- Brunnstrom Movement Therapy.
- Motor Relearning Programme.
- Contemporary Task-Oriented Approach.
- Muscle Re-education Approach.
- Constraint-Induced Movement Therapy.

UNIT 2

PTN 2.1. Evaluation and Management of Brain and Spinal Cord Disorders

Evaluation and management including:

- History.
- Observation.
- Palpation.
- Higher mental function examination.
- Cranial nerve examination.
- Motor and sensory examination.
- Reflex testing.
- Differential diagnosis.
- Balance and coordination examination.
- Gait analysis.
- Functional analysis.
- Identification of problems and complications.
- Establishment of short-term and long-term goals.
- Management of systemic complications.
- Management of mechanical complications.
- Application of various neurophysiological approaches and modalities.

Conditions include:

- Cerebrovascular Accident.
- Meningitis.
- Encephalitis.
- Head Injury.
- Brain Tumours.
- Perceptual Disorders.
- Amyotrophic Lateral Sclerosis.

- Multiple Sclerosis.

PTN 2.2. Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders

Evaluation and management including:

- History.
- Observation.
- Palpation.
- Motor and sensory examination.
- Reflex testing.
- Differential diagnosis.
- Balance and coordination examination.
- Gait analysis.
- Functional analysis.
- Identification of problems and complications.
- Establishment of short-term and long-term goals.
- Management of systemic complications.
- Management of mechanical complications.
- Application of appropriate neurophysiological approaches and modalities.

Conditions include:

- Ataxia.
- Sensory Ataxia.
- Parkinson's Disease.
- Muscular Dystrophy including Duchenne Muscular Dystrophy.
- Myasthenia Gravis.
- Eaton-Lambert Syndrome.
- Spinal Tumours.
- Spinal Cord Injury.
- Transverse Myelitis.
- Bladder and Bowel Dysfunction.
- Spinal Muscular Atrophies.
- Poliomyelitis.
- Post-Polio Syndrome.

UNIT 3

PTN 3.1. Paediatric Neurology

Paediatric neurological assessment including:

- Paediatric examination.
- Developmental milestones.
- Developmental reflexes.
- Neurodevelopmental screening tests.

Evaluation and management including:

- History.
- Observation.
- Palpation.
- Milestone examination.
- Developmental reflex examination.
- Higher mental function examination.
- Cranial nerve examination.
- Motor and sensory examination.
- Reflex testing.

- Differential diagnosis.
- Balance and coordination examination.
- Gait analysis.
- Functional analysis.
- Identification of problems and complications.
- Establishment of short-term and long-term goals.
- Management of systemic complications.
- Management of mechanical complications.
- Use of appropriate neurophysiological approaches and modalities.

Conditions include:

- Risk babies.
- Minimum brain damage.
- Developmental disorders.
- Cerebral Palsy.
- Autism.
- Down's Syndrome.
- Hydrocephalus.
- Chorea.
- Spina Bifida.
- Syringomyelia.

PTN 3.2. Assessment and Management of Neurological Gaits

Quantitative and qualitative assessment including:

- Kinetic analysis.
- Kinematic analysis.
- Identification of problems.
- Establishment of short-term and long-term goals.

Management of:

- Hemiplegic gait.
- Parkinsonian gait.
- High-step gait.
- Hyperkinetic gait.
- Hypokinetic gait.
- Waddling gait.
- Scissoring gait.
- Spastic gait.
- Choreiform gait.
- Diplegic gait.
- Myopathic gait.

SECTION-B

UNIT 4

PTN 4.1. Evaluation and Management of Peripheral Nerve Injuries and Disorders

Evaluation and management including:

- History.
- Observation.
- Palpation.
- Motor and sensory examination.
- Reflex testing.
- Differential diagnosis.

- Balance and coordination examination.
- Gait analysis.
- Functional analysis.
- Identification of problems and complications.
- Establishment of short-term and long-term goals.
- Management of systemic complications.
- Management of mechanical complications.
- Application of neurophysiological approaches and modalities.

Conditions include:

- Hereditary Motor Sensory Neuropathy.
- Guillain-Barré Syndrome.
- Brachial Plexus Palsy.
- Thoracic Outlet Syndrome.
- Lumbosacral Plexus Lesions.
- Phrenic and Intercostal Nerve Lesions.
- Median Nerve Palsy.
- Ulnar Nerve Palsy.
- Radial Nerve Palsy.
- Musculocutaneous Nerve Palsy.
- Anterior and Posterior Interosseous Nerve Palsy.
- Axillary Nerve Palsy.
- Long Thoracic Nerve Palsy.
- Suprascapular Nerve Palsy.
- Sciatic Nerve Palsy.
- Tibial Nerve Palsy.
- Common Peroneal Nerve Palsy.
- Femoral Nerve Palsy.
- Obturator Nerve Palsy.
- Pudendal Nerve Palsy.

PTN 4.2. Pre- and Post-Surgical Assessment and Treatment

Pre- and post-surgical physiotherapy assessment and treatment following:

- Spinal disc herniation.
- Spinal stenosis.
- Spinal cord trauma.
- Head trauma.
- Brain tumours.
- Tumours of the spine, spinal cord, and peripheral nerves.
- Cerebral aneurysms.
- Subarachnoid haemorrhages.
- Epilepsy.
- Parkinson's disease.
- Chorea.
- Hemiballismus.
- Psychiatric disorders.
- Malformations of the nervous system.
- Carotid artery stenosis.
- Arteriovenous malformations.
- Spina bifida.

PTN 4.3. Applied Yoga in Neurological Conditions

Application of appropriate yoga-based practices in neurological conditions.

UNIT 5

PTN 5.1. Paediatric Problems and Management

Problems and management of:

- Low birth weight infants.
- Perinatal problems.
- Respiratory conditions of childhood.
- Epilepsies:
 - Types
 - Diagnosis
 - Treatment
- Sensory disorders resulting from loss of vision and hearing.
- Learning and behavioural problems:
 - Hyperactivity
 - Autism
 - Challenging behaviours
 - Educational delay
 - The clumsy child

PTN 5.2. Cerebral Palsy

- Definition.
- Etiology.
- Classification.
- Clinical features.
- Complications.
- Deformities.
- Medical management.

PTN 5.3. Developmental Assessment Scales

Motor, sensory, cognitive, neurological, and functional assessment scales used for neonates, including:

- Brazelton.
- TIMP.
- MAI.
- NBA.
- AIMS.

Overview of:

- Speech development.
- Cognitive development.
- Social development.

PTN 5.4. Physiotherapy Assessment and Management of Developmental Delay and High-Risk Babies

PTN 5.5. Exercise Testing Protocols/Tests

Common paediatric exercise testing protocols used in:

- Obesity.
- Juvenile Diabetes.

PTN 5.6. Pre- and Post-Surgical Physiotherapy Assessment and Management

Conditions include:

- Traumatic brain injury.
- Spinal cord disorders:
 - Traumatic spinal cord injuries.

- Non-traumatic spinal cord injuries.
- Spina bifida.
- Brachial plexus injury.
- Peripheral nerve conditions including chemical neuritis of upper and lower extremities.
- Cranial nerve conditions including Bell's palsy.
- Hydrocephalus.

PTN 5.7. Physiotherapy Management for Disorders of Muscles

Including:

- Congenital myopathies.
- Acquired myopathies.
- Muscular dystrophy:
 - Duchenne Muscular Dystrophy.
 - Becker Muscular Dystrophy.
- Spinal Muscle Atrophy.

PTN 5.8. Paediatric Neurology

Management of:

- Developmental disorders.
- Learning disabilities.
- Meningitis.
- Encephalitis.
- Guillain-Barré Syndrome.
- Autism.
- Down's Syndrome.
- ADHD.
- Poliomyelitis.
- Bell's palsy.
- Congenital facial palsy.

PTN 5.9. Physiotherapy Management of Neuropsychiatric Disorders

Including:

- Neuropsychiatric disorders.
- Cerebral anomalies.
- Craniovertebral anomalies.
- Metabolic disorders of the nervous system.

PTN 5.10. Poliomyelitis

- Definition.
- Etiology.
- Types.
- Pathophysiology.
- Clinical features.
- Deformities.
- Medical management.
- Surgical management.

PTN 5.11. Neural Tube Defects

PTN 5.12. Introduction and Classification of Metabolic and Genetic Disorders and Genetic Counselling

Including:

- Down's Syndrome.
- West's Syndrome.
- Wilson's Syndrome.

- Leigh's Disease.
- Angelman Syndrome.

PRACTICAL: B.P.T. PTN 402 (P)

Practical shall be conducted for all relevant topics discussed in theory through the following:

PTN (P) 6.1. Bedside Case Presentations and Case Discussions**PTN (P) 6.2. Laboratory Sessions**

Laboratory sessions consisting of:

- Evaluation and assessment methods on student models.
- Treatment techniques.
- Practice sessions.

The student should be able to independently perform the following procedures on self, human model, and patient where appropriate.

PTN (P) 6.3. History Taking and Neurological Examination

- History taking.
- Examination.
- Observation.
- Palpation.
- Special tests.
- Investigation.
- Diagnosis.
- Functional diagnosis including:
 - Impairment.
 - Functional restriction.
 - Activity limitation.
- Documentation.

PTN (P) 6.4. Planning and Execution of Management Protocol

Planning and execution of physiotherapy management protocols for commonly encountered neurological conditions with respect to:

- Active exercise regimen.
- Inhibitory techniques.
- Facilitatory techniques.
- Passive mobilization.
- Stretching procedures.
- Selection of appropriate electrotherapeutic modalities.
- Patient and caregiver education and training.
- Functional training programmes.
- Bladder and bowel training.
- Integumentary care.
- Prescription and training of suitable aids, appliances, and orthotic devices.
- Ergonomic advice.

