



SWAMI VIVEKANAND  
**SUBHARTI**  
UNIVERSITY  
UGC Approved Meerut



AN ISO 21001: 2018 ORGANIZATION

OFFICE OF THE REGISTRAR

Gp Capt M Yakoob  
M-in-D (Retd.), M.Tech.  
REGISTRAR  
registrar@subharti.org

Ref.No.U-508(i)/SVSU/2024/1114

Date:23.12.2024

**NOTIFICATION**

It is hereby notified for information of all the concerned that the Academic Council in its 31<sup>st</sup> meeting held on 09-09-2022 vide resolution No.31(21) has approved the semester wise ordinance & syllabus (as per CBCS scheme) of the following ordinances:

1. **Ordinance No.V-12(A)**, relating to Bachelor of Physiotherapy (BPT).
2. **Ordinance No.V-12(B)**, relating to Syllabus of Bachelor of Physiotherapy (BPT).

The copies of all above are enclosed and shall be applicable from Academic Session 2022-23 onwards.

This issues with the approval of the Hon'ble Vice Chancellor.

Ref.No.U-508(i)/SVSU/2024/1114

Copy forwarded to information of:

1. Hon'ble Vice-Chancellor
2. Controller of Examination
3. Dean-Academics
4. Director-IQAC
5. Principal/HOI-Physiotherapy College (for compliance please)
6. CTO (with a request to upload the ordinance on University website)
7. Additional Registrar-Academics
8. Guard File

Date: 23.12.2024

*Yakoob*  
*23.12*  
*2024*  
Registrar

*Yakoob*  
*23.12*  
*2024*  
Registrar



0121 6678000

Subhartipuram, NH-58, Delhi-Haridwar Bypass Road, Meerut-250005 (U.P.) INDIA

# **ORDINANCE No. V (12A)**

## **BACHELOR OF PHYSIOTHERAPY (B.P.T.)**

**UNDER GRADUATE DEGREE PROGRAMME  
[SEMESTER SYSTEM AS PER CBCS]**

**Passed in : 31<sup>st</sup> Academic Council Meeting,  
Swami Vivekanand Subharti University,  
Meerut**

**Agenda No. : 31(17)**

**Effective from: Academic Session 2022**



**FACULTY OF PHYSIOTHERAPY  
&  
ALLIED HEALTH SCIENCES**

**SWAMI VIVEKANAND SUBHARTI UNIVERSITY**

**Meerut**

**BACHELOR OF PHYSIOTHERAPY**  
**(BPT)**

**ORDINANCE**

## PREAMBLE

The NEP-2020 is based on the principle that education must develop not only cognitive capacities - both the ‘foundational capacities’ of literacy and numeracy and ‘higher-order’ cognitive capacities, such as critical thinking and problem solving – but also social, ethical, and emotional capacities and dispositions. In a broader way, NEP envisions an education system rooted in Indian ethos that contributes directly to transforming India, that is Bharat, sustainably into an equitable and vibrant knowledge society, by providing high-quality education to all, and thereby making India a global knowledge superpower.

The NEP-2020 envisages a student centric educational system with an opportunity to learn multiple courses and programs and provides a comparable and globally competitive educational system. It transforms the existing Higher Educational System into creative, innovative and research-oriented system.

The NEP-2020 needs the whole- hearted co-operation and support of galaxy of academia and educationist. This Ordinance shall be known as “Ordinance Governing B.P.T. Program under NEP-2020” of SVSU.

Physiotherapy or Physical Therapy (P.T.) is a **Movement Science** with an established theoretical and scientific base and has widespread clinical applications in the Prevention, Rehabilitation and Restoration, Maintenance and Promotion of optimal physical abilities, including the achievement of personal independence. Physiotherapists **diagnose and manage movement dysfunction** and enhance physical and functional abilities. This physical dysfunction may be the sequelae of involvement of any of the body systems like Musculoskeletal, Neurological, Cardiovascular, Respiratory or other systems.

Learning experiences are provided under the guidance of expert faculty, in both, classroom as well as in clinical setting. The designed curriculum will prepare the entry-to-practice physiotherapist (PT), to be an autonomous, effective, safe and compassionate professional, who practices collaboratively in a variety of healthcare set ups such as neonatal to geriatric, from critical care to community fitness to sports training and is responsive to the current and future needs of the health care system.

The work of the Physiotherapist is therefore essential to ensure a good quality of life of individuals ranging from children to the elderly with various disabilities like physical, neurological, psychosocial and sensory, rehabilitation needs and their integration in the community. The specific objective of the therapist is to function as an integral part of a multidisciplinary team to enable those whose abilities in productivity, self-maintenance and leisure are threatened, restricted or lost due to impairment, developmental delay, ageing or lack of opportunity, to become full and productive members of the community.

**VISION:**

To create a best academic and professional environment by providing quality education and practical skills to prepare physiotherapist who shall lead to serve & heal in a variety of healthcare and social settings.

**MISSION:**

To graduate **knowledgeable, service-oriented, self-assured, adaptable, reflective practitioners**, who, by virtue of critical and integrative thinking along with clinical reasoning, lifelong learning, and ethical values, render independent judgments concerning patient needs supported by evidence; promote the health of the patient; and enhance the professional, contextual, and collaborative foundations for physiotherapy practice.

## **The Salient Features of the Four and Half Years B.P.T. Program**

- i) It is a Choice Based Credit System under Semester Scheme.
- ii) The program comprises of about 40% Discipline Specific Core Courses as Major subjects, 15% Discipline Specific Core Courses/ Multi-Discipline Specific Courses as Minor courses, and remaining 45% Ability Enhancement Courses, Skill Enhancement Courses along with Open Elective Courses.
- iii) The relative importance of Courses of the study is measured in terms of credits.
- iv) The students shall take part in value-based activities.
- v) The declaration of result is based on Aggregate Percentage of marks obtained and Cumulative Grade Point Average (CGPA) earned.
- vi) There is a provision to transfer the credits earned by the candidate during transfer from one institution to other.
- vii) The program permits the consideration of credits earned from SWAYAM and other platforms recognized by the University.
- viii) The first three years of study have been designed to equip students with all the basic training needs of a Physiotherapist for general practice, including implementation of treatment after effective Physiotherapy assessment, good communication and interpersonal skills and commitment to ethical and social responsibility. The fourth year of study leads to the award of a Bachelor of Physiotherapy and is designed to meet the research and administrative and management needs of the profession, including exposure to clinical electives. The practical and clinical education training will provide the opportunity for translation of theoretical knowledge into hands-on practice of immediate relevance and will further help students in acquiring professional competence.
- ix) Graduates with this degree can pursue higher studies like Master of Physiotherapy and thereafter, Doctorate in Physiotherapy or practice in the field of physiotherapy, also eligible for services with graduation as basic qualification.

**DEFINITION:** :In this Ordinance, unless the context otherwise requires:

- i. “University” means Swami Vivekanand Subharti University, Meerut.
- ii. “College” means “Jyotirao Phule Subharti College of Physiotherapy” stands for constituent Higher Education Institution of University.
- iii. “Program” or “Program of study” means a higher education program pursued for a degree specified by the Commission under sub-section (3) of section 22 of the University Grants Commission Act, 1956 (3 of 1956).
- iv. “Discipline” means “Faculty of Physiotherapy & Allied Health Sciences”.
- v. “Course” means subject or paper having specified units which go to comprise Bachelor of Physiotherapy program designed to comprise lectures/ tutorials/laboratory work/ field work/ project work/ viva / seminars/ term papers / assignments / presentations/ self-study/internship etc.
- vi. “Credit” means the standard methodology of calculating teaching hours of the course per week in the semester system.
- vii. “Candidate” means, a person seeking admission or appearing for examination to the Bachelor of Physiotherapy program.
- viii. “Student” means a person admitted to, and pursuing credit-based Bachelor of Physiotherapy program of study.

Physiotherapy is an allied health care profession characterized by the treatment of various diseases and disorders with the help of skilled use of physiologically- based movement techniques, supplemented when necessary by electrotherapy and other physical means for the prevention and treatment of injury and disease.

**“Physiotherapy”** is a branch of modern medical science which includes examination, assessment, interpretation, physical diagnosis, planning and execution of treatment and advice to any person for the purpose of preventing, correcting, alleviating and limiting dysfunction, acute and chronic bodily malfunction including life saving measures via chest physiotherapy in the intensive care unit, curing physical disorders or disability, promoting physical fitness, facilitating healing and pain relief and treatment of physical and psychological disorders through modulating psychological and physical response using physical agents, activities and devices including exercise, mobilization, manipulations, therapeutic ultrasound, electrical and thermal agents and electrotherapy for diagnosis, treatment and prevention.

**“Physiotherapist”** is a qualified professional who has acquired all the above mentioned knowledge and skills for entry into practice after being awarded a bachelor degree in the subject of “Physiotherapy” from a recognized institute conducting a fulltime course not less than four years and six months of internship.

**1. TITLE AND COMMENCEMENT**

- 1.1 This Ordinance shall be called “Ordinance relating to B.P.T. Program”.  
1.2 It shall come into effect from the academic session: 2022-2023.

**2. UNDER GRADUATE PROGRAM OFFERED (U. G. Degree) by the Faculty of Physiotherapy and Allied Health Sciences**

Bachelor of Physiotherapy (B.P.T.)

**3. SEMESTER SYSTEM, DURATION OF THE PROGRAMS, REQUIREMENTS AND OPTIONS:**

- 3.1 The B.P.T. program is of eight semester duration.  
3.2 Each academic year has two semesters; odd and even semester.  
3.3 Each semester has 20 weeks with minimum 90 working days (excluding Sundays and other holidays).  
3.4 Candidates shall be awarded Bachelor’s degree on successful completion of EIGHT semesters along with 6 months compulsory internship.

**4. CURRICULUM/ STRUCTURE OF PROGRAMME OF BPT**

**4.1** The B.P.T. program have three components, viz., i) Discipline Specific Core Courses (DSCC) ii) Skill Enhancement Courses (SEC) and iii) Ability Enhancement Courses (AEC), (Course means subject / paper).

**a) DSCC:** DSCC are Compulsory Core Courses of the program.

**b) Ability Enhancement Courses (AEC):** The Ability Enhancement Courses (AEC) is of two kinds: i) Ability Enhancement Compulsory Courses (AECC) and ii) Skill Enhancement Courses (SEC).

i- **Ability Enhancement Compulsory Courses (AECC):** Environmental Study, English and Universal Human Values & Professional Ethics are AECCs.

ii- **Skill Enhancement Courses (SEC):** These courses provide skill-based knowledge and contain lab/hands-on training.