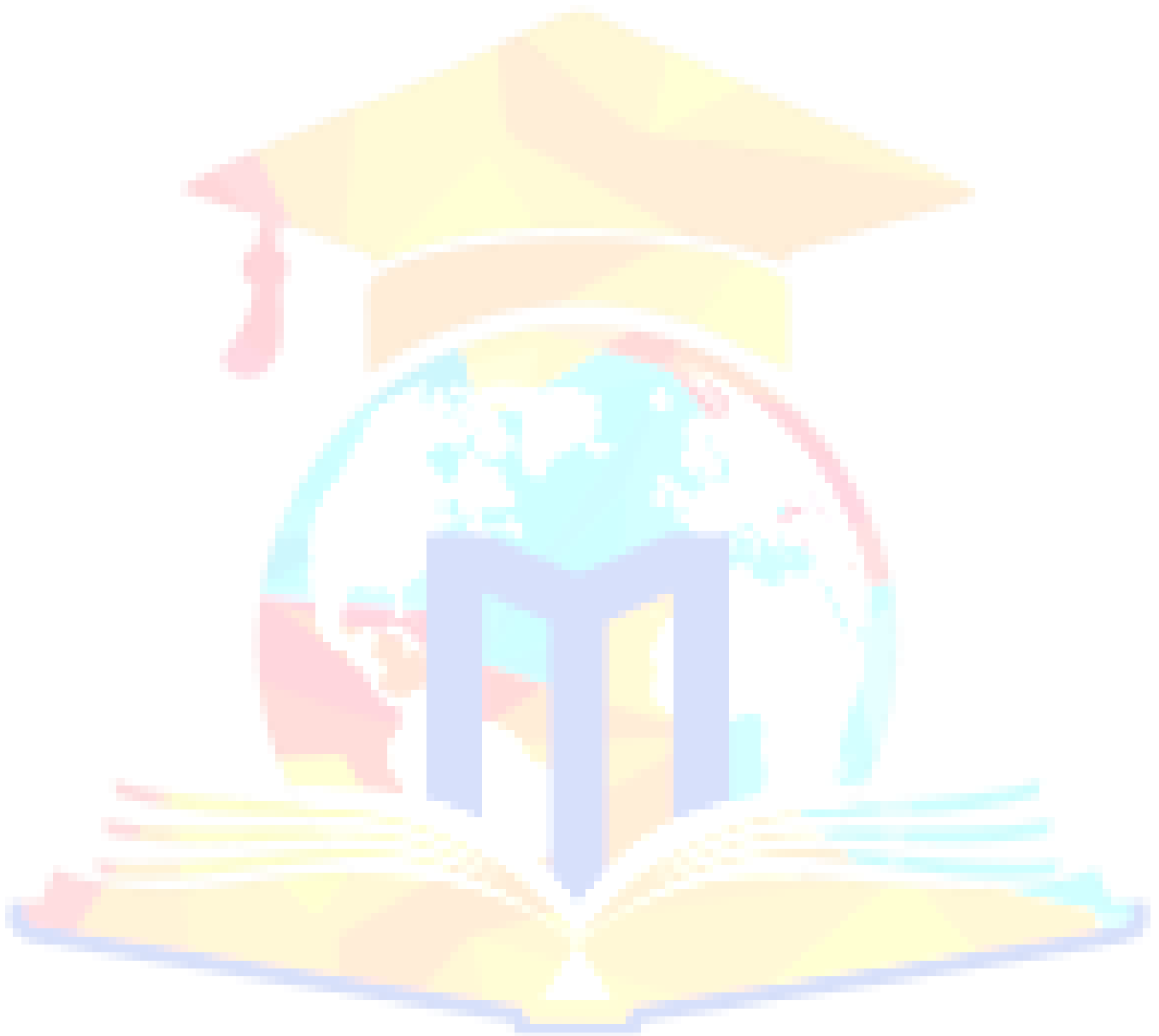
Recommended Text Books for PTN

1. Patricia A. D. Cash's Text Book for Physiotherapists in Neurological Disorders – Jaypee Brothers.
2. Adler B. PNF in Practice – Springer.
3. Hollis M. Practical Physical Therapy.
4. O'Sullivan S. Physical Rehabilitation.
5. Johnstone M. Therapy for Stroke – Churchill Livingstone.
6. Bromley I. Tetraplegia and Paraplegia: A Guide for Physiotherapists.

7. Carr and Shepherd. Neurological Rehabilitation.

Recommended Reference Books for PTN

1. Umphred D. Neurological Rehabilitation – Mosby/Elsevier.
2. Donaghy M. Brain's Diseases of the Nervous System – Oxford University Press.
3. Bobath B. Adult Hemiplegia – Heinemann Medical Books.
4. Patricia M. D. Right in the Middle – Springer-Verlag.



CARDIO THORACIC DISEASES AND SURGERIES (CTD)

Course Code	BPT-403	L	P	C	Total sessions
Course Title	Cardio Thoracic Diseases and Surgeries (CTD)	90	30	7	120
Pre-requisite	Basic knowledge of human anatomy and physiology, pathology, general medicine, and general surgery.				
Co-requisites	NIL				

Course Objective:

1. To develop knowledge of the anatomy, physiology, pathology, clinical features, investigations, diagnosis, and management of common cardiovascular and respiratory diseases.
2. To understand the aetiopathogenesis, complications, and medical management of common cardiac, vascular, respiratory, and chest wall disorders.
3. To develop knowledge of the principles, indications, procedures, complications, and perioperative management of common cardiothoracic and vascular surgeries.
4. To understand critical care procedures including airway management, tracheal suctioning, mechanical ventilation, weaning, extubation, and post-extubation care.
5. To develop an understanding of cardiopulmonary resuscitation and the principles of emergency management in cardiothoracic conditions.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the anatomy, physiology, aetiopathogenesis, clinical features, investigations, diagnosis, complications, and principles of management of common cardiovascular diseases.

CLO2: Explain the aetiopathogenesis, clinical features, investigations, diagnosis, complications, and management of common respiratory diseases and chest wall disorders.

CLO3: Describe the principles, indications, contraindications, surgical procedures, perioperative management, and complications associated with common cardiac and vascular surgeries.

CLO4: Explain the principles and procedures involved in thoracic surgery, thoracic trauma, airway management, mechanical ventilation, weaning, extubation, and post-extubation care.

CLO5: Apply knowledge of cardiopulmonary resuscitation, emergency management, and perioperative care to understand the clinical management of patients with cardiothoracic diseases and surgical conditions.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in the assessment and management of physiotherapy conditions.

PLO2: Apply scientific principles and evidence-based knowledge in physiotherapy assessment and clinical decision-making.

PLO3: Demonstrate competence in planning and implementing appropriate physiotherapy interventions for individuals with various health conditions.

PLO4: Communicate effectively and collaborate with patients, caregivers, and members of the interdisciplinary healthcare team.

PLO5: Demonstrate lifelong learning, professional development, and the ability to utilize contemporary knowledge and technology in healthcare practice.

PLO6: Uphold ethical, legal, professional, and patient-safety standards in physiotherapy practice.

PLO7: Demonstrate leadership, clinical reasoning, and responsibility in promoting health, rehabilitation, and quality healthcare services.

Program Specific Outcomes (PSOs):

PSO1: Demonstrate competency in the assessment and physiotherapy management of individuals with musculoskeletal, neurological, cardiopulmonary, and other health conditions.

PSO2: Apply clinical reasoning and evidence-based principles in developing appropriate physiotherapy management strategies.

PSO3: Demonstrate effective communication, interdisciplinary collaboration, and patient education in physiotherapy and rehabilitation practice.

PSO4: Demonstrate professional competence, ethical responsibility, and commitment to lifelong learning and advancement of physiotherapy practice.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	2	2	2	2	3	3	2	2
CLO2	3	3	3	2	2	2	2	3	3	2	2
CLO3	3	3	3	2	2	3	3	3	3	3	3
CLO4	3	3	3	3	2	3	3	3	3	3	3
CLO5	3	3	3	3	3	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**SECTION A – CARDIOVASCULAR AND RESPIRATORY DISEASES****CTD 1.1. Brief Idea of Anatomy and Physiology of Cardio-Respiratory Systems**

- Overview of the anatomy and physiology of the cardiovascular system.
- Overview of the anatomy and physiology of the respiratory system.
- Functional integration of the cardiovascular and respiratory systems.

CTD 1.2. Cardiovascular System Disorders

Outline the aetiopathogenesis, investigations, diagnosis, differential diagnosis, and principles of management of cardiovascular system disorders.

1. Cardiac Failure

- Definition.
- Causes.
- Symptoms and signs.
- Brief management of cardiac failure.

2. Rheumatic Fever

- Definition.
- Brief description of aetiology.
- Clinical features.
- Complications.
- Treatment.

3. Congenital Heart Diseases

- Classification.
- Brief outline of:
 - Atrial Septal Defect (ASD).
 - Ventricular Septal Defect (VSD).
 - Patent Ductus Arteriosus (PDA).

- Tetralogy of Fallot.

- Associated complications.

4. Ischemic Heart Disease

- Aetiopathogenesis.
- Classification.
- Symptoms.
- Diagnosis.
- Medical treatment.
- Surgical treatment.

5. Hypertension

- Definition.
- Classification.
- Symptomatology.
- Complications.
- Treatment.

6. Infective Endocarditis

- Brief aetiopathogenesis.
- Clinical features.
- Diagnosis.
- Treatment.

7. Deep Vein Thrombosis and Pulmonary Embolism

- Brief description.
- Clinical significance.
- Principles of management.

8. Vascular Diseases

- Atherosclerosis.
- Buerger's disease.
- Phlebitis.
- Other vascular disorders.

CTD 1.3. Respiratory System and Chest Wall Disorders

Discuss respiratory diseases including diseases of the chest wall.