**c) Earning additional credits:** The student has an option to study any number of additional OEC/SEC from SWAYAM or similar platforms recognized by the University.

**d) Project:** A candidate will prepare a project on his / her own, with an advisory support of a teacher / faculty member during his / her internship.

**e) Internship:** A period of 6 months (26 weeks) of continuous clinical practice to enhance the clinical reasoning, judgment, program planning, intervention, evaluation of intervention, follow up and referral skills of all the dysfunctions and impairments learnt throughout the curriculum of four years.

**4.2** Each course has following components

- i) Lecturing (L) and/or
- ii) Tutorial (T)/ Practical (P).

**4.3 INTRODUCTION OF CHOICE-BASED CREDIT SYSTEM (CBCS)**

The UGC while outlining the several unique features of the Choice-Based Credit System (CBCS) has, in fact, given in a nutshell, the rationale for its introduction for

- a) Enhanced learning opportunities, ability to match learners' scholastic needs and aspirations, inter-institution transferability of learners (following the completion of an academic year).
- b) Improvement in educational quality and excellence,
- c) Flexibility for working learners to complete the program over an extended period of time.
- d) Standardization and comparability of educational programs across the country.

**5. RULE AND REGULATIONS (ELIGIBILITY) FOR ADMISSION IN BPT**

**5.1 GENERAL**

- a) The minimum educational qualification for admission in the B.P.T. course is Intermediate (10+2) or an equivalent from a recognized board/university with Chemistry, Biology, Physics and English as subjects.
- b) Minimum marks for eligibility in the above subjects in aggregate should be 45% in EPCB.
- c) Eligible applicants are required to appear in an Entrance Examination conducted by or on behalf of the Swami Vivekanand Subharti University

**5.2 LATERAL ENTRY: For candidates having Diploma in Physiotherapy**

- a) A candidate having passed class 12<sup>th</sup> exam with English, Physics, Chemistry, Biology (EPCB) with 45% marks along with holding recognized Diploma in Physiotherapy (DPT) with 55% marks in aggregate will be eligible for admission in BPT course through lateral entry i.e. 2<sup>nd</sup> year in BPT.
- b) Admission through lateral entry in 2<sup>nd</sup> year BPT course shall be made only on remaining vacant seats (i.e. not more than 10% of the total seats) in second year Bachelor of Physiotherapy (BPT) course.
- c) These seats shall be allotted to the students seeking migration/transfer or holding diploma with minimum of 55% marks in aggregate from recognized institute/ college.

**5.3 Medium of instruction:**

The medium of instruction shall be English only.

**5.4 Change of College/Transfer**

- a) This shall be applicable for the candidate seeking transfer from the colleges of other University within or outside the state or country subject to approval by the Institutional / University Equivalence Committee.
- b) Such transfer of admission shall be within the intake capacity of the respective class/ subject of the Physiotherapy College.

## **6 EXAMINATION AND EVALUATION**

### **6.1 ATTENDANCE:**

The students are required to attend all the classes and should have more than 75% attendance to be eligible to appear for the university examination. Short fall in attendance can, however be condoned in deserving cases to the extent of 10% by the Principal. If the short fall is more than 10% but not more than 20%, the Principal may recommend deserving cases to the Vice Chancellor for condonation. The order of the Vice Chancellor in this regard shall be final.

### **6.2 EXAMINATION**

All Courses offered under BPT program will have an evaluation system with two components:

- a) Continuous Comprehensive Assessment (CCA)/ Sessional Examination accounting for 30% of the final grade that a student gets in a course
- b) End-Semester Examination (ESE) accounting for the remaining 70% of the final grade that the student gets in a course.

**A student will have to pass both the components i.e. CCA and ESE separately to become eligible to be declared successful in a course, as per clause 6.4(c) and clause 6.5.2(a).**

#### **6.2.1 CONTINUOUS COMPREHENSIVE ASSESSMENT (CCA) :**

- a) Continuous Comprehensive Assessment (CCA) will be 30% and comprise of Terminal / Sessional examination in each subject as per University Examination policy.
- b) Minimum 40% marks to be obtained out of total 30 marks in internal /sessional examination, which include Theory/Practical & Attendance.

#### **6.2.2 END SEMESTER EXAMINATION (ESE)**

- a) The remaining 70% of the final grade of the student in a course will be assessed on the basis of an End Semester Examination (ESE) and will cover the entire syllabus of the course.
- b) The question papers for the ESE will be set by the Controller of Examinations (COE) of the Swami Vivekanand Subharti University (SVSU) by a selected faculty panel.

**6.3 PAPER SETTING:** As per effective University guidelines.

#### **6.4 CRITERIA FOR APPEARING IN UNIVERSITY EXAMINATION**

- a) Minimum 75% attendance.
- b) Fee deposited as per schedule.
- c) Minimum 40% marks to be obtained out of total internal/ sessional marks, which include Theory/Practical & Attendance.
- d) Marks in each subject shall be awarded for attending classes (Theory/ Practical) as per the Examination Manual.
- e) The Vice Chancellor shall have the right to call for all the records of terminal/ sessional examinations for scrutiny, if it deems fit in any specific case.
- f) Awarding of grace marks: As per the effective University policy

## **6.5 EVALUTION & RESULTS**

The final result at the end of the course shall be prepared by aggregating the marks obtained in all the semesters.

### **6.5.1 CRITERION OF PROMOTION**

- a) The result shall be prepared at the end of each academic year of the course by aggregating the marks obtained in the theory and practical examinations in all the semesters of the course till date.
- b) A candidate shall be declared as passed at the end of an academic year if he/she secures minimum 50% marks in each theory & practical paper separately.
- c) On clearing 50% or more of Odd and Even Semester subjects put together in one year, the student is promoted to next semester/year.
- d) However, there is IT integrated process through which, if the total of unsuccessful subjects is >50% of in one year or the cumulative number of un-cleared papers of previous years put together is more than 50%, the student is detained and not promoted.
- e) Reappearance in failed subject/ subjects is permitted in next identical – odd or even semester examination. Final chance is to be given to the final year students, as a special examination, to clear carry over subjects of previous years.
  - i. Student has to complete his/her course in stipulated time as notified in the Ordinances.
  - ii. Students are permitted to appear in Back papers of odd/even semester during regular University Odd /Even semester examination.
  - iii. Special Examination will be conducted only for students who have completed their course of study for the program.

### **6.5.2 CRITERIA FOR PASSING**

- a) Minimum of 50% marks in each subject and in aggregate (internal / sessional & external examination combined)
- b) The candidate shall have to obtain minimum 40% marks in internal / sessional Examination to be eligible for appearing in University Examination.
- c) Candidate shall have to pass in theory and practical examination separately.
- d) Candidate appeared in university exam & failed due to marks less than passing marks, can be permitted to take up exams as and when held, on payment basis to improve their marks.
- e) The B.P.T. Degree will be awarded from the University where the candidate has earned a minimum 132 of the credits prescribed for the program.
- f) As per CBCS system, minimum two internal / sessional in theory and practical examinations besides assignments, viva-voce, Group Discussion, Dissertations, Practical's etc. are practiced. Best of the internal / sessional marks are added to external examination marks. The attendance of student in a particular semester also carries marks, which are added to the internal / sessional marks.

The conduct of the Annual examinations, evaluation and declaration of results shall be as per the laid down examination policies / latest university notifications.

The result shall be prepared at the end of each academic year of the course by aggregating the marks obtained in all theory and practical examinations in all the semesters of the course till date.

- i) A candidate is declared passed in an examination in a subject, if he/she secures 50% of marks in theory and 50% in practical separately.
- ii) A student who has failed only in theory or practical shall have to appear in both theory & practical of the concern subject in the next eligible examination.
- iii) Promotion policy as per effective University guidelines notified from time to time through office orders, a student has to pass 50% subjects (theory & practical) excluding qualifying subjects.
- iv) If a student obtained 50% marks in at least 50% of the papers, he/she will be promoted to the next year with carryover papers and will have to appear & obtain pass marks in carryover papers along with the subsequent regular examinations for the relevant semester.
- v) A student has to pass all Core subjects (theory & practical), Skill Enhancement Course (SEC) and Ability Enhancement Course (AEC) including qualifying subjects (theory & practical) till Final semester / IV<sup>th</sup> year (final year) before joining internship.
- vi) A student seeking entry to the Internship shall have to satisfy the following conditions: -
  - a. He/she must have passed first year, second year and third year and fourth year examination in all subjects (theory and practical).
  - b. During the Internship period, a student shall have to undergo a full time (26 weeks) supervised Physiotherapy clinical practice for minimum six months in recognized Institutions/Hospital/Centre however the student who want to carry out their internship from outside university have to obtain NOC from the college. During the internship, the student will be evaluated on the basis of his/her clinical performance.

A student not covered by clauses above shall have the following options to complete his/her course:-

- He/ she may take admission and repeat the entire year of study after paying the course fee / charges as per University notification. He /She shall be treated as a regular student.

**Note:** A student will not be promoted to the next academic year if the carryover papers are more than 50% at one point of time.

## **7 Minimum Period of Course:**

The entire course inclusive of Internship should be completed within a maximum period of nine years from the date of original admission in the course.

## **8 COMPUTATION OF SGPA AND CGPA**

$(S_i) = \frac{\sum (C_i \times G_i)}{\sum C_i}$ , where  $C_i$  is the number of credits of the  $i$ th course and  $G_i$  is the grade point scored by the student in the  $i$ th course.

$CGPA = \frac{\sum (C_i \times S_i)}{\sum C_i}$  where  $S_i$  is the SGPA of the  $i$ th year and  $C_i$  is the total number of credits in that year.

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

## 9 OBJECTIVES:

### i) Program Objectives:

- a) Develop knowledge, skills and attitude necessary for competent health education, diagnosis, prevention, treatment, recovery & rehabilitation of patients from trauma and disease.
- b) Focus on development of clinical practice.
- c) Train them to practice the profession of Physiotherapy in a competent and ethical manner towards those who need such service with autonomy, quality care, assurance & humanitarian approach with compassion.
- d) To provide multidisciplinary approach for other courses.
- e) Acquire the attitude to practice the profession with moral and ethical values

### ii) Program Outcomes:

After successful completion of the programme, an individual will be able to:

- PO1 KNOWLEDGE:** Graduates will adopt of physical therapy services using theoretical and practical knowledge with consideration for patients in clinical judgment.
- PO2 LEARNING SKILLS:** Ability to reflect theoretical and practical knowledge on assessment planning, implementation in physiotherapy practice requiring for individual rehabilitation.
- PO3 PROFESSIONAL ETHICS:** Graduate will achieve moral principles and values that out to guide the professional ethical rules and legislation.
- PO4 ANALYTIC SKILLS:** Ability to consider new ideas, and uses the knowledge to collect data and analyze accurately to complete research project.
- PO5 SOCIAL AWARENESS:** The graduate will demonstrate the impact of physiotherapy knowledge on the society.
- PO6 LIFE LONG LEARNING:** Develop educational experience for proficiency in profession and promote preventive and rehabilitative aspects of healthy individual.

## 10 FRAMEWORK OF THE CURRICULUM

### B.P.T. 1<sup>st</sup> Semester

- a. Deals with the basic foundation in medical as well as physiotherapy subjects. The foundation of human body structure & function & energy utilization is achieved by studying the subjects Human Anatomy & Physiology.
- b. Acquire the skills of use of various tools of the therapeutic gymnasium, assessment of basic evaluation like sensations, reflexes & vital parameters, objective assessment of Range of Motion of the joints by Goniometry.
- c. Students acquire knowledge of Yoga Therapy.

### B.P.T. 2<sup>nd</sup> Semester

- a. Deals with the basic foundation in medical as well as physiotherapy subjects. In depth

study and analysis of human anatomy with emphasis on different body systems. Physiology in different body systems and in aging and Biochemistry.

- b. Students knowledge of Physics i.e. – Mechanics, Electricity, Water , Sound & Light is recalled to apply it on human body in understanding movements and the various physiotherapeutic modalities under the subject of Electrotherapy-I.

#### **B.P.T. 3<sup>rd</sup> Semester**

- a. Deals with understanding of altered physiology by studying Microbiology.
- b. The students get oriented to various Pharmaco-therapeutic agents used along with their effects by studying Pharmacology.
- c. In the subject of Electrotherapeutics, students will acquire knowledge and learn application & uses of various electrotherapeutic modalities on models.
- d. Develop and acquire understanding of physiological responses to various types of training and develop skills of exercise programs (on models). Exercise components of muscle strength, flexibility, balance, breathing and gait.
- e. Students acquire knowledge of Sociology.

#### **B.P.T. 4<sup>th</sup> Semester**

- a. Deals with understanding of altered physiology by studying Pathology.
- b. The students get oriented to various Pharmaco-therapeutic agents used along with their effects by studying Pharmacology.
- c. The students will study about normal and altered human mind & behavior by studying Psychology & Psychiatry.
- d. Students will acquire the knowledge of Biomechanics as applicable to human body in the context of Kinetics & kinematics of Joints, Movements & Daily activities under subject of Kinesiology and shall acquire knowledge and learn various physiotherapeutic skills on models in subject of Kinesiotherapy.

#### **B.P.T. 5<sup>th</sup> Semester**

- a. Students acquire knowledge of all the clinical subjects like Orthopaedics, Neurology, Paediatrics, Dermatology, Obstetrics & Gynecology.
- b. Students will acquire knowledge about Basics of Computer Application.

#### **B.P.T. 6<sup>th</sup> Semester**

- a. Students acquire knowledge of all the clinical subjects like Surgery, Medicine & Community Medicine.
- b. Students will acquire knowledge about the principles of International Classification of Functioning (I.C.F.) and its applicability in context to movement dysfunctions.
- c. Students will learn the physiotherapeutic evaluation skills including electro-diagnosis on patients to arrive at a Functional/ Physical Diagnosis in Neuromuscular, Cardiovascular & Respiratory dysfunction. They will also acquire knowledge of various specialized manual therapy and neuro-developmental techniques and practice these skills on models under the subject of functional diagnosis and physiotherapeutic skills.
- d. Students will acquire knowledge about First Aid and Emergency Care.

### **B.P.T. 7<sup>th</sup> Semester**

- a. Students will revise, recall and integrate the knowledge of previous years to evaluate, functionally diagnose, plan and execute short and long term management of various musculoskeletal & cardiovascular- respiratory dysfunctions in hospital and community settings.
- c. Students will also acquire knowledge about biomechanical principles & application of variety of aids & appliances used for ambulation, protection & prevention by studying Bioengineering.
- d. Professional Practice and ethics as a subject will be studied in continuum from first year, so students will acquire the knowledge of ethical code of professional practice, as well as its moral & legal aspects. The principles of Hospital Administration, Management & Marketing will be studied separately.
- e. Students will also acquire knowledge of ICU Evaluation and Management.

### **B.P.T. 8<sup>th</sup> Semester**

- a. Students will revise, recall and integrate the knowledge of previous years to evaluate, functionally diagnose, plan and execute short and long term management of various neurological & dysfunctions in hospital and community settings. Students also acquire knowledge pertaining to health promotion & disease prevention throughout lifespan in the community. They will also be able to analyse, prevent and treat problems associated with various industries in community physiotherapy.
- b. Students will acquire the knowledge of principles of Hospital Administration, Management & Marketing.
- c. Students will also acquire knowledge of Research Methodology and Biostatistics and apply the knowledge in project work in community physiotherapy.

### **INTERNSHIP**

- a. A period of 6 months (26 weeks) of continuous clinical practice to enhance the clinical reasoning, judgment, programme planning, intervention, evaluation of intervention, follow up and referral skills of all the dysfunctions and impairments learnt throughout the curriculum of four years.
- b. Those candidates declared to have passed the final year examination in all subjects shall be eligible for internship.
- c. Internship shall be done in a teaching hospital recognized by the University. A degree certificate shall be awarded ONLY on successful completion of regular six months of internship.
- d. The Internship will be rotatory and shall cover clinical branches concerned with Physiotherapy such as Orthopaedics, Cardiovascular & Respiratory including ICU, Neurology & Neurosurgery Paediatrics, General Medicine, Surgery, Obstetrics and Gynecology both inpatient and outpatient services.
- e. Successful Completion: The student must maintain a logbook. On completion of each posting, the same will have to be certified by the faculty in-charge of the posting for both attendance as well as work done. On completion of all the postings, the duly completed logbook will be submitted to the Principal/Head of program to be considered as having successfully completed the internship program. Internship marks will be awarded at the completion of internship.
- f. A period of ten days for discussion and preparation of projects, presentation will be done after initial three months of the internship. After completion of ten days the internship will continue for next three months (subject to no extension and completing of project and presentation).

## 11 SUBJECTS SCHEDULE (TRANSCRIPT HOURS)

### B. P.T. 1<sup>st</sup> Semester Transcript Hours - 540

Sr. no.	Subject Code	Subjects	Theory Hours	Practical/ Demonstration/ Clinical Hours	Total Hours
01.	BPT 101	Human Anatomy-I	60	30	90
02.	BPT 102	Human Physiology-I	60	30	90
03.	BPT 103	Exercise Therapy-I	120	120	240
04.	BPT 104	Yoga Therapy	30	30	60
05.	AEC-01	English Communication	15	30	45
06.	AEC-02	Environmental Studies	15	-	15
		<b>Total</b>	300	240	540

### BPT 2<sup>nd</sup> Semester Transcript Hours - 600

Sr. no.	Subject Code	Subjects	Theory Hours	Practical/ Demonstration/ Clinical Hours	Total Hours
01.	BPT 201	Human Anatomy-II	60	30	<b>90</b>
02.	BPT 202	Human Physiology-II	60	30	<b>90</b>
03.	BPT 203	Electrotherapy-I	120	120	<b>240</b>
04.	BPT 204	Biochemistry	60	30	<b>90</b>
05.	AEC-01	English Communication	15	30	45
06.	AEC-02	Environmental Studies	15	-	15
07.	HVE-01	Universal Human Values & Professional Ethics	30	-	<b>30</b>
		<b>Total</b>	360	240	<b>600</b>

**BPT 3<sup>rd</sup> Semester****Transcript Hours- 600**

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subject</b>	<b>Theory Hours</b>	<b>Practical/ Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 301	Exercise Therapy-II	90	120	<b>210</b>
02.	BPT 302	Electrotherapy-II	90	120	<b>210</b>
03.	BPT 303	Microbiology	30	30	<b>60</b>
04.	BPT 304	Sociology	30	-	<b>30</b>
05.	BPT 305	Pharmacology	60	-	<b>60</b>
06.	BPT 306	Basic Professional Practice and Ethics	30	-	<b>30</b>
		<b>Total</b>	330	270	<b>600</b>

**BPT 4<sup>th</sup> Semester****Transcript Hours- 420**

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subject</b>	<b>Theory Hours</b>	<b>Practical/ Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 401	Biomechanics & Kinesiology	90	180	<b>270</b>
02.	BPT 402	Pathology	60	-	<b>60</b>
03.	BPT 403	Psychiatry	30	-	<b>30</b>
04.	BPT 404	Psychology	30	-	<b>30</b>
05.	HVE-01	Universal Human Values & Professional Ethics	30	-	<b>30</b>
		<b>Total</b>	240	180	<b>420</b>

**BPT 5<sup>th</sup> Semester  
Transcript Hours- 675**

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subject</b>	<b>Theory Hours</b>	<b>Practical / Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 501	Orthopaedics	60	30	90
02.	BPT 502	Neurology	60	30	90
03.	BPT 503	Paediatrics	60	30	90
04.	BPT 504	Obstetrics & Gynaecology	30	30	60
05.	BPT 505	Dermatology	30	30	60
06.	BPT 506	Basics of Computer Application	15	30	45
07.	BPT 507	Functional Diagnosis & Physiotherapeutic Skills	60	60	120
08.	-	Supervised Clinical Practice	-	120	120
		<b>TOTAL</b>	<b>315</b>	<b>360</b>	<b>675</b>

**BPT 6<sup>th</sup> Semester  
Transcript Hours- 705**

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subject</b>	<b>Theory Hours</b>	<b>Practical / Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 601	Functional Diagnosis & Physiotherapeutic Skills	60	60	120
02.	BPT 602	Medicine	60	30	90
03.	BPT 603	Surgery	60	30	90
04.	BPT 604	Community Medicine	30	30	60
05.	BPT 605	First Aid & Emergency Care	30	30	60
06.	BPT 606 (MT/PTP)	Choice Based Course- Manual Therapy/ PT in Paediatrics	75	60	135
07.	BPT 607(P)	Supervised Clinical Practice	-	120	120
08.	HVE-01	Universal Human Values And Professional Ethics	30	-	30
		<b>TOTAL</b>	<b>345</b>	<b>360</b>	<b>705</b>