1. Chronic Bronchitis and Emphysema

- Definition.
- Clinical features.
- Investigations.
- Complications.
- Treatment.

2. Bronchial Asthma

- Definition.
- Aetiopathogenesis.
- Clinical features.
- Diagnosis.
- Treatment.

3. Pneumonia

- Definition.
- Classification.
- Clinical features.
- Complications.

- Treatment.
- 4. Tuberculosis**
 - Aetiopathogenesis.
 - Clinical features and clinical tests of pulmonary tuberculosis.
 - Diagnosis.
 - Complications.
 - Treatment.
- 5. Lung Abscess and Bronchiectasis**
 - Definition.
 - Clinical features.
 - Diagnosis.
 - Treatment.
- 6. Chest Wall Deformities**
 - Description of various chest wall deformities.
 - Effects of chest wall deformities.
 - Associated pulmonary disorders.
- 7. Occupational Lung Diseases**
 - Clinical features.
 - Diagnosis.
 - Treatment.
- 8. Respiratory Failure**
 - Classification.
 - Causes.
 - Treatment.

SECTION B – CARDIOTHORACIC SURGERY

CTD 1.4. Cardiothoracic Surgery

1. Introduction to Cardiothoracic Surgery

- Types of incisions.
- Pre-operative assessment.
- Post-operative assessment.
- Principles of management.
- Complications of cardiothoracic surgery.
- Management of complications.

2. Airway and Ventilatory Management

Describe the following procedures:

- Management of endotracheal tubes.
- Tracheal suctioning.
- Mechanical ventilation.
- Weaning the patient from a ventilator.
- Extubation.
- Post-extubation care.

3. Cardiopulmonary Resuscitation

Describe the principles of:

- Cardiopulmonary resuscitation.
- Cardiac massage.
- Artificial respiration.

- Defibrillation.
- Use of defibrillators.

4. Cardiac Surgery

Outline the indications, contraindications, site of incision, pre-operative management, post-operative management, and complications of the following procedures:

i. Valvotomy and Valve Replacement

- Indications.
- Contraindications.
- Surgical approach.
- Pre-operative and post-operative management.
- Complications.

ii. Open Heart Surgery and Cardiac Bypass Surgery

- Open heart surgery.
- Cardiac bypass surgery.
- Surgery of the pericardium.
- Heart transplantation.

iii. Pacemaker

- Indications.
- Basic principles.
- Perioperative considerations.
- Complications.

iv. Coronary and Balloon Angioplasty

- Coronary angioplasty.
- Balloon angioplasty.
- Indications and principles of management.

5. Vascular Surgery

- Outline of surgical procedures involving arteries and veins.
- Principles of perioperative management.

6. Thoracic Surgery

i. Thoracic Trauma

Outline the clinical features and management of:

- Fracture of ribs.
- Flail chest.
- Stove-in chest.
- Pneumothorax.
- Haemothorax.
- Lung contusion.
- Lung laceration.
- Injury to thoracic vessels.
- Injury to the bronchus.

ii. Thoracic Surgical Procedures

Outline the indications, contraindications, site of incision, pre-operative management, post-operative management, and complications of:

- Lobectomy.
- Pneumonectomy.
- Segmentectomy.

- Pleuro-pneumectomy.
- Thoracoplasty.
- Decortication.
- Tracheostomy.

iii. Carcinoma of Lung

- Outline the clinical features.
- Principles of management.

Recommended Textbooks / Book References

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

PHYSIOTHERAPY IN ADULT AND PAEDIATRIC CARDIOTHORACIC CONDITIONS AND SURGICAL CONDITIONS (PTCT)

Course Code	BPT-404	L	P	C	Total sessions
Course Title	Physiotherapy In Adult and Paediatric Cardiothoracic Conditions and Surgical Conditions (PTCT)	150	90	13	240
Pre-requisite	Basic knowledge of anatomy and physiology of the cardiovascular and respiratory systems, pathology, cardiothoracic diseases, exercise physiology, and basic physiotherapy assessment and treatment techniques.				
Co-requisites	NIL				

Course Objective:

1. To develop comprehensive knowledge and practical competency in the assessment and physiotherapy management of adult and paediatric patients with cardiopulmonary disorders.
2. To understand the physiological basis, indications, contraindications, precautions, and evidence pertaining to commonly used respiratory physiotherapy techniques.
3. To develop skills in cardiorespiratory evaluation, interpretation of investigations, functional assessment, identification of impairments, activity limitations, and participation restrictions.
4. To develop competency in planning, prioritising, and implementing physiotherapy interventions for respiratory and cardiac disorders and following cardiothoracic surgeries.
5. To understand the principles and application of pulmonary rehabilitation, cardiac rehabilitation, neonatal and paediatric cardiopulmonary physiotherapy, and critical care physiotherapy.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the principles of gaseous exchange and demonstrate competency in comprehensive cardiorespiratory assessment, interpretation of investigations, and identification of physiotherapy-related problems.

CLO2: Demonstrate and apply appropriate physiotherapy techniques for airway clearance, improvement of lung volumes, reduction of breathlessness, and administration of adjunctive respiratory therapies.

CLO3: Assess, prioritise, plan, and provide physiotherapy management for adult patients with acute and chronic respiratory disorders, pulmonary surgical conditions, and those undergoing pulmonary rehabilitation.

CLO4: Demonstrate competency in the assessment and physiotherapy management of neonatal and paediatric cardiopulmonary conditions, congenital cardiac disorders, respiratory disorders, and cardiothoracic surgical conditions.

CLO5: Assess, plan, and provide physiotherapy care for patients with cardiac disorders, cardiac surgical conditions, and patients undergoing cardiac rehabilitation.

CLO6: Demonstrate clinical reasoning and evidence-informed physiotherapy practice in critical care, including interpretation of ICU monitoring, investigations, lines and tubes, and prioritisation of physiotherapy problems.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in the assessment and management of physiotherapy conditions.

PLO2: Apply scientific principles and evidence-based knowledge in physiotherapy assessment and clinical decision-making.

PLO3: Demonstrate competence in planning and implementing appropriate physiotherapy interventions for individuals with various health conditions.

PLO4: Communicate effectively and collaborate with patients, caregivers, and members of the interdisciplinary healthcare team.

PLO5: Demonstrate lifelong learning, professional development, and the ability to utilize contemporary knowledge and technology in healthcare practice.

PLO6: Uphold ethical, legal, professional, and patient-safety standards in physiotherapy practice.

PLO7: Demonstrate leadership, clinical reasoning, and responsibility in promoting health, rehabilitation, and quality healthcare services.

Program Specific Outcomes (PSOs):

PSO1: Demonstrate competency in the assessment and physiotherapy management of individuals with musculoskeletal, neurological, cardiopulmonary, and other health conditions.

PSO2: Apply clinical reasoning and evidence-based principles in developing appropriate physiotherapy management strategies.

PSO3: Demonstrate effective communication, interdisciplinary collaboration, and patient education in physiotherapy and rehabilitation practice.

PSO4: Demonstrate professional competence, ethical responsibility, and commitment to lifelong learning and advancement of physiotherapy practice.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	3	2	2	2	2	3	3	2	2
CLO2	3	3	3	2	2	3	2	3	3	3	2
CLO3	3	3	3	3	2	3	3	3	3	3	3
CLO4	3	3	3	3	2	3	3	3	3	3	3
CLO5	3	3	3	3	3	3	3	3	3	3	3
CLO6	3	3	3	3	3	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION A – RESPIRATORY AND PAEDIATRIC CARDIOPULMONARY PHYSIOTHERAPY

Unit 1: Basics of Respiratory System

PTCT 1.1. Discuss the process of gaseous exchange.

PTCT 1.2. Explain the possible factors which affect gaseous exchange.

PTCT 1.3. Discuss the effect of impaired gaseous exchange on function.

Unit 2: Cardiorespiratory Evaluation and Assessment

PTCT 2.1. Demonstrate skills to interpret common investigations to identify problems that can be managed by physiotherapy.

PTCT 2.2. Discuss the principles of cardiorespiratory assessment pertaining to physiotherapy clinical decision-making.

PTCT 2.3. Demonstrate skills in reading medical records to formulate physiotherapy-related hypotheses.

PTCT 2.4. Demonstrate skills in conducting subjective assessment.

PTCT 2.5. Demonstrate skills in performing physical examination to identify problems, including:

1. Palpation.

2. Chest expansion measurements.
3. Percussion note.
4. Tactile and vocal fremitus.
5. Auscultation.
6. Six-minute walk test.
7. Blood investigations.
8. Arterial blood gas analysis (ABG).
9. Chest X-ray.
10. Pulmonary function tests (PFT).
11. Electrocardiogram (ECG).
12. Exercise testing report.

PTCT 2.6. Demonstrate skills in selecting and applying appropriate outcome measures used in cardiorespiratory care.

PTCT 2.7. Demonstrate skills in identifying impairments, activity limitations, and participation restrictions caused by cardiorespiratory disorders with appropriate rationale.

PTCT 2.8. Prioritise and formulate physiotherapy goals.

Unit 3: Physiotherapy Techniques in Cardiorespiratory Dysfunction

PTCT 3.1. Physiotherapy Techniques Used for Airway Secretions

1. Explain the physiological mechanism, indications, contraindications, precautions, and evidence pertaining to physiotherapy techniques used for airway secretions.
2. Demonstrate physiotherapy techniques used to clear airway secretions:
 - i. Positioning.
 - ii. Postural drainage.
 - iii. Chest wall manipulation.
 - iv. Forced expiratory techniques.
 - v. Active cycle of breathing techniques.
 - vi. Autogenic drainage.
 - vii. Positive expiratory pressure.
 - viii. Intermittent positive pressure breathing (IPPB).

PTCT 3.2. Physiotherapy Techniques Used for Improving Lung Volume

1. Explain the physiological mechanism, indications, contraindications, precautions, and evidence pertaining to physiotherapy techniques used for improving lung volume.
2. Demonstrate physiotherapy techniques used to improve lung volume:
 - i. Deep breathing exercises.
 - ii. Thoracic expansion exercises.
 - iii. Sustained maximal inspiration.
 - iv. IPPB.
 - v. Continuous positive airway pressure (CPAP).

PTCT 3.3. Physiotherapy Techniques Used for Reducing Breathlessness

1. Explain the physiological mechanism, indications, contraindications, precautions, and evidence pertaining to physiotherapy techniques used for reducing breathlessness.
2. Demonstrate physiotherapy techniques used to reduce breathlessness:
 - i. Relaxation positions.
 - ii. Breathing control techniques.
 - iii. Pacing techniques.

PTCT 3.4. Adjuncts Used in Respiratory Physiotherapy Care

1. Explain the physiological mechanism, indications, contraindications, precautions, and evidence pertaining to adjuncts used in respiratory physiotherapy care.
2. Demonstrate skills in selecting and administering:
 - i. Humidification therapy.
 - ii. Aerosol therapy.
 - iii. Oxygen therapy.

PTCT 3.5. Physiotherapy Management of Respiratory Disorders

Demonstrate skills in assessing and identifying impairments, activity limitations, and participation restrictions in clients with acute exacerbations and chronic respiratory disorders, including:

1. Asthma.
2. Chronic obstructive pulmonary disease (COPD).
3. Interstitial lung disease.
4. Bronchiectasis.
5. Pneumonia.
6. Pleural disorders.

PTCT 3.6. Prioritise physiotherapy-related problems based on assessment in providing respiratory care.

PTCT 3.7. Plan physiotherapy care with rationale for identified problems in respiratory care.

PTCT 3.8. Demonstrate skills in providing physiotherapy care for identified problems in clients with respiratory disorders.

PTCT 3.9. Pulmonary Surgeries

1. Demonstrate skills in assessing and identifying impairments, activity limitations, and participation restrictions in clients who have undergone pulmonary surgeries.
2. Demonstrate skills in providing physiotherapy care for identified problems in clients who have undergone:
 - i. Lung volume reduction surgery.
 - ii. Lung transplantation.
 - iii. Pleural surgeries.

PTCT 3.10. Pulmonary Rehabilitation

1. Define pulmonary rehabilitation.
2. Discuss the need for pulmonary rehabilitation.
3. Explain the components of pulmonary rehabilitation.
4. Demonstrate skills in performing physiotherapy assessment in clients referred for pulmonary rehabilitation, including:
 - i. Subjective assessment.
 - ii. Physical examination.
 - iii. Exercise testing.
 - iv. Respiratory muscle testing.
5. Prescribe exercise based on assessment for clients undergoing a pulmonary rehabilitation programme.

Unit 4: Neonatal and Paediatric Cardiopulmonary Physiotherapy Assessment and Care

PTCT 4.1. Discuss anatomical and physiological differences between the adult and paediatric lung.

PTCT 4.2. Neonatal and paediatric physiotherapy:

- Chest physiotherapy for children.
- The neonatal unit.

- Modifications of chest physiotherapy for specific neonatal disorders.
- PTCT 4.3.** Postural drainage for the paediatric population and modifications at home.
- PTCT 4.4.** Therapeutic tools, equipment, aids, and appliances in paediatric physiotherapy rehabilitation.
- PTCT 4.5.** Intensive care unit and physiotherapy:
- Equipment.
 - Instruments.
 - Common physiotherapy procedures in neonatal and paediatric intensive care.

PTCT 4.6. Cardiothoracic Surgeries

Thoracotomy:

- Definition.
- Types of incisions.
- Site of incision.
- Muscles cut.
- Complications.

Lung surgeries:

- Pneumonectomy.
- Lobectomy.
- Segmentectomy.

Discuss:

- Indications.
- Physiological changes.
- Complications.

Other procedures:

- Thoracoplasty.
- Pleurectomy.
- Pleurodesis.
- Decortication of the lung.
- Overview of cardiac surgeries in paediatrics.

PTCT 4.7. Disorders of the Cardiovascular System

Discuss the definition, clinical features, diagnosis, and choice of management for:

Congenital heart diseases:

- Acyanotic congenital heart diseases.
- Cyanotic congenital heart diseases.
- Patent ductus arteriosus.
- Coarctation of aorta.
- Atrial septal defect.
- Ventricular septal defect.
- Tetralogy of Fallot.
- Transposition of great vessels.

PTCT 4.8. Physiotherapy assessment and management in paediatric cardiac conditions.

PTCT 4.9. Physiotherapy assessment and management in paediatric respiratory conditions:

- Childhood asthma.
- Respiratory distress syndrome.
- Hyaline membrane disease / bronchopulmonary dysplasia.
- Meconium aspiration syndrome.
- Pneumonia.
- Cystic fibrosis.

- Bronchiectasis.
- Congenital diaphragmatic hernia.

SECTION B – CARDIAC AND CRITICAL CARE PHYSIOTHERAPY

Unit 5: Physiotherapy Techniques in Cardiac Disorders and Surgeries

PTCT 5.1. Cardiac Surgeries

1. Demonstrate skills in assessing and identifying impairments, activity limitations, and participation restrictions in clients who have undergone cardiac surgeries.
2. Demonstrate skills in providing physiotherapy care for identified problems in clients who have undergone:
 - i. Coronary artery bypass grafting (CABG).
 - ii. Valve repair and replacement surgeries.
 - iii. Cardiac pacemaker insertion.
 - iv. Surgeries to correct congenital heart disease.

PTCT 5.2. Cardiac Disorders

1. Demonstrate skills in assessing and identifying impairments, activity limitations, and participation restrictions in clients with cardiac disorders.
2. Demonstrate skills in providing physiotherapy care for identified problems in clients with:
 - i. Ischemic heart disease (IHD).
 - ii. Cardiac failure.
 - iii. Rheumatic heart disease.

PTCT 5.3. Prioritise physiotherapy-related problems based on assessment in providing cardiac care.

PTCT 5.4. Plan physiotherapy care with rationale for identified problems in clients with cardiac disorders.

PTCT 5.5. Cardiac Rehabilitation

1. Define cardiac rehabilitation.
2. Discuss the need for cardiac rehabilitation.
3. Appreciate the roles of other healthcare providers in cardiac rehabilitation.
4. Demonstrate skills in performing physiotherapy assessment in clients referred for cardiac rehabilitation:
 - i. Subjective assessment.
 - ii. Physical examination.
 - iii. Exercise testing.
5. Prescribe exercise based on assessment for clients undergoing a cardiac rehabilitation programme.

Unit 6: Critical Care Physiotherapy

PTCT 6.1. Identify the common lines and tubes used in critical care units.

PTCT 6.2. Interpret the ICU monitor and incorporate the findings in clinical decision-making.

PTCT 6.3. Analyse and interpret investigation procedures required to make a physiotherapy diagnosis.

PTCT 6.4. Identify and prioritise problems that can be addressed by physiotherapists.

PTCT 6.5. Discuss the indications, precautions, advantages, and disadvantages of commonly used physiotherapy techniques based on available evidence.

PTCT 6.6. Design and discuss an evidence-informed physiotherapy protocol.