**BPT 7<sup>th</sup> Semester  
Transcript Hrs-660**

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subjects</b>	<b>Theory Hours</b>	<b>Practical/ Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 701	Musculoskeletal Physiotherapy	120	60	180
02.	BPT 702	Cardiovascular-Respiratory Physiotherapy	120	60	180
03.	BPT 703	Principles of Bio-engineering	30	30	60
04.	BPT 704	Advance Professional Practice & Ethics	15	30	45
05.	BPT 705	ICU Evaluation & Management	30	30	60
06.	BPT 706 (PTS/PTH)	Choice Based Course- PT in Sports/ PT in Hand Conditions	45	30	75
07.	-	Supervised Clinical Practice	-	60	60
		<b>Grand Total</b>	<b>360</b>	<b>300</b>	<b>660</b>

**BPT 8<sup>th</sup> Semester  
Transcript Hours-580**

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subjects</b>	<b>Theory Hours</b>	<b>Practical/ Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 801	Neuro Physiotherapy	120	60	180
02.	BPT 802	Community Physiotherapy	120	60	180
03.	BPT 803	Research Methodology & Biostatistics	60	-	60
04.	BPT 804	Administration, Management & Marketing	30	-	30
05.	BPT 805	Supervised Clinical Practice	-	100	100
06.	HVE-01	Universal Human Values & Professional Ethics	30	-	30
		<b>Grand Total</b>	<b>360</b>	<b>220</b>	<b>580</b>

## 12 COURSE STRUCTURE:

The course structure shall be as given as under:

First year

### B.P.T. 1<sup>st</sup> Semester

Subject Code	Subjects	Theory			Practical			Grand Total
		Maximum Marks						
		Annual	I.A.	Total	Annual	I.A.	Total	
BPT 101	Human Anatomy-I	35	15	50	35	15	50	100
BPT 102	Human Physiology-I	35	15	50	35	15	50	100
BPT 103	Exercise Therapy-I	70	30	100	70	30	100	200
BPT 104	Yoga Therapy	35	15	50	-	-	-	50
	<b>Total</b>	<b>175</b>	<b>75</b>	<b>250</b>	<b>140</b>	<b>60</b>	<b>200</b>	<b>450</b>

### B.P.T. 2<sup>nd</sup> Semester

Subject Code	Subjects	Theory			Practical			Grand Total
		Maximum Marks						
		Annual	I.A.	Total	Annual	I.A.	Total	
BPT 201	Human Anatomy-II	35	15	50	35	15	50	100
BPT 202	Human Physiology-II	35	15	50	35	15	50	100
BPT 203	Electrotherapy-I	70	30	100	70	30	100	200
BPT 204	Biochemistry	35	15	50	-	-	-	50
AEC-01	English Communication	35	15	50	35	15	50	100
	<b>Total</b>	<b>210</b>	<b>90</b>	<b>300</b>	<b>175</b>	<b>75</b>	<b>250</b>	<b>550</b>

### Qualifying Courses:

Subject Code	Subjects	Theory			Practical		
		Annual	I.A.	Total	Annual	I.A.	Total
AEC-02	Environmental Studies	70	30	100	-	-	-
HVE-01	Universal Human Values & Professional Ethics	-	-	-	-	-	-

**Note:** i) English Communication & Environmental Studies Examination will be held in 2<sup>nd</sup> Semester and thereafter every even semester (In case of failure in 2<sup>nd</sup> semester or subsequent even semesters).

ii) Examination of Universal Human Values & Professional Ethics will be held in 8<sup>th</sup> Semester.

### FIRST YEAR (OVERALL) TOTAL MARKS

Semester	Theory			Practical			Semester Total
	Annual	I.A.	Total	Annual	I.A.	Total	
Odd (1 <sup>st</sup> ) Semester	175	75	250	140	60	200	450
Even (2 <sup>nd</sup> ) Semester	210	90	300	175	75	250	550
Grand Total (Both Semester)	<b>385</b>	<b>165</b>	<b>550</b>	<b>315</b>	<b>135</b>	<b>450</b>	

**Second year**

**B.P.T. 3<sup>rd</sup> Semester**

Subject Code	Subjects	Theory			Practical			Grand Total
		Maximum Marks						
		Annual	I.A.	Total	Annual	I.A.	Total	
BPT 301	Exercise Therapy-II	70	30	100	70	30	100	<b>200</b>
BPT 302	Electrotherapy-II	70	30	100	70	30	100	<b>200</b>
BPT 303	Microbiology	35	15	50	-	-	-	<b>50</b>
BPT 304	Sociology	35	15	50	-	-	-	<b>50</b>
BPT 305	Pharmacology	35	15	50	-	-	-	<b>50</b>
BPT 306	Basic Professional Practice & Ethics	35	15	50	-	-	-	<b>50</b>
	<b>Total</b>	<b>280</b>	<b>120</b>	<b>400</b>	<b>140</b>	<b>60</b>	<b>200</b>	<b>600</b>

**B.P.T. 4<sup>th</sup> Semester**

Subject Code	Subjects	Theory			Practical			Grand Total
		Maximum Marks						
		Annual	I.A.	Total	Annual	I.A.	Total	
BPT 401	Biomechanics Kinesiology	70	30	100	70	30	100	<b>200</b>
BPT 402	Pathology	35	15	50	-	-	-	<b>50</b>
BPT 403	Psychiatry	35	15	50	-	-	-	<b>50</b>
BPT 404	Psychology	35	15	50	-	-	-	<b>50</b>
HVE-01	Universal Human Values & Professional Ethics*	-	-	-	-	-	-	-
	<b>Semester Total</b>	<b>175</b>	<b>75</b>	<b>250</b>	<b>70</b>	<b>30</b>	<b>100</b>	<b>350</b>

\*Note: Examination of Universal Human Values & Professional Ethics will be held in 8<sup>th</sup> Semester.

**SECOND YEAR (OVERALL) TOTAL MARKS**

Semester	Theory			Practical			Semester Total
	Annual	I.A.	Total	Annual	I.A.	Total	
Odd (3 <sup>rd</sup> ) Semester	280	120	400	140	60	200	<b>600</b>
Even (4 <sup>th</sup> ) Semester	175	75	250	70	30	100	<b>350</b>
<b>Grand Total (Both Semester)</b>	<b>455</b>	<b>195</b>	<b>650</b>	<b>210</b>	<b>90</b>	<b>300</b>	<b>950</b>

**Third year**

**B.P.T. 5<sup>th</sup> Semester**

Subject Code	Subjects	Theory			Practical			Grand Total
		Maximum Marks						
		Annual	I.A.	Total	Annual	I.A.	Total	
BPT 501	Orthopaedics	35	15	50	-	-	-	50
BPT 502	Neurology	35	15	50	-	-	-	50
BPT 503	Paediatrics	35	15	50	-	-	-	50
BPT 504	Obstetrics & Gynaecology	35	15	50	-	-	-	50
BPT 505	Dermatology	35	15	50	-	-	-	50
BPT 506	Basics of Computer Application	35	15	50	-	-	-	50
-	Functional Diagnosis & Physiotherapeutic Skills-I	-	-	-	-	-	-	-
	<b>TOTAL</b>	<b>210</b>	<b>90</b>	<b>300</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>300</b>

\*Note: Examination of Functional Diagnosis & Physiotherapeutic Skills-I will be held in 6<sup>th</sup> Semester (Final Semester).

**B.P.T. 6<sup>th</sup> Semester**

Subject Code	Subjects	Theory			Practical			Grand Total
		Maximum Marks						
		Annual	I.A.	Total	Annual	I.A.	Total	
BPT 601	Functional Diagnosis & Physiotherapeutic Skills	70	30	100	70	30	100	200
BPT 602	Medicine	35	15	50	-	-	-	50
BPT 603	Surgery	35	15	50	-	-	-	50
BPT 604	Community Medicine	35	15	50	-	-	-	50
BPT 605	First Aid & Emergency Care	35	15	50	-	-	-	50
BPT 606 (MT/PTP)	Choice Based Course- Manual Therapy/ PT in Paediatrics	35	15	50	35	15	50	100
BPT 607	Supervised Clinical Practice	-	-	-	-	-	-	-
HVE-01	Universal Human Values and Professional Ethics	-	-	-	-	-	-	-
	<b>TOTAL</b>	<b>245</b>	<b>105</b>	<b>350</b>	<b>105</b>	<b>45</b>	<b>150</b>	<b>500</b>

**THIRD YEAR (OVERALL) TOTAL MARKS**

Semester	Theory			Practical			Semester Total
	Annual	I.A.	Total	Annual	I.A.	Total	
Odd (5 <sup>th</sup> ) Semester	210	90	300	-	-	-	300
Even (6 <sup>th</sup> ) Semester	245	105	350	105	45	150	500
Grand Total (Both Semester)	<b>455</b>	<b>195</b>	<b>650</b>	<b>105</b>	<b>45</b>	<b>150</b>	<b>800</b>

**Fourth year**

**B.P.T. 7<sup>th</sup> Semester**

Subject Code	Subjects	Theory			Practical			Grand Total
		Maximum Marks						
		Annual	I.A.	Total	Annual	I.A.	Total	
BPT 701	Musculoskeletal Physiotherapy	70	30	100	70	30	100	<b>200</b>
BPT 702	Cardiovascular-Respiratory Physiotherapy	70	30	100	70	30	100	<b>200</b>
BPT 703	Principles of Bio-engineering	35	15	50	-	-	-	<b>50</b>
BPT 704	Advance Professional Practice & Ethics	35	15	50	-	-	-	<b>50</b>
BPT 705 (PTS/PTH)	Choice Based Course- PT in Sports/ PT in Hand Conditions	35	15	50	35	15	50	<b>100</b>
	<b>Grand Total</b>	<b>245</b>	<b>105</b>	<b>350</b>	<b>175</b>	<b>75</b>	<b>250</b>	<b>600</b>