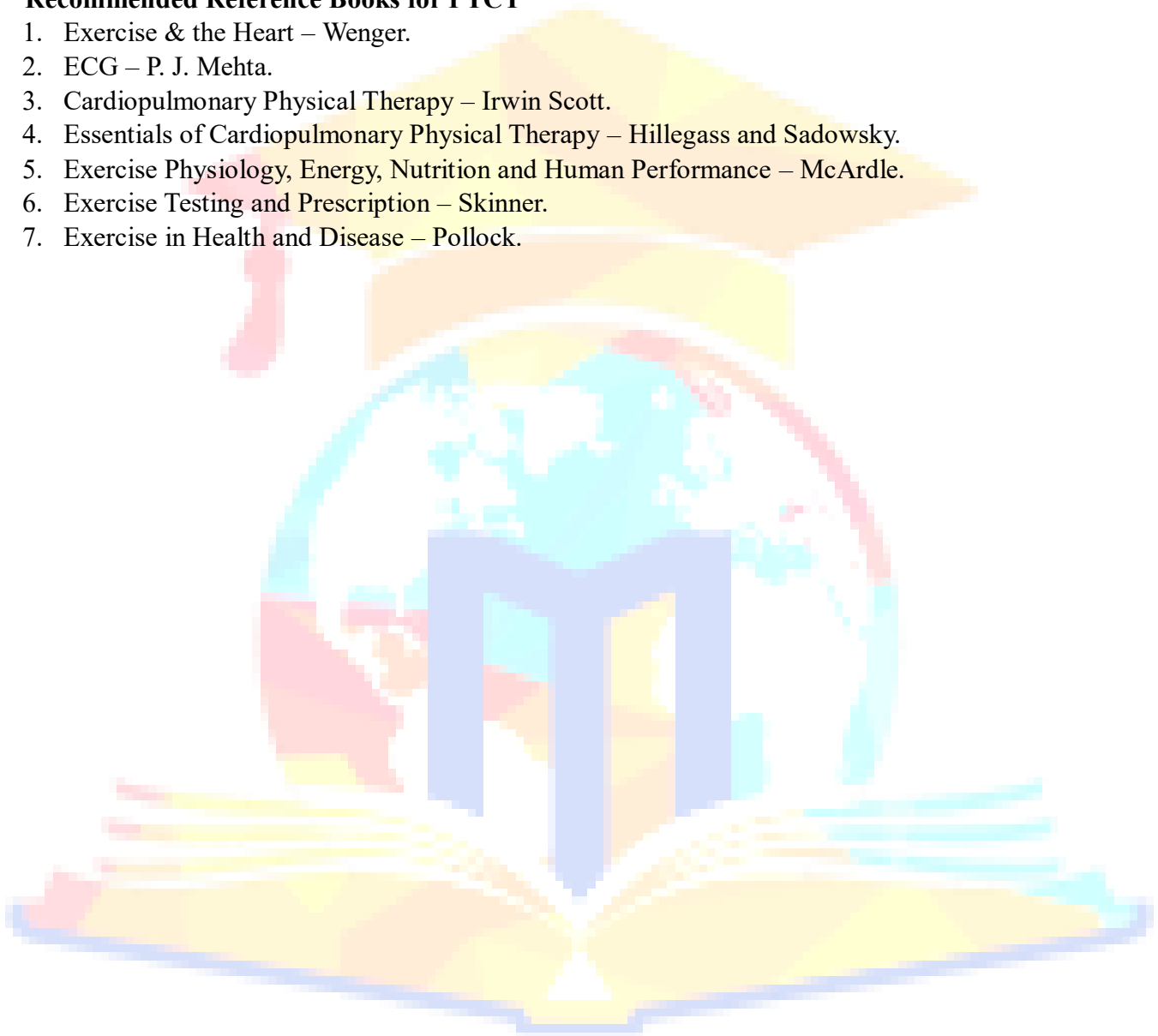
Recommended Textbooks for PTCT

1. Cash's Textbook for Physiotherapists in Chest, Heart & Vascular Diseases.

2. Cash's Textbook in General Medicine and Surgical Conditions for Physiotherapists.
3. Chest Physical Therapy and Pulmonary Rehabilitation – Donna Frown Filter.
4. Brompton's Hospital Guide.
5. Physiotherapy in Respiratory and Cardiac Problems – Pryor and Prasad.
6. Physiotherapy in Cardiovascular Rehabilitation – Webber.
7. Chest Physiotherapy in Intensive Care – Colin Mackenzie.
8. Mechanical Ventilation – Ashfaq Hasan.
9. Management of Mechanical Ventilation – Pierce.

Recommended Reference Books for PTCT

1. Exercise & the Heart – Wenger.
2. ECG – P. J. Mehta.
3. Cardiopulmonary Physical Therapy – Irwin Scott.
4. Essentials of Cardiopulmonary Physical Therapy – Hillegass and Sadowsky.
5. Exercise Physiology, Energy, Nutrition and Human Performance – McArdle.
6. Exercise Testing and Prescription – Skinner.
7. Exercise in Health and Disease – Pollock.



SPORTS PHYSIOTHERAPY AND EXERCISE PRESCRIPTION (PTS)

Course Code	BPT-405	L	P	C	Total sessions
Course Title	Sports Physiotherapy and Exercise Prescription (PTS)	150	90	13	240
Pre-requisite	Basic knowledge of human anatomy, physiology, biomechanics, kinesiology, exercise therapy, pathology, and principles of physiotherapy assessment and management.				
Co-requisites	NIL				

Course Objective:

1. To develop knowledge regarding the role of physiotherapy in sports, health promotion, injury prevention, acute injury management, and rehabilitation.
2. To understand the mechanisms, risk factors, stages of healing, prevention, assessment, and management of common sports injuries.
3. To develop competency in the assessment of physical fitness and various components of fitness relevant to health and sports performance.
4. To acquire knowledge and skills in exercise testing, exercise prescription, and planning individualized exercise programmes for healthy and special populations.
5. To develop practical competency in pre-participation screening, acute sports injury management, taping, bandaging, fitness testing, and sports rehabilitation.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the importance of sports in health promotion, the role of the physiotherapist in sports, mechanisms and risk factors of sports injuries, and principles of injury prevention.

CLO2: Assess, identify, and plan appropriate management and rehabilitation strategies for common acute, overuse, and soft tissue sports injuries.

CLO3: Demonstrate competency in acute sports injury management, taping, bandaging, safe handling and transportation of injured athletes, and emergency response procedures.

CLO4: Assess various components of physical fitness and interpret findings for health promotion, sports participation, and exercise programme planning.

CLO5: Design and prescribe safe, evidence-informed, and individualized exercise programmes for healthy populations, special populations, athletes, and individuals with chronic health conditions.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy assessment, diagnosis, treatment, rehabilitation, and health promotion.

PLO2: Apply scientific principles, clinical reasoning, and evidence-based practice in physiotherapy decision-making.

PLO3: Assess impairments, activity limitations, and participation restrictions and formulate appropriate physiotherapy management programmes.

PLO4: Demonstrate effective communication, teamwork, leadership, and interdisciplinary collaboration in healthcare and rehabilitation settings.

PLO5: Utilize appropriate assessment tools, technology, exercise science principles, and therapeutic interventions for improving health and functional outcomes.

PLO6: Uphold ethical, legal, professional, and safety standards in physiotherapy practice.

PLO7: Promote health, fitness, wellness, injury prevention, rehabilitation, and lifelong learning in individuals and communities.

Program Specific Outcomes (PSOs):

PSO1: Assess and manage musculoskeletal and sports-related conditions using appropriate physiotherapy examination, clinical reasoning, and rehabilitation principles.

PSO2: Design and implement individualized exercise, fitness, injury prevention, and rehabilitation programmes based on functional assessment and patient or athlete needs.

PSO3: Demonstrate competency in the application of sports physiotherapy techniques, emergency management, taping, bandaging, and return-to-activity planning.

PSO4: Promote health, fitness, wellness, safe physical activity, and injury prevention across different populations and sporting environments.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	2	2	3	3	3	2	2	3
CLO2	3	3	3	2	3	3	3	3	3	3	3
CLO3	3	2	3	3	3	3	2	3	2	3	2
CLO4	3	3	3	2	3	2	3	2	3	2	3
CLO5	3	3	3	3	3	3	3	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**SECTION A****Unit 1: Sports Physiotherapy****PTS 1.1. Introduction to Sports**

- Importance of sports in health promotion.
- Types of sports:
 - Contact sports.
 - Non-contact sports.
 - Team sports.
 - Individual sports.
- Social and economic importance of sports.
- Role of the Physiotherapist in sports.

PTS 1.2. Sports Injuries

- Types of sports injuries:
 - Acute injuries.
 - Overuse injuries.
 - Soft tissue injuries.
- Stages of healing.
- Principles of treatment for soft tissue injuries during:
 - Acute stage.
 - Sub-acute stage.
 - Chronic stage.

PTS 1.3. Safe Participation

- Causes of sports injuries.
- Risk factors for sports injuries.

- Principles of prevention of injuries in sports and physical activities.
- Levels of prevention.
- Methods of prevention:
 - Active measures.
 - Passive measures.
 - Protective equipment.

PTS 1.4. Management of Common Sports Injuries

Management of:

- Sprain.
- Strain.
- Contusion.
- Laceration.
- Lateral ligament sprain of ankle.
- Rotator cuff injuries.
- Collateral ligament injuries of knee.
- Cruciate ligament injuries of knee.
- Meniscal injuries of knee.
- Supraspinatus tendinitis.
- Bicipital tendinitis.
- Prepatellar bursitis.
- Subacromial bursitis.
- Tennis elbow.
- Golfer's elbow.
- Hamstring strains.
- Quadriceps contusion.
- Tendon Achilles rupture.
- De Quervain's tenosynovitis.
- Trigger finger.
- Mallet finger.
- Plantar fasciitis.
- Wrist sprains.

PTS 1.5. Techniques of Sports Physiotherapy

- Taping.
- Bandaging.
- Moving the injured participant.
- Stretcher use.
- Cardiopulmonary Resuscitation.
- Causes of collapse in athletes.
- Assessment and treatment of the collapsed athlete.
- Recovery methods.

PTS 1.6. Rehabilitation in Sports

- Principles of sports rehabilitation.
- Progression of rehabilitation.
- Functional recovery.
- Return to sports participation.

SECTION B

Unit 2: Physical Fitness and Exercise Prescription**PTS 2.1. Physical Fitness**

- Definition of physical fitness.
- Components of physical fitness:
 - Strength.
 - Endurance.
 - Flexibility.
 - Power.
 - Aerobic capacity.
 - Anaerobic capacity.
 - Agility.
 - Coordination.
 - Body composition.

PTS 2.2. Assessment of Physical Fitness

- Physical Activity Readiness Questionnaire.
- Fitness screening for mental and physical fitness.
- Tests for individual components of fitness.
- Body Mass Index.

PTS 2.3. Health, Fitness and Wellness Promotion

- Principles and methods of health promotion.
- Cardiopulmonary endurance training:
 - Continuous training.
 - Intermittent training.
 - Fartlek training.
- Anaerobic capacity.
- Strength training.
- Flexibility training.
- Agility training.
- Coordination training.
- Health education.
- Healthy nutrition.
- Balanced diet.
- Relaxation.

PTS 2.4. Health, Fitness and Wellness Issues of Specific Population Groups

Exercise and fitness considerations for:

- Childhood and adolescence.
- Pregnancy.
- Older adults.
- Individuals with hypertension.
- Individuals with diabetes.

PTS 2.5. Special Ability in Sports

- Paralympic sports.
- Types of Paralympic sports.
- Classification of athletes.

- Specific problems and considerations.

PTS 2.6. Guidelines for Exercise Testing and Prescription

- Benefits associated with physical activity.
- Risks associated with physical activity.
- Principles of safe exercise testing and prescription.

PTS 2.7. Pre-participation Health Screening

- Purpose and importance of pre-participation screening.
- Identification of risk factors.
- Determining fitness and safety for sports participation.

PTS 2.8. General Principles of Exercise Prescription

- Principles of individualized exercise prescription.
- Selection and progression of exercise.
- Monitoring exercise response.
- Safety considerations.

PTS 2.9. Exercise Prescription for Healthy Populations with Special Considerations

- Exercise planning for healthy individuals.
- Modification of exercise programmes based on age, fitness level, and individual requirements.
- Special considerations during exercise prescription.

PTS 2.10. Exercise Prescription for Populations with Other Chronic Diseases and Health Conditions

- Exercise prescription for individuals with chronic diseases and health conditions.
- Exercise considerations for overweight and obesity.
- Modification and monitoring of exercise programmes.

PRACTICAL: B.P.T. PTS 405 (P)

Students should be able to independently execute the following:

PTS (P) 3.1. Pre-participation Examination

- Conduct pre-participation examination.
- Identify intrinsic and extrinsic risk factors.
- Assess readiness and safety for participation.

PTS (P) 3.2. Acute Management of Sports Injuries

- Assess acute sports injuries.
- Apply appropriate immediate management principles.
- Demonstrate safe handling and emergency management.

PTS (P) 3.3. Testing of Various Components of Fitness

Assessment of:

- Strength.
- Endurance.
- Flexibility.
- Power.
- Aerobic capacity.
- Anaerobic capacity.
- Agility.
- Coordination.

- Body composition.

PTS (P) 3.4. Application of Bandaging and Taping

- Apply bandaging for common sports injuries.
- Apply appropriate taping techniques for common sports injuries.

PTS (P) 3.5. Exercise Programme Planning

- Assess impairments and activity limitations.
- Plan an individualized exercise programme.
- Select appropriate exercises.
- Progress and modify the programme according to functional goals.

Recommended Text Books

1. Brukner and Khan: Clinical Sports Medicine, McGraw Hill.
2. Zulunga et al.: Sports Physiotherapy, W.B. Saunders.
3. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.
4. Norris: Sports Injuries – Diagnosis and Management for Physiotherapists, Heinmann.

Recommended Reference Books

1. Morris B. Mellion: Office Sports Medicine, Hanley & Belfus.
2. Bartlett R.: Introduction to Sports Biomechanics: Analysing Human Movement Patterns, Routledge; 2007.
3. William D. McArdle, Frank I. Katch, Victor L. Katch: Exercise Physiology, Energy, Nutrition and Human Performance; Astrand, P.-O. and Rodahl, K.: Textbook of Work Physiology: Physiological Basis of Exercise.
4. Fu and Stone: Sports Injuries: Mechanism, Prevention and Treatment, Williams and Wilkins.
5. Kulund: The Injured Athlete, Lippincott.

PHYSIOTHERAPY ETHICS, MEDICO-LEGAL ASPECTS, MANAGEMENT AND ADMINISTRATION (PTLM)

Course Code	BPT-406	L	P	C	Total sessions
Course Title	Physiotherapy Ethics, Medico-Legal Aspects, Management and Administration (PTLM)	90	-	6	90
Pre-requisite	Basic knowledge of physiotherapy practice, healthcare delivery systems, professional responsibilities, and communication skills.				
Co-requisites	NIL				

Course Objective:

1. To develop an understanding of morality, ethics, legality, professional values, and ethical principles applicable to physiotherapy practice.
2. To understand medico-legal responsibilities, patient rights, professional conduct, informed consent, confidentiality, negligence, malpractice, and accountability in physiotherapy practice.
3. To develop knowledge of ethical principles governing physiotherapy research, education, and patient care delivery.
4. To understand the laws, regulations, professional responsibilities, and consultation processes relevant to physiotherapy practice.
5. To develop knowledge and skills in management, administration, leadership, planning, organization, staffing, finance, marketing, quality assurance, and establishment of physiotherapy services.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the concepts of morality, ethics, legality, professionalism, professional values, and ethical principles applicable to physiotherapy practice.

CLO2: Apply ethical and medico-legal principles related to informed consent, confidentiality, patient rights, professional accountability, negligence, malpractice, professional relationships, and patient care.

CLO3: Demonstrate knowledge of professional ethics in research, education, and healthcare delivery, including relevant ethical guidelines and codes of professional conduct.

CLO4: Explain the laws, regulations, direct access responsibilities, consultation processes, and professional development relevant to physiotherapy practice.

CLO5: Apply principles of management and administration in planning, organizing, staffing, directing, controlling, financing, marketing, quality assurance, and establishment of physiotherapy services.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy assessment, diagnosis, treatment, rehabilitation, and health promotion.

PLO2: Apply scientific principles, clinical reasoning, and evidence-based practice in physiotherapy decision-making.

PLO3: Assess impairments, activity limitations, and participation restrictions and formulate appropriate physiotherapy management programmes.

PLO4: Demonstrate effective communication, teamwork, leadership, and interdisciplinary collaboration in healthcare and rehabilitation settings.

PLO5: Utilize appropriate assessment tools, technology, therapeutic interventions, and management strategies for improving health and functional outcomes.

PLO6: Uphold ethical, legal, professional, and safety standards in physiotherapy practice.

PLO7: Promote health, quality improvement, professional development, innovation, and lifelong learning in physiotherapy practice.

Program Specific Outcomes (PSOs):

PSO1: Demonstrate ethical, legal, professional, and accountable physiotherapy practice while ensuring patient rights, safety, confidentiality, and quality of care.

PSO2: Apply principles of leadership, management, administration, and communication in the organization and delivery of physiotherapy services.

PSO3: Demonstrate competency in professional decision-making, consultation, teamwork, and interdisciplinary collaboration in healthcare settings.

PSO4: Develop and manage physiotherapy services and professional practice with emphasis on quality assurance, entrepreneurship, health promotion, and social responsibility.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	2	2	2	2	1	3	2	3	2	2	2
CLO2	3	3	3	3	2	3	2	3	2	3	2
CLO3	2	3	2	2	2	3	3	3	2	3	2
CLO4	2	2	2	3	2	3	3	3	2	3	2
CLO5	2	2	2	3	3	3	3	2	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content**SECTION A****Unit 1: Physiotherapy Ethics and Medico-Legal Aspects****PTLM 1.1. Concept of Morality, Ethics and Legality**

- Concept of morality.
- Concept of ethics.
- Concept of legality.
- Personal values.
- Ethical values.
- Moral values.

PTLM 1.2. Ethical Issues in Physiotherapy Practice

- Professionalism.
- Informed consent.
- Confidentiality.
- Sexual and physical abuse.
- Social characteristics and personal relationships.
- Professional issues.
- Client interest and satisfaction.
- Confidence and communication.
- Malpractice.
- Negligence.
- Rights of patients.
- Liability.
- Professional obligations.

PTLM 1.3. Professional Ethics

Professional ethics related to:

- Research.
- Education.
- Patient care delivery.

PTLM 1.4. Professionalism and Professional Values

Professional values:

- Integrity.
- Objectivity.
- Professional competence.
- Due care.
- Confidentiality.

Core values:

- Accountability.
- Altruism.
- Compassion and caring.
- Excellence.
- Integrity.
- Professional duties.
- Social responsibility.

Attitude and behaviour:

- Professional behaviour.
- Professional accountability.
- Professional responsibility.
- Professional misconduct.

PTLM 1.5. Code of Professional Conduct

- Code of professional conduct.
- Differences between professions.
- Importance of team efforts.
- Relationship with patients.
- Relationship with healthcare institutions.
- Relationship with colleagues and peers.
- Relationship with medical and other professionals.
- Referral relationships.

PTLM 1.6. Ethical Guidelines and Declarations

- Salient features of the Helsinki Declaration.
- ICMR Code of Ethics for Research Involving Human Subjects.
- Ethical principles of WCPT.

Unit 2: Laws, Professional Practice and Development of Physiotherapy

PTLM 2.1. Laws Governing Physiotherapy Practice

- AHCPA.
- Consumer protection law.
- People with Disability Act.
- Professional indemnity insurance policy.

PTLM 2.2. Direct Access and Consultation

- Meaning of direct access.
- Responsibilities associated with direct access.
- The consulting process.
- Skills of a good consultant.
- Trust in the consultant-client relationship.
- Ethical issues in consultation.
- Legal issues in consultation.

PTLM 2.3. Development of Physiotherapy Profession

- Historical and professional development of physiotherapy.
- Development of professional roles and responsibilities.
- Growth of physiotherapy as an independent healthcare profession.

SECTION B

Unit 3: Principles of Management and Administration

PTLM 3.1. Introduction to Management and Administration

- Meaning of management.
- Definition of management.
- Scope of management.
- Principles of management.
- Elements of management.
- Relevance of management to physiotherapy practice.

PTLM 3.2. Planning

- Definition of planning.
- Nature of planning.
- Principles of planning.
- Advantages of planning.
- Disadvantages of planning.

Components of planning:

- Objectives.
- Policy.
- Procedure.
- Rules.
- Methods.
- Projects.
- Budget.
- Strategy.
- Types of plans.
- Process of planning.
- Decision-making.

PTLM 3.3. Organizing

- Definition of organizing.
- Steps in organizing.
- Types of organization.
- Organizational chart.
- Hierarchy.
- Authority.

- Power.
- Responsibility.
- Accountability.
- Delegation of authority.
- Centralization.
- Decentralization.

PTLM 3.4. Staffing

- Definition of staffing.
- Functions of staffing.

Manpower planning:

- Planning according to organizational structure.
- Planning according to organizational needs.

Other staffing functions:

- Recruitment.
- Training and development.
- Appraisal.
- Remuneration.

PTLM 3.5. Controlling and Monitoring

- Controlling and monitoring.
- Types of control.
- Steps in the control process.
- Methods of control.

Management and quality systems:

- Management Information System.
- Quality Management System (QMS).
- Quality Assurance (QA).
- Quality Control (QC).
- Inventory management.
- Store management.
- Record keeping.