**B.P.T. 8<sup>th</sup> Semester**

Subject Code	SUBJECTS	UNIVERSITY EXAMINATIONS						Grand Total
		Theory			Clinical / Practical			
		Annual	I.A.	Total	Annual	I.A.	Total	
BPT 801	Neuro Physiotherapy	70	30	100	70	30	100	<b>200</b>
BPT 802	Community Physiotherapy	70	30	100	70	30	100	<b>200</b>
BPT 803	Research Methodology & Biostatistics	35	15	50	-	-	-	<b>50</b>
BPT 804	Administration, Management & Marketing	35	15	50	-	-	-	<b>50</b>
BPT 805	ICU Evaluation & Management	35	15	50	-	-	-	<b>50</b>
	<b>Semester Total</b>	<b>245</b>	<b>105</b>	<b>350</b>	<b>140</b>	<b>60</b>	<b>200</b>	<b>550</b>

**Qualifying Course:**

HVE-01	Universal Human Values & Professional Ethics	35	15	50	-	-	-	
--------	--	----	----	----	---	---	---	--

**FOURTH YEAR (OVERALL) TOTAL MARKS**

Semester	Theory			Practical			Semester Total
	Annual	I.A.	Total	Annual	I.A.	Total	
Odd (7 <sup>th</sup> ) Semester	245	105	350	175	75	250	<b>600</b>
Even (8 <sup>th</sup> ) Semester	245	105	350	140	60	200	<b>550</b>
Grand Total (Both Semester)	<b>490</b>	<b>210</b>	<b>700</b>	<b>315</b>	<b>135</b>	<b>450</b>	<b>1150</b>

**INTERNSHIP MARKS**

<b>INTERNSHIP MARKS</b>	<b>300</b>
-------------------------	------------

**TOTAL MARKS (8 semesters + Internship)**

Marks	Theory	Practical	Total
<b>Total Marks (1<sup>st</sup> to 8<sup>th</sup> Semester)</b>	<b>2700</b>	<b>1600</b>	<b>4300</b>
<b>Internship Marks</b>	<b>-</b>	<b>300</b>	<b>300</b>
<b>GRAND TOTAL</b>	<b>2700</b>	<b>1900</b>	<b>4600</b>

### 13 B.P.T. Program Structure

Semester	Discipline Specific Core Courses (DSCC)			Ability Enhancement Course						Total Credits
				Skill Enhancement Course			Ability Enhancement Compulsory Course (AECC)			
	Skill Based									
	Core Course	L+T+P	Credit	Course	L+T+P	Credit	Course	Instruction Hrs	Credit	
I	BPT 101	4+0+1	4+0+0	BPT 104	2+0+1	2+0+0	AEC-01	1+2	2	24
	BPT 102	4+0+1	4+0+0				AEC-02	2+0	2	
	BPT 103	8+0+4	8+0+2				-	-	-	
II	BPT 201	4+0+1	4+0+0	-	-	-	AEC-01	1+2	2	27
	BPT 202	4+0+1	4+0+0	-	-	-	AEC-02	2+0	2	
	BPT 203	8+0+4	8+0+2	-	-	-	HVE-01	1+0	1	
	BPT 204	4+0+1	4+0+0	-	-	-				
III	BPT 301	6+0+4	6+0+2	BPT 304	2+0+0	2+0+0	-	-	-	26
	BPT 302	6+0+4	6+0+2	BPT 305	4+0+0	4+0+0				
	BPT 303	2+0+1	2+0+0	BPT 306	2+0+0	2+0+0				
IV	BPT 401	6+0+6	6+0+3	BPT 403	2+0+0	2+0+0	HVE-01	1+0	1	24
	BPT 402	6+0+0	6	BPT 404	2+0+0	2+0+0				
	BPT 405	4+0+1	4							
V	BPT 501	4+0+1	4+0+0	BPT 504	2+0+1	2+0+0	-	-	-	22
	BPT 502	4+0+1	4+0+0	BPT 505	2+0+1	2+0+0				
	BPT 503	4+0+1	4+0+0	BPT 506	1+0+1	1+0+0				
	BPT 507	4+0+2	4+0+1							
VI	BPT 601	4+0+2	4+0+1	BPT 604	2+0+1	2+0+0	HVE-01	1+0	1	25
	BPT 602	4+0+1	4+0+0	BPT 605	2+0+1	2+0+0				
	BPT 603	4+0+1	4+0+0	BPT 606	5+0+2	5+0+1				
	BPT 607(P)	0+0+4	0+0+2							
VII	BPT 701	8+0+2	8+0+1	BPT 703	2+0+1	2+0+0	-	-	-	26
				BPT 704	1+0+1	1+0+0				
	BPT 702	8+0+2	8+0+1	BPT 705	2+0+1	2+0+0				
				BPT 706	3+0+1	3+0+0				
VIII	BPT 801	8+0+2	8+0+1	BPT 803	4+0+0	4+0+0	HVE-01	1+0	1	25
	BPT 802	8+0+2	8+0+1	BPT 804	2+0+0	2+0+0				

**BACHELOR OF PHYSIOTHERAPY (BPT): COMPULSORY ROTATORY INTERNSHIP  
(1092 HOURS ACROSS 26 WEEKS)**

<b>COURSE TITLE</b>	<b>HOURS/WEEK</b>	<b>CREDITS</b>
Compulsory Rotatory Internship	42 / WEEK	36

**13 LIST OF ALL COURSES UNDER DIFFERENT CATEGORIES FOR BPT PROGRAMMES**

<b>Semester</b>	<b>Hard Core (HC)</b>	<b>Core Course (C)</b>	<b>Skill Enhancement Compulsory Course (SEC)</b>	<b>Ability Enhancement Compulsory Course (AEC)</b>
<b>I</b>	<ul style="list-style-type: none"> <li>• Human Anatomy-I</li> <li>• Human Physiology-I</li> <li>• Exercise Therapy-I</li> </ul>	-	<ul style="list-style-type: none"> <li>• Yoga Therapy</li> </ul>	<ul style="list-style-type: none"> <li>• English Communication</li> <li>• Environmental Studies</li> </ul>
<b>II</b>	<ul style="list-style-type: none"> <li>• Human Anatomy-II</li> <li>• Human Physiology-II</li> <li>• Electrotherapy-I</li> </ul>	<ul style="list-style-type: none"> <li>• Biochemistry</li> </ul>	-	<ul style="list-style-type: none"> <li>• English Communication</li> <li>• Environmental Studies</li> <li>• Universal Human Values &amp; Professional Ethics</li> </ul>
<b>III</b>	<ul style="list-style-type: none"> <li>• Exercise Therapy-II</li> <li>• Electrotherapy-II</li> </ul>	<ul style="list-style-type: none"> <li>• Microbiology</li> </ul>	<ul style="list-style-type: none"> <li>• Pharmacology</li> <li>• Sociology</li> <li>• Basic Professional Practice &amp; Ethics</li> </ul>	-
<b>IV</b>	<ul style="list-style-type: none"> <li>• Biomechanics &amp; Kinesiology</li> </ul>	<ul style="list-style-type: none"> <li>• Pathology</li> </ul>	<ul style="list-style-type: none"> <li>• Psychiatry</li> <li>• Psychology</li> </ul>	<ul style="list-style-type: none"> <li>• Universal Human Values &amp; Professional Ethics</li> </ul>
<b>V</b>	<ul style="list-style-type: none"> <li>• Orthopedics</li> <li>• Neurology</li> </ul>	<ul style="list-style-type: none"> <li>• Paediatrics</li> </ul>	<ul style="list-style-type: none"> <li>• Obstetrics &amp; Gynaecology</li> <li>• Dermatology</li> <li>• Basics Of Computer Application</li> </ul>	-
<b>VI</b>	<ul style="list-style-type: none"> <li>• Functional Diagnosis &amp; Physiotherapeutic Skills</li> </ul>	<ul style="list-style-type: none"> <li>• Medicine</li> <li>• Surgery</li> </ul>	<ul style="list-style-type: none"> <li>• Community Medicine</li> <li>• First Aid &amp; Emergency Care</li> <li>• Choice Based Course – Manual Therapy / PT in Paediatrics</li> </ul>	<ul style="list-style-type: none"> <li>• Universal Human Values &amp; Professional Ethics</li> </ul>
<b>VII</b>	<ul style="list-style-type: none"> <li>• Musculoskeletal Physiotherapy</li> <li>• Cardiovascular - Respiratory Physiotherapy</li> </ul>	-	<ul style="list-style-type: none"> <li>• Principles of Bioengineering</li> <li>• Advance Professional Practice &amp; Ethics</li> <li>• ICU Evaluation &amp; Management</li> <li>• Choice Based Course – PT in Sports / PT in Hand Conditions</li> </ul>	-
<b>VIII</b>	<ul style="list-style-type: none"> <li>• Neuro Physiotherapy</li> </ul>	<ul style="list-style-type: none"> <li>• Community Physiotherapy</li> </ul>	<ul style="list-style-type: none"> <li>• Research Methodology &amp; Biostatistics</li> <li>• Administration, Management &amp; Marketing</li> </ul>	<ul style="list-style-type: none"> <li>• Universal Human Values &amp; Professional Ethics</li> </ul>

**Hard Core and Core Course (22):** A course, which should compulsorily to be studied by a candidate as a core requirement is termed as a Hard Core and Core Course.

**Skill Enhancement Course (18):** A Skill Enhancement Compulsory Course chosen generally from an unrelated discipline/subject, with an intention to seek exposure to other subjects/disciplines.

**Ability Enhancement Courses (03):** Ability Enhancement Compulsory Courses are the courses based upon the content that leads to knowledge enhancement.

The entire course inclusive of Internship should be completed within a maximum period of nine years from the date of original admission in the course.

#### **14 POWER TO MODIFY**

In the event of any emergent situation, if any deviation is considered necessary, the Vice Chancellor is authorized to modify the Ordinance subject to subsequent ratification by the Executive Council.