Unit 4: Leadership, Finance, Marketing and Physiotherapy Service Administration**PTLM 4.1. Directing**

- Definition of directing.
- Nature of directing.
- Significance of directing.
- Principles of directing.

Elements of directing:

- Supervision.
- Communication.
- Motivation.
- Leadership.

PTLM 4.2. Finance

- Meaning of finance.
- Nature and scope of finance.
- Financial goals.

Finance functions:

- Investment decisions.
- Dividend decisions.
- Financial decisions.
- Budgeting.

PTLM 4.3. Marketing

- Meaning of marketing.
- Concept of marketing.
- Importance of marketing.

Elements of marketing:

- Product.
- Price.
- Promotion.
- Physical distribution.

Other aspects:

- Branding.
- Pricing.
- Advertising.
- Publicity.
- Social marketing.
- Advocacy.
- Sensitization.

PTLM 4.4. Quality Assurance

- Establishment of standards.
- Audit.
- Financial audit.
- Clinical audit.
- Total Quality Management.

PTLM 4.5. Establishment of Physiotherapy Services and Entrepreneurship

- Setting up a physiotherapy service unit.
- Organization of a physiotherapy department.

Entrepreneurship in Physiotherapy Practice:

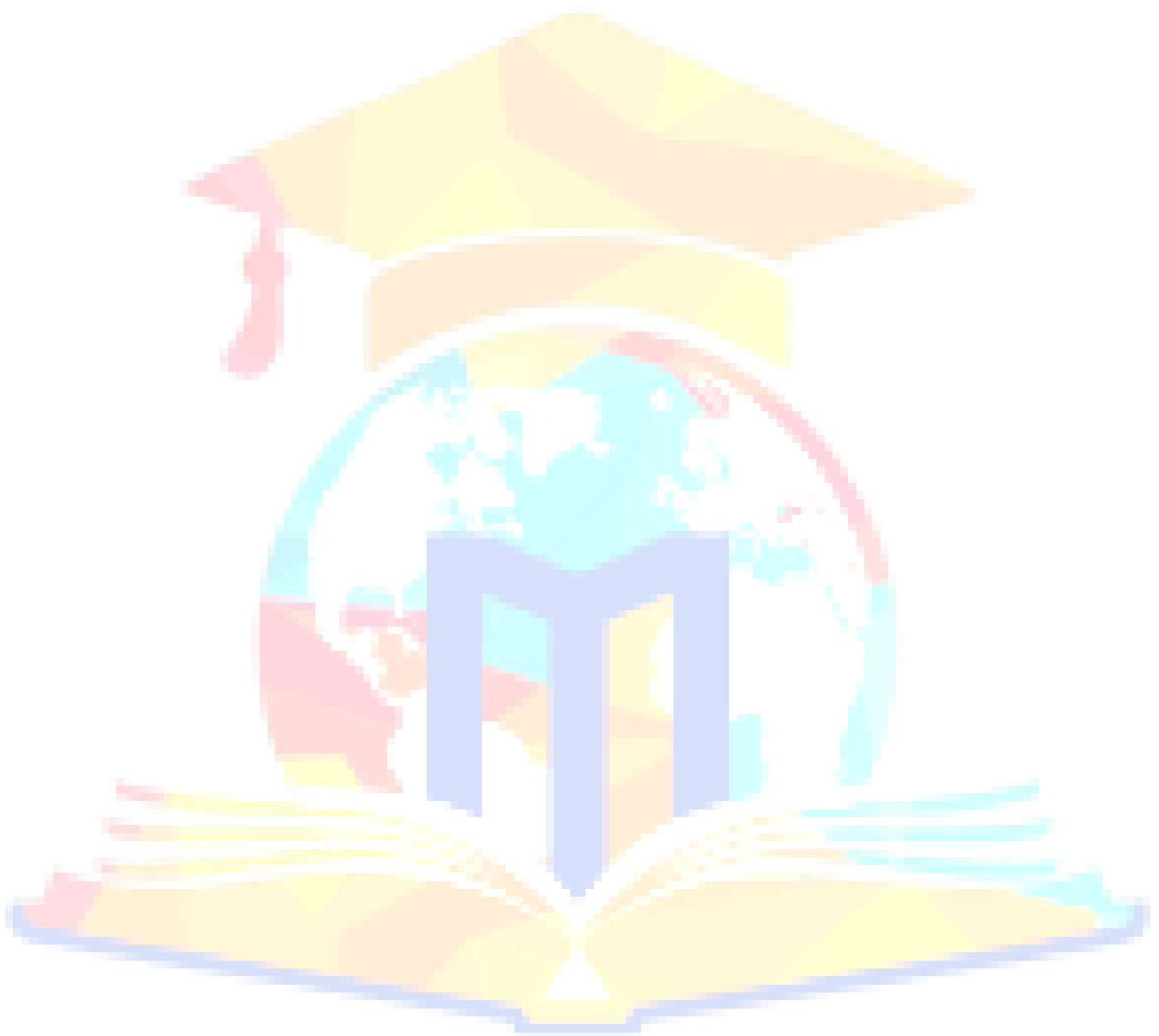
- Need for entrepreneurship.
- Advantages.
- Opportunities.
- Challenges.
- Barriers.

Recommended Text Books

1. Francis, C. M. Medical Ethics. Jaypee, New Delhi.
2. Raja, K. and Davis, F. Ethical Issues: Perspectives for the Physiotherapists. Jaypee Brothers, New Delhi.
3. Percival, T. (2014). Medical Ethics. Cambridge University Press.
4. Dunn, M., & Hope, T. (2018). Medical Ethics: A Very Short Introduction. Oxford University Press.
5. Sakharkar, B. M. Principles of Hospital Administration and Planning. Jaypee Brothers, New Delhi.

Recommended Reference Books

1. Hébert, P. C., & Rosen, W. (2009). Doing Right: A Practical Guide to Ethics for Medical Trainees and Physicians. Oxford University Press.
2. American Medical Association & New York Academy of Medicine. (1848). Code of Medical Ethics. H. Ludwig & Company.
3. Blackburn, S. (2003). Ethics: A Very Short Introduction. Oxford University Press.
4. Joydeep Das Gupta. Hospital Administration and Management: A Comprehensive Guide. Jaypee Brothers.



COMMUNITY PHYSIOTHERAPY AND REHABILITATION (CPTR)

Course Code	BPT-407	L	P	C	Total sessions
Course Title	Community Physiotherapy and Rehabilitation (CPTR)	90	30	7	120
Pre-requisite	Basic knowledge of physiotherapy assessment and management, human anatomy and physiology, pathology, orthopaedics, neurology, cardiopulmonary sciences, and rehabilitation principles.				
Co-requisites	NIL				

Course Objective:

1. To develop an understanding of community-based rehabilitation and the role of physiotherapy in disability prevention, rehabilitation, and health promotion at the community level.
2. To acquire knowledge of disability concepts, rehabilitation models, healthcare delivery systems, and national and international organizations involved in community rehabilitation.
3. To develop competency in assessing disability and planning appropriate physiotherapy interventions for individuals and communities in rural and urban settings.
4. To understand the principles and application of orthotics, prosthetics, assistive devices, accessibility modifications, and low-cost rehabilitation aids.
5. To develop knowledge and skills related to health education, vocational rehabilitation, occupational health, ergonomics, and social rehabilitation of persons with disabilities.
6. To enable students to apply physiotherapy skills through community visits, disability screening, rehabilitation camps, community education, and community-based rehabilitation programmes.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Explain the concepts, principles, models, and organization of rehabilitation and community-based rehabilitation, including the role of physiotherapy and rehabilitation team members.

CLO2: Assess disability, impairment, activity limitation, participation restriction, and community rehabilitation needs using appropriate functional and disability evaluation principles.

CLO3: Plan and implement community-based physiotherapy interventions for prevention, treatment, restoration of function, and rehabilitation of individuals with musculoskeletal, neurological, cardiothoracic, paediatric, geriatric, and other disabling conditions.

CLO4: Demonstrate knowledge and application of orthotics, prosthetics, assistive devices, low-cost rehabilitation aids, environmental modifications, and accessibility strategies for persons with disabilities.

CLO5: Apply principles of health education, vocational and social rehabilitation, occupational health, ergonomics, disability prevention, and community awareness programmes.

CLO6: Demonstrate practical competency in community disability screening, physiotherapy assessment and prescription, assistive device prescription, community education, and rehabilitation programme planning through field-based learning.

Program Learning Outcomes (PLOs):

PLO1: Demonstrate comprehensive knowledge and clinical competence in physiotherapy assessment, diagnosis, and management across various areas of physiotherapy practice.

PLO2: Apply evidence-based clinical reasoning and problem-solving skills for the assessment and management of individuals with health conditions, impairments, activity limitations, and participation restrictions.

PLO3: Demonstrate competency in planning and implementing safe, effective, and individualized physiotherapy interventions across the lifespan.

PLO4: Communicate effectively and collaborate with patients, families, communities, healthcare professionals, and interdisciplinary rehabilitation teams.

PLO5: Demonstrate leadership, health promotion, preventive care, community engagement, and advocacy for improving population health and rehabilitation outcomes.

PLO6: Uphold ethical, legal, professional, and social responsibilities in physiotherapy practice.

PLO7: Engage in lifelong learning, innovation, research, quality improvement, and professional development in physiotherapy.

Program Specific Outcomes (PSOs):

PSO1: Apply physiotherapy knowledge and skills for assessment, prevention, treatment, and rehabilitation of individuals with musculoskeletal, neurological, cardiopulmonary, paediatric, geriatric, and community health conditions.

PSO2: Plan and deliver patient-centred and community-based rehabilitation programmes addressing functional independence, participation, accessibility, and quality of life.

PSO3: Demonstrate competency in the prescription and application of assistive devices, orthotics, prosthetics, environmental modifications, and appropriate rehabilitation technologies.