**ORDINANCE No. V (12B)**

**BACHELOR OF PHYSIOTHERAPY  
(B.P.T.)**

**UNDER GRADUATE DEGREE PROGRAMME**

**SEMESTER SYSTEM AS PER NEP-2020 & CBCS**

**FACULTY OF PHYSIOTHERAPY  
&  
ALLIED HEALTH SCIENCES**

**Swami Vivekanand**

**SUBHARTI UNIVERSITY**

**Meerut**

**Applicable from the Academic Session 2022-2023**

**BACHELOR OF PHYSIOTHERAPY**  
**(B.P.T.)**

**SYLLABUS**

**FIRST SEMESTER**

## SYLLABUS

**Transcript Hours - 527**

<b>Sr. no.</b>	<b>Subject Code</b>	<b>Subjects</b>	<b>Theory Hours</b>	<b>Practical/ Demonstration/ Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 101	Human Anatomy-I	65	25	<b>90</b>
02.	BPT 102	Human Physiology-I	63	37	<b>100</b>
03.	BPT 103	Exercise Therapy-I	120	120	<b>240</b>
04.	BPT 104	Yoga Therapy	30	30	<b>60</b>
05.	AEC-01	English Communication	07	14	<b>21</b>
06.	AEC-02	Environmental Studies	16	-	<b>16</b>
		<b>Total</b>	301	226	<b>527</b>

# HUMAN ANATOMY-I

(Theory : 65 Hours + Practical / Laboratory :25 Hours) **TOTAL :90 Hours**

## COURSE DESCRIPTION:

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

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

Sr.No.	Regions	Theory Hours	Practical Hours	Total Hours
01.	GENERAL ANATOMY AND HISTOLOGY	15	03	<b>18</b>
02.	MUSCULOSKELETAL SYSTEM (UPPER LIMB + THORAX)	26	15	<b>41</b>
03.	CARDIO VASCULAR & RESPIRATORY ANATOMY	10	05	<b>15</b>
04.	SENSORY ORGANS	04	02	<b>06</b>
05.	RADIOLOGY	10	-	<b>10</b>
<b>TOTAL</b>		<b>65</b>	<b>25</b>	<b>90</b>

## OBJECTIVES:

### (1) MUSCULOSKELETAL ANATOMY

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

### (2) To Obtain Knowledge of **OTHER SYSTEMS & SENSORY ORGANS**

## SYLLABUS

Sr.No.	Regions	Theory Hours	Practical Hours	Total Hours
01.	<b>GENERAL ANATOMY AND HISTOLOGY</b>	<b>15</b>	<b>03</b>	<b>18</b>
	a- General Anatomy: i. Fascia ii. Muscles iii. Bones iv. Joints v. Nerve vi. Vessels	8	2	10
	b- General Histology i. Epithelial ii. Connective tissue iii. Muscle iv. Bone and cartilage v. Nerve and vessels vi. Embryology	7	1	8
02	<b>MUSCULOSKELETAL SYSTEM (UPPER LIMB + THORAX)</b>	<b>26</b>	<b>15</b>	<b>41</b>
	a- Superior extremity	11	7	18
	b- Back & Thoracic Cage -	10	6	16
	c- Living Anatomy:	2	1	3
	i. Upper extremity	1	-	3
	ii. Trunk	1	-	4
03.	<b>CARDIO VASCULAR &amp; RESPIRATORY ANATOMY</b>	<b>10</b>	<b>05</b>	<b>15</b>
	a- Thoracic wall	2	-	2
	b- Mediastinum	1	-	1
	c- Heart and major blood vessels	2	2	4
	d- Lungs	2	1	3
	e- Diaphragm & Intercostals	1	1	2
	f- Ribs and sternum	2	1	3
04.	<b>SENSORY ORGANS</b>	<b>4</b>	<b>2</b>	<b>6</b>
	a- Ear	2	1	3
	b- Eye	1	1	2
	c- Skin	1	-	1
05.	<b>RADIOLOGY</b>	<b>10</b>	<b>-</b>	<b>10</b>

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Identify & describe various parts of structures of the Musculoskeletal system.
- 2) Understand the Anatomical basis of clinical conditions of Musculoskeletal system.
- 3) Application of knowledge of anatomy on the living.

**RECOMMENDED TEXT BOOKS**

1. Anatomy- Chaurasia, Volume- I,II& III
2. Neuro anatomy -- Inderbir Singh
3. Human Anatomy – Kadasne, Volume- I,II& III
4. Neuroanatomy -- Vishram Singh
5. Human Anatomy – Datta

**RECOMMENDED REFERENCE BOOKS**

1. Gray's Anatomy
2. Extremities - QuiningWasb
3. Atlas of Histology - Mariano De Fiore
4. Anatomy & Physiology - Smout and McDowell
5. Kinesiology - Katherine Wells
6. Neuroanatomy - Snell
7. Cunningham`s- Practical Anatomy

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks *The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A-Q-1</b>	MCQs – based on <b>MUST KNOW</b> area on <b>HUMAN ANATOMY</b> (1x10)	<b>10</b>
<b>Section B- Q-2</b>	SAQ- Questions based on <b>HUMAN ANATOMY</b> to answer any FIVE out of SIX (5x 2)	<b>10</b>
<b>Section B- Q-3</b>	SAQ – Questions based on <b>HUMAN ANATOMY</b> to answer any THREE out of FOUR (3x 5)	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

<b>PRACTICAL</b>		<b>Marks</b>
<b>35 MARKS + I.A. – 15 MARKS</b>		<b>50</b>
<b>SPOTS</b>	Based on : General Anatomy and histology, Musculoskeletal system, Sensory Organs, Endocrine and Exocrine system.	<b>15</b>
<b>Radiology</b>		<b>02</b>
<b>Living anatomy</b>		<b>03</b>
<b>Viva</b>	General Anatomy and histology, Musculoskeletal system, Sensory Organs, Endocrine and Exocrine system.	<b>10</b>
<b>Practical Manual</b>	Practicals performed during the year	<b>05</b>
Total Marks		<b>35</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory & Practical
2. I.A. to be calculated out of 15 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# HUMAN PHYSIOLOGY–I

(Theory : 65 Hours + Practical / Laboratory :35 Hours) **TOTAL :100 Hours**

## COURSE DESCRIPTION:

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

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

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

<b>Sr. No.</b>	<b>Topics</b>	<b>Theoryhrs</b>	<b>Practical hrs</b>	<b>Total hrs</b>
01.	GENERAL PHYSIOLOGY	25	05	30
02.	ENDOCRINE SYSTEM	05	05	10
03.	SPECIAL SENSES	05	05	10
04.	RESPIRATORY SYSTEM	15	05	20
05.	EXERCISE PHYSIOLOGY	15	15	30
	<b>Total</b>	<b>65</b>	<b>35</b>	<b>100</b>

## OBJECTIVES:

At the end of the course, the candidate will:

- 1- Acquire the knowledge of the relative contribution of each organ system in maintenance of the Milieu Interior (Homeostasis).
- 2- Be able to describe physiological functions of various systems, with special reference to Musculo-skeletal, Endocrine.
- 3- Analyze physiological response & adaptation to environmental stresses-with special emphasis on physical activity, altitude, temperature
- 4- Acquire the skill of basic clinical examination, with special emphasis to Respiratory system, & Exercise tolerance /Ergography.

## SYLLABUS

Sr. No.	Topics	Theoryhrs	Practical hrs	Total hrs
<b>01-</b>	<b>GENERAL PHYSIOLOGY</b>	<b>25</b>	<b>5</b>	<b>30</b>
	a- Cell: <ul style="list-style-type: none"> <li>• Structure of cell membrane</li> <li>• Transport across cell membrane</li> <li>• Homeostasis</li> </ul>	4	1	5
	b- Blood: <ul style="list-style-type: none"> <li>• Rh- ABO system &amp; mismatch-transfusion</li> <li>• WBC</li> <li>• Plasma protein</li> <li>• Platelets</li> <li>• hemoglobin</li> <li>• normal values of blood (composition &amp; function)</li> <li>• bleeding time &amp; clotting time</li> </ul>	7	2	9
	c- Nerve: <ul style="list-style-type: none"> <li>• Structure, classification &amp; Properties</li> <li>• R M P &amp; action potential</li> <li>• Propagation of nerve impulse</li> <li>• Nerve injuries –degeneration, regeneration and reaction of degeneration</li> </ul>	6	1	7
	d- Muscle: <ul style="list-style-type: none"> <li>• Structure- properties – classification – smooth, skeletal, cardiac, excitation/contraction coupling.</li> <li>• Factors affecting development of muscle tension, fatigue, load.</li> <li>• Neuro-muscular transmission; applied physiology. Myasthenia gravis, Eaton Lambert Syndrome.</li> </ul>	8	1	9
<b>02-</b>	<b>ENDOCRINE SYSTEM:</b>	<b>5</b>	<b>5</b>	<b>10</b>
	a- Secretion- regulation & function of Pituitary- Thyroid- Adrenal-Parathyroid-Pancreas b- Applied physiology (abnormalities) of the above mentioned glands. c- Functions of progesterone, estrogen and testosterone d- Puberty & menopause			

	e- Physiological changes during pregnancy			
03-	<b>SPECIAL SENSES</b>	<b>5</b>	<b>5</b>	<b>10</b>
	a- Structure and function of the eye b- Applied physiology: errors of refraction, accommodation, c- Reflexes – dark and light adaptation, photosensitivity. d- Structure and function of the ear e- Applied physiology- types of deafness			
04-	<b>RESPIRATORY SYSTEM:</b>	<b>15</b>	<b>5</b>	<b>20</b>
	a- Introduction, structure and function of the RS b- Mechanics of respiration; c- Pulmonary Volumes & capacities; d- Anatomical & Physiological Dead spaceventilation/perfusion ratio, alveolar ventilation e- Transport of respiratory gases f- Nervous & Chemical control of respiration g- Pulmonary function tests-Direct & indirect method of measurement h- Physiological changes with altitude & acclimatization			
05-	<b>EXERCISE PHYSIOLOGY</b>	<b>15</b>	<b>15</b>	<b>30</b>
	a- Basal Metabolic Rate and Respiratory Quotient b- Energy metabolism c- Fatigue d- Oxygen debt e- Acute cardio vascular changes during exercise, difference between mild, moderate and severe exercise, concept of endurance f- Acute respiratory changes during exercise g- Concept of training/conditioning, effects of chronic exercise/effect of training on the cardiovascular & respiratory system h- Body temperature regulation during exercise i- Hormonal and metabolic effects during exercise j- Effects of exercise on muscle strength,power,endurance k- Physical fitness and its components			

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Describe physiological functions of various systems like – Musculoskeletal, respiratory, endocrine & function.
- 2) Acquire the knowledge of the relative contribution of each organ system in maintenance of Homeostasis.
- 3) Acquire the skill of basic clinical examination of Respiratory system.

**RECOMMENDED TEXT BOOKS**

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

**RECOMMENDED REFERENCE BOOKS**

1. Review of Medical Physiology – Ganong
3. Samson & Wright's Applied Physiology
4. Textbook of Medical Physiology – Bern and Levy

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks		
*The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A-Q-1</b>	MCQs – based on <b>MUST KNOW</b> area on <b>HUMAN PHYSIOLOGY</b> (1x10)	<b>10</b>
<b>Section B- Q-2</b>	SAQ- Questions based on <b>HUMAN PHYSIOLOGY</b> to answer any FIVE out of SIX (5x 2)	<b>10</b>
<b>Section B- Q-3</b>	SAQ – Questions based on <b>HUMAN PHYSIOLOGY</b> to answer any THREE out of FOUR (3x 5)	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

<b>PRACTICAL</b>		<b>Marks</b>
<b>35 MARKS + I.A. – 15 MARKS</b>		
		<b>50</b>
<b>SPOTS</b>	Based on : General Physiology, Endocrine system, Special senses, Respiratory system and Exercise physiology.	<b>15</b>
<b>Viva</b>	General Physiology, Endocrine system, Special senses, Respiratory system and Exercise physiology.	<b>15</b>
<b>Practical Manual</b>	Practicals performed during the year	<b>05</b>
<b>Total Marks</b>		<b>35</b>

### INTERNAL ASSESSMENT:

1. Exams – Theory & Practical
2. I.A. to be calculated out of 15 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# EXERCISE THERAPY-I

(Theory : 120 Hours + Practical / Laboratory :120 Hours) **TOTAL :240 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Demonstrations Hours	Total Hours
01	<b>MECHANICS &amp; BASIC BIOMECHANICS</b>	30	--	30
02	<b>BIO-PHYSICS RELATED TO EXERCISE THERAPY</b>	35	30	65
03	<b>CLASSIFICATION OF MOVEMENTS</b>	15	10	25
04	<b>BASIC EVALUATION</b>	20	40	60
05	<b>MASSAGE</b>	10	20	30
06	<b>RELAXATION</b>	5	10	15
07	<b>AEROBIC EXERCISE</b>	5	10	15
<b>TOTAL</b>		<b>120</b>	<b>120</b>	<b>240</b>

## OBJECTIVE:

### Cognitive:

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

- Define the various terms used in relation to Mechanics, Biomechanics & Kinesiology
- Recall the basic principles of Biophysics related to mechanics of movement / motion & understand the application of these principles to the simple equipment designs alongwith their efficacy in Therapeutic Gymnasium & various starting positions used intherapeutics.

### Psychomotor:

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

- a) Describe & also acquire the skills of use of various tools of the TherapeuticGymnasium
- b) Demonstrate the movements in terms of various anatomical planes and axes.
- c) Demonstrate various starting & derived positions used in therapeutics.
- d) Describe physiological principles & acquire the skills of application of therapeuticmassage
- e) Acquire the skills of assessment of basic evaluation like sensations, reflexes &vitalparameters
- f) Acquire the skill of objective assessment of Range of Motion of the joints byGoniometry
- g) Describe physiological basis and principle of relaxation and acquire the skills ofrelaxation methods
- h) Describe physiological responses and principles of aerobic exercises for generalfitness& demonstrate fitness skills on self & group.

### SYLLABUS

Sr. No.	Topics	Theory Hours	Practical/ Laboratory Hours	Total Hours
01	<b>MECHANICS &amp; BASIC BIOMECHANICS</b>	<b>30</b>	-	<b>30</b>
	a. Mechanics & Application to human body <ol style="list-style-type: none"> <li>i. Definition and terminologies: Mechanics (Statics &amp; Dynamics), Biomechanics, Kinetics, Kinematics (Osteokinematics, Arthrokinematics, Open Chain &amp; Closed Chain kinematics)</li> <li>ii. Axes / planes,</li> <li>iii. Laws of inertia &amp; motion,</li> <li>iv. Gravity, C.O.G., L.O.G. and B.O.S.</li> <li>v. Equilibrium – Types and affecting factors</li> <li>vi. Mechanics of Forces Work, Energy, Power, Friction, Momentum, Parallelogram of Forces</li> <li>vii. Torque</li> <li>viii. Pendulum</li> <li>ix. Mechanical and Anatomical pulleys</li> <li>x. Levers</li> <li>xi. Fluid mechanics related to Hydrotherapy (physics, statics &amp; dynamics)</li> </ol>	20	-	20
	b. Muscle Mechanics			

	<ul style="list-style-type: none"> <li>i. Types of Muscles- Anatomical &amp; Physiological</li> <li>ii. Types of muscle work / Contraction</li> <li>iii. Muscle Action: Roles as Agonist, Antagonist, Fixators, Synergist</li> <li>iv. Active &amp; Passive insufficiency</li> <li>v. Range of muscle work ,Angle of pull – with importance to efficiency of muscle work and stability of joint</li> </ul>	10	-	10
02	<b>BIO-PHYSICS RELATED TO KINESIOTHERAPY</b>	<b>35</b>	<b>30</b>	<b>65</b>
	<ul style="list-style-type: none"> <li>a. Starting Positions &amp; Derived Positions <ul style="list-style-type: none"> <li>i. Application of stability</li> <li>ii. BOS, Gravity and muscle work in relation to various positions</li> </ul> </li> </ul>	15	10	25
	<ul style="list-style-type: none"> <li>b. Therapeutic Gymnasium <ul style="list-style-type: none"> <li>i. Use of accessories such as Pulleys Springs, Shoulder wheel, Walking aids,</li> <li>ii. Finger ladder, Therapeutic balls, Weights, Resistance bands, tubes, &amp; wands</li> <li>iii. Applied mechanics of all above accessories</li> </ul> </li> </ul>	10	10	20
	<ul style="list-style-type: none"> <li>c. Suspension Therapy <ul style="list-style-type: none"> <li>i. Principles</li> <li>ii. Suspension Apparatus</li> <li>iii. Types of Suspension</li> <li>iv. Effects and uses</li> <li>v. Techniques for individual joints</li> </ul> </li> </ul>	10	10	20
03	<b>CLASSIFICATION OF MOVEMENTS</b>	<b>15</b>	<b>10</b>	<b>25</b>
	<ul style="list-style-type: none"> <li>a. Definition and classification</li> <li>b. Principles of movements</li> <li>c. Effects, uses and Techniques (active: assisted, free, assisted- resisted, resisted &amp; passive)</li> </ul>			
04	<b>BASIC EVALUATION</b>	<b>20</b>	<b>40</b>	<b>60</b>
	<ul style="list-style-type: none"> <li>a. Assessment of Vital Parameters <ul style="list-style-type: none"> <li>i. Temperature</li> <li>ii. Blood Pressure</li> <li>iii. Heart Rate/ Pulse rate</li> <li>iv. Respiratory Rate</li> <li>v. Chest expansion</li> </ul> </li> </ul>	5	5	10

	b. Assessment of Sensations and Reflex testing	5	5	10
	c. Goniometry i. Definition and Types of Goniometers ii. Principles iii. Techniques for individual joints with biomechanical principles iv. Uses	10	30	40
05	<b>MASSAGE</b>	<b>10</b>	<b>20</b>	<b>30</b>
	a. Definition b. Classification c. Principles d. Effects & uses e. Indications and contra indications f. Techniques- Upper limb, Lower Limb, Neck, Back, Abdomen, Face & Scalp			
06	<b>RELAXATION</b>	<b>5</b>	<b>10</b>	<b>15</b>
	a. Principles, b. Techniques along with their effects & uses i- General –Jacobson’s, Shavasana & Reciprocal (Laura Mitchell ) ii- ii. Local - Heat, Massage, Gentle/Rhythmic passive movements			
07	<b>AEROBIC CONDITIONING AND BASIC PRINCIPLES OF GENERAL FITNESS</b> (as applied to self and group)	<b>5</b>	<b>10</b>	<b>15</b>
	a. Physiology of aerobic and anaerobic exercise. b. Components of fitness (definition of terms only) c. Warm up d. Cool down exercises e. Group & Recreational activities			

**PRACTICAL:** Practical demonstrations of:

Sr.No.	Topics
01	Various starting and derived positions
02	The techniques of active, passive, assisted and resisted movements
03	The techniques of various accessories and equipments used in therapeutic gymnasium its biomechanical principles and uses.
04	The techniques of use of suspension method for assisted and resisted Movements

05	Relaxation procedures
06	Massage techniques
08	Aerobic exercise for self and others
09	Assessment of vital parameters in different body position (supine, sitting and standing) and of sensory system and reflexes.
10	Measurement of joint R.O.M. through goniometry, method of fixation and Measurement

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Recall the basic principles of Physics related to mechanics of movement /motion & will be able to understand the application of such principles to the simple equipment designs, and their efficacy in therapeutic gymnasium and various starting positions used in therapeutics.
- 2) To demonstrate passive movements in terms of various Anatomical planes
- 3) Acquire the skill of application of various massage manipulations and describe the Physiological effects, therapeutic use, merits /demerits of the same
- 4) To describe types of Goniometer ,merits and demerits of goniometry and to demonstrate and acquire the skill of measuring ROM with goniometer
- 5) Be able to demonstrate General Fitness exercises and shall gain fitness for self.

### **RECOMMENDED TEXT BOOKS**

1. Principles of Exercise Therapy – Dena Gardiner
2. Massage, Manipulation & Traction – Sydney Litch
3. Therapeutic Exercise – Sydney Litch
4. Massage – M. Hollis
5. Practical Exercise Therapy– Margaret Hollis
6. Hydrotherapy – Kisner, Hollis
7. Measurement of Joint Motion – Cynthia Norkins.
8. Biomechanics – Cynthia Norkins
9. Clinical Kinesiology-Brunnstrom

### **RECOMMENDED REFERENCE BOOKS**

1. Therapeutic Exercise – Carolyn Kisner

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		Marks
70 marks + I.A. – 30 Marks		100
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section -A- M.C.Qs.</b>	Q-1 – based on MUST KNOW area [1x20]	20
<b>Section-B- S.A.Qs.</b>	Q-1 - Answer any FIVE out of SIX [5x2=10] Q-2 - Answer any TWO out of THREE [2X5=10]	20
<b>Section-C- L.A.Qs.</b>	Answer any TWO out of THREE [2X15=30] Q-1 Q-2- Q-3-	30
<b>Total Marks</b>		<b>70</b>

<b>PRACTICAL</b>		Marks
70 MARKS + IA – 30 MARKS		100
<b>LONG CASE</b>	Based on Massage /Goniometry /Movements (passive) <ul style="list-style-type: none"> <li>• Cognitive – Bio-physics, Biomechanical, principles, indications, contraindication.</li> <li>• <i>Documentation of findings etc</i> - 15 Marks</li> <li>• <i>Psychomotor + Affective skills</i> - 10 Marks</li> </ul>	25
<b>SHORT CASE</b>	Two Short case based on <ul style="list-style-type: none"> <li>• Basic evaluation (<b>any one</b>): Sensation / Reflex testing / B.P./ &amp; Pulse Rate/ Chest Expansion / Respiratory Rate /Aerobic fitness for self</li> <li>• Skill performance (<b>any one</b>): Relaxation /Starting / Derived position &amp; Suspension Therapy (2 x 10 = 20 marks)</li> <li>• <i>Cognitive</i> -05 Marks</li> <li>• <i>Psychomotor</i> -15 Marks</li> </ul>	40
<b>Assignment</b>	Practicals performed during the year	05
<b>TOTAL MARKS</b>		<b>70</b>

### INTERNAL ASSESSMENT:

1. Exams – Theory & Practical
2. I.A. to be calculated out of 30 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# YOGA THERAPY

(Theory : 30 Hours + Practical / Laboratory :30 Hours) **TOTAL : 60 Hours**

## COURSE DESCRIPTION:

This course covers the definition of Yoga, Principles of Yoga, Techniques, Benefits, Contraindications and cautions for each Asanas and Pranayama. This course additionally covers therapeutic principles and skills of application of yoga.