PSO4: Promote health, prevent disability, and contribute to inclusive community rehabilitation through interdisciplinary collaboration, education, advocacy, and professional practice.

Mapping:

CLO / PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PSO1	PSO2	PSO3	PSO4
CLO1	3	3	2	3	3	2	2	3	3	2	3
CLO2	3	3	3	2	3	2	2	3	3	2	3
CLO3	3	3	3	3	3	2	2	3	3	2	3
CLO4	3	3	3	2	3	2	3	3	3	3	3
CLO5	2	3	2	3	3	3	2	2	3	2	3
CLO6	3	3	3	3	3	3	2	3	3	3	3

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Course Content

SECTION A

Unit 1: Community-Based Rehabilitation and Community Physiotherapy

CPTR 1.1. National District Level Community Program: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker.

CPTR 1.2. Role of Physiotherapy in CBR: Screening for disabilities, prescribing exercise program, prescribing and devising low-cost locally available assistive aids, modifications for physical and architectural barriers for persons with disabilities, disability prevention, strategies to improve ADL, and rehabilitation programmes for various neuro-musculoskeletal and cardiothoracic disabilities.

CPTR 1.3. Assessment of disability in rural and urban setups. Healthcare delivery system and preventive measures with specific reference to disabling conditions. Community education programme.

CPTR 1.4. Application of Physiotherapy skills at community level with special reference to the needs at the rural level.

CPTR 1.5. Role of voluntary organizations in CBR: Charitable Organizations, Voluntary health agencies – National level and International NGOs, Multilateral and Bilateral agencies.

International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World Bank, USAID, SIDA, DANIDA, Rockefeller Foundation, Ford Foundation, CARE, RED CROSS.

Unit 2: Rehabilitation, Disability and Community Health

CPTR 2.1. Introduction to Rehabilitation and History.

CPTR 2.2. Epidemiology of disability: Impairment, disability, phases of disability process, etc.

CPTR 2.3. Principles of Rehabilitation and concept of team approach with roles of each individual participant.

CPTR 2.4. Organization of Rehabilitation unit.

CPTR 2.5. Disability prevention, evaluation, and principles of Rehabilitation Management.

CPTR 2.6. Role of Physiotherapy in Rehabilitation: Preventive, treatment, and restoration.

CPTR 2.7. Brief outline of Communication disorder and its implications on the Rehabilitation process.

CPTR 2.8. Brief outline of psychosocial and vocational aspects of Rehabilitation.

CPTR 2.9. Introduction to Occupational Therapy.

CPTR 2.10. Activities of Daily Living, functional assessment, and training for functional independence.

CPTR 2.11. Brief outline of basic community medicine with special reference to community-based Rehabilitation, infrastructure, and role of CBR.

CPTR 2.12. Disability and Rehabilitation: Concept and definition, models of disability, International Classification of Functioning, definition and concept of impairment, handicap and disability, activity limitation, participation restriction, environmental factors, and contextual factors.

Types and conceptual framework of rehabilitation, roles of rehabilitation team members, definitions and various models of rehabilitation, and role of family members in the rehabilitation of a person with physical disability.

PWD Act 1995 and Rights of Persons with Disabilities Act 2016, National Trust Act.

CPTR 2.13. Introduction to Community Based Rehabilitation: Definition, historical review, concept of CBR, need for CBR, difference between institution-based and community-based rehabilitation, objectives, scope, members of CBR team, models of CBR, extension services and mobile units, introduction, need, and camp approach.

CPTR 2.14. Disability Evaluation: Introduction, what, why, and how to evaluate; quantitative versus qualitative data; uses of evaluation findings; Government of India guidelines.

CPTR 2.15. Principles of Orthotics: Types, indications, contraindications, assessment, check-out, uses, and fitting – region wise.

1. Orthotics for the Upper Limb

2. Orthotics for the Lower Limb

3. Orthotics for the Spine

CPTR 2.16. Principles of Prosthetics: Types, indications, contraindications, assessment, check-out, uses, and fitting – region wise.

CPTR 2.17. Assistive Devices and Technologies.

CPTR 2.18. Introduction to Occupational Therapy: Definition, scope, and importance of Activities of Daily Living (ADLs), including self-care activities such as toileting, eating, and dressing.

SECTION B

Unit 3: Rehabilitation of Sensory and Intellectual Disabilities

CPTR 3.1. Identification, assessment, and classification of intellectual disabilities; etiology and principles of management including prevention; rehabilitation of persons with intellectual disabilities, including vocational training and home education programmes.

CPTR 3.2. Principles and mechanisms of communication including speech and hearing; common disorders of speech and hearing – etiology, clinical features, assessment, and principles of management.

CPTR 3.3. Identification, assessment, and classification of visual disabilities; etiology and principles of management including prevention and rehabilitation.

Unit 4: Vocational Rehabilitation, Accessibility, Health Education and Occupational Health

CPTR 4.1. Vocational and social rehabilitation: Vocational and social aspects of disability, including evaluation and vocational goals for persons with disabilities. Role of the social worker in rehabilitation.

CPTR 4.2. Architectural Barriers: Architectural barriers and possible modifications with reference to Rheumatoid Arthritis, CVA, Spinal Cord Injury, and other disabling conditions. Physical and architectural barriers for persons with disabilities.

CPTR 4.3. Health Education: Concepts, aims and objectives, approaches to health education, models of health education, contents of health education, principles of health education, and practice of health education.

CPTR 4.4. Occupational Health and Ergonomics:
Occupational hazards in industrial areas, including:

- Accidents due to physical agents
- Chemical agents
- Mechanical hazards
- Overuse and fatigue injuries due to ergonomic alterations
- Ergonomic evaluation of the workplace
- Mechanical stresses due to sedentary table work
- Problems related to executives and clerks
- Inappropriate seating arrangements
- Vehicle drivers
- Constant standing occupations
- Watchmen
- Defence forces
- Surgeons
- Overexertion in labourers
- Common occupational accidents
- Role of Physiotherapy
- Stress management

Psychological hazards, including monotony and dissatisfaction at work, anxiety related to work completion and quality, and the role of Physiotherapy in industrial settings and stress management through relaxation modes.

PRACTICAL DEMONSTRATION: B.P.T CPTR 407 (P)

CPTR (P) 5. The practical component will consist of:

1. Field visits to urban and rural PHCs.
2. Visits to Regional Rehabilitation Training Centres.
3. Participation in regular mobile rehabilitation camps.
4. Disability surveys in villages.
5. Disability screening programmes.
6. Demonstration of evaluation and Physiotherapy prescription techniques for:
 - Musculoskeletal problems
 - Neuromuscular problems
 - Cardiorespiratory problems
 - Paediatric problems
 - Gynecological problems
 - Geriatric problems

7. Demonstration of evaluation and prescription techniques for ambulatory and assistive devices.
8. Fabrication of low-cost assistive devices using locally available materials.
9. Preparation and delivery of community education programmes on various health- and disability-related issues for awareness, prevention, and care.

Recommended Text Books

1. Handbook of Rehabilitation – Sunder.
2. Orthotics in Rehabilitation – McKee and Morgan, F.A. Davis.
3. Orthotics, Prosthetics and Assistive Devices for Physiotherapists – Sinha, Sharma and Tripathy, Jaypee Brothers.
4. Park's Textbook of Preventive and Social Medicine – K. Park.
5. Physical Rehabilitation – Assessment and Treatment – Sullivan and Schmitz, F.A. Davis.
6. Occupational Therapy and Physical Dysfunction: Principles, Skills and Practices – Hand Splinting – Turner, Forster and Johnson, Churchill Livingstone.
7. Piyush Gupta and O.P. Ghai: Textbook of Preventive and Social Medicine, 2nd Edition, CBS Publishers and Distributors.

Recommended Reference Books

1. Status of Disabled in India – 2000, RCI Publication.
2. Legal Rights of Disabled in India – Gautam Bannerjee.
3. ICF – World Health Organization, 2001 Publication.
4. Training in the Community for the People with Disability – Hallender Padmini.
5. Mendes.
6. Disabled Village Children – David Werner.
7. Chorin C. & M. Desai, C. Gonsalves, Women and the Law, Volumes I and II, Socio-Legal Information Centre, Mumbai.
8. Hand Splinting – Wilson, W.B. Saunders.
9. Atlas of Limb Orthotics and Limb Prosthetics – American Academy of Orthopedic Surgeons, Mosby.
10. Krusen's Handbook of Physical Medicine and Rehabilitation.

PROJECT WORK: (PW)**PW 1.0. RESEARCH PROJECT**

1. The candidate shall submit a project under the supervision of a Physiotherapy faculty during internship. The project may be a case study or of recent technique or literature reviews and etc. to make the student to have research mind and to facilitate for higher studies.
 2. The interns shall maintain the record of work which is to be verified and certified by the Physiotherapy faculty under whom he/she works. Based on the record of work and project, The Internship completion shall be reported in the form of grades by the HOD/ principle while issuing "Certificate of Satisfactory Completion" of internship following which University shall award the BPT degree.
 3. All interneers will be assessed based on their satisfactory attendance, performance in the postings/and the presentation of the logbook and project. The credits and hours of internship will be mentioned in transcript.
 4. The internship assessment weightage will be based on following criteria: Domains (% of the total marks)
 - a) Attendance (10%)
 - b) Log book (60%)
 - c) Project (30%) of the internship assessment
- CRITIQUE ENQUIRY, CASE PRESENTATION AND CASE DISCUSSION:** Should be the regular part of clinical education from third year on wards.

CLINICAL ROTATION (CLRO)

CLRo 1. Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physio- therapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU
7. Developmental Pediatrics & Child Guidance Clinic
8. OBG
9. Geriatric – Old Age Homes
10. Industrial Visits – Ergonomics