## Objectives:

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

- Describe physiological principles and acquire the skill of performing Pranayama &Yogasanas

Sr. No.	Topics	Theory Hours	Practical/Laboratory Hours	Total Hours
01	<b>YOGA</b>	30	30	60
	<b>i. Introduction</b> a) Definition b) Principles of Yoga c) Yogasana- Technique, Benefits, Contraindications & cautions for each Asanas:	5	5	10
	<b>ii. Asanas in supine</b> a) Pawanamuktasana b) Ardha Halasana c) Halasana d) Setubandhasana e) Naukasana f) Matsyasana g) Shavasana h) Sarvangasana	5	5	10
	<b>iii. Asanas in prone</b> a) Bhujangasana b) Ardha-Shalabhasana c) Dhanurasana d) Makarasana	5	5	10
	<b>iv. Asanas in sitting</b> a) Padmasana, Siddhasana, Sukhasana b) Yogamudrasana	5	5	10

	c) Virasana d) Vajrasana e) Gomukhasana f) Pashchimottanasana	5	5	10
	<b>v. Asanas in standing</b> b) Padhastasana, Padangusthasana, Uttanasana c) Utkatasanac d) Tadasana e) Trikonasana	5	5	10
	<b>vi. Pranayama</b> a) Anulom-vilom b) Kapalbhathi	5	5	10

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Define Yoga and its types, its physiological and Psycho-somatic effects and will be able to demonstrate standard yoga postures used by the beginners.

### **RECOMMENDED TEXT BOOKS**

1. Yogic Exercises-Physiologic and Psychic processes-- S. Datta Ray

### **RECOMMENDED REFERENCE BOOKS**

1. Asanas-Why & How – Omprakash Tiwari

## **SCHEME OF UNIVERSITY EXAMINATION**

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks *The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A-Q-1</b>	MCQs – based on <b>MUST KNOW</b> area on <b>YOGA THERAPY</b> (1x10)	<b>10</b>
<b>Section B- Q-2</b>	SAQ- Questions based on <b>YOGA THERAPY</b> to answer any FIVE out of SIX (5x 2)	<b>10</b>
<b>Section B- Q-3</b>	SAQ – Questions based on <b>YOGA THERAPY</b> to answer any THREE out of FOUR (3x 5)	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

# ENGLISH COMMUNICATION

TOTAL :15Hours

## Objective

The purpose of commencing English communication skills course is to develop in students fundamental communication skills being integral to personal, social and professional interactions. One of the significant associations among human beings is the ability to share thoughts, emotions and ideas through various means of communication: both verbal and non-verbal. The present course hopes to address most of these aspects through an interactive approach of teaching learning process; focusing on various dimensions of communication skills. The course also focuses on enhancing the ability to handle casual and formed situations in terms of personal and intellectual grooming.

## Syllabus Modules:

### Module 01 – Self Introduction

- Introducing self
- Speaking about achievements
- Voicing future aspects

### Module 02 –Non verbal Communication

- Body Language
- Paralanguage skills

### Module 03 – Manners and Etiquettes

- Personal grooming
- Dress code
- Telephone etiquettes
- Intellectual grooming

## COURSE OUTCOMES:

1. Projecting the first impression
2. Use simple forms of polite expressions to establish basic social contact and to perform everyday functions including making requests and offers, conducting simple phone conversations, asking and telling time, giving simple directions, asking about price, ordering a meal, etc.
3. Students learn to use general, social and professional language.
4. Polishing manners to behave appropriately in social and professional circles.
5. Handling difficulty situations with grace style and professionalism.

## BOOKS RECOMMENDED:

1. An introduction to Professional English and Soft Skills by B. K. Das et al., Cambridge University Press
2. Technical Communication: Principles and Practice, Second Edition by Meenakshi Raman and Sangeeta Sharma, Oxford Publications.

3. Effective Technical Communication by M Ashraf Rizvi, The McGraw-Hill companies.
4. Understanding Body Language by Alan Pease.
5. Communicative Grammar of English by Geoffrey Leech and Ian Svartik.
6. Better English Pronunciation by J.D.O'Connor.
7. English Grammar by Wren and Martin.
8. Strengthen Your English, M. Bhaskaran and D. Horsburgh, Oxford University Press, Delhi 1973

# ENVIRONMENTAL STUDIES

Total :16 Hours

## OBJECTIVES:

1. Understanding of major concepts in environmental sciences and creating the awareness about environmental problems among people;
2. Recognize the interconnectedness of multiple factors in environmental challenges;
3. Imparting basic knowledge about the environment and its allied problems to develop an attitude of concern for the environment in respect to environment protection and environment improvement;
4. Motivating students to participate in Develop analytical skills, critical thinking, in identifying and solving environmental problems.

### Unit 1: Concept of Environment (3 Hrs)

Definition and concept of environment; Types and components of environment (Lithosphere, Atmosphere, Hydrosphere, Biosphere); Scope and multidisciplinary nature of the subject; Man-environment relationships.

### Unit 2: Ecology and Ecosystems (7 Hrs)

Concepts of Ecology: Subdivisions of ecology; Ecological factors - climatic, edaphic, physiographic and biotic; Concept of Biological clock; physiological adaptation of Hydrophytes, Xerophytes, mesophytes; Ecological Succession and classification (hydrosere, xerosere, mesosere etc.).

Structure and Functions of Ecosystem; a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries); Trophic Levels; Ecological Pyramids; food chains and food webs; Energy flow in an ecosystem; Ecological Interactions; Ecotone; Habitat; Ecological Niche; Resilience.

### Unit 3: Environmental Pollution and Global Environmental Issues (6 Hrs)

Environmental pollution: types, causes, effects and controls; Air, water, soil, noise, thermal and radioactive pollution; Solid waste management: Control measures of urban and industrial waste, special reference e-waste, biomedical waste; Climate change; global warming; ozone layer depletion; acid rain and its impacts on human communities and agriculture; Case studies on Pollution Tragedies: Love canal, Bhopal Gas, Endosulfan and Minamata; International Agreements: IPCC, Montreal and Kyoto protocol.

## COURSE OUTCOME: Students will be able,

1. To understand the concept and function of the environment and recognize the physical, chemical, and biological components of the earth's systems and their functions.
2. To acquire the awareness on the ecosystem structure and process which interlinked with human survival, intensively need attention at global and regional level.

3. To identify common and adverse impacts of human activities on biotic communities, soil, water, and air quality and suggest sustainable strategies to mitigate these impacts;
4. Develop an understanding of environmental pollutions and hazards and general measures to control them.
5. To identify surrounding natural resources including renewable resources and non-renewable resources and practices for their restoration.
6. To realize the importance of biodiversity for maintaining ecological balance and Global conservation practices and strategies.
7. To analyze the need for sustainable development in respect of environmental management through Policies, movements and social awareness.
8. To acquire skills required to research and analyze environmental issues scientifically in applied situations such as careers.

## **REFERENCES:**

### **BOOKS:**

1. Banerji, K.S., Environmental Chemistry, TMH publication.
2. Bhargava & Gupta, Environmental Pollution & Human Health, CBS publication.
3. D. K. Asthana, Environment : Problems & Solutions, S. Chand Publishing, 2001
4. G. Tyler Miller, Environmental Science Working With the Earth, Cengage Learning.
5. Ghosh, G.K., Environment and Development, ARH publication.
6. Godfrey Boyle, Renewable Energy, Oxford University Press.
7. Kumar, A., Environment Pollution and Management, ARH publication.
8. M K Varshney, Environmental Pollution & Control, Ashian Publication.
9. Odum Eugene P, Fundamental of Ecology, Cengage Learning
10. Rajagopalan, R, Environmental Studies, Oxford University Press
11. Sakarama Somayaji, Environmental Concept and Sustainable Development, TERI.
12. Shivdutt Upadhyay, Environmental Education and Disaster Management, Bharat Publication.
13. Shrivastava, A.K., Environmental Ethics, ARH publication.
14. Trivedi, P.R., Ecology & Environment, ARH publication.

## SCHEME OF UNIVERSITY EXAMINATIONS AT A GLANCE

### B.P.T. FIRST SEMESTER

Subject Code	Subjects	Theory			Practical		
		University	I.A.	Total	University	I.A.	Total
BPT 101	Human Anatomy-I	35	15	50	35	15	50
BPT 102	Human Physiology-I	35	15	50	35	15	50
BPT 103	Exercise Therapy-I	70	30	100	70	30	100
BPT 104	Yoga Therapy	35	15	50	-	-	-
AEC-01	English Communication *	-	-	-	-	-	-
AEC-02	Environmental Studies*	-	-	-	-	-	-
	<b>Total</b>	<b>175</b>	<b>75</b>	<b>250</b>	<b>140</b>	<b>60</b>	<b>200</b>

**\*Note:** English Communication & Environmental Studies Examination will be held in 2<sup>nd</sup> Semester and thereafter every even semester (In case of failure in 2<sup>nd</sup> semester or subsequent even semesters).

**BACHELOR OF PHYSIOTHERAPY  
(BPT)**

**SYLLABUS**

**SECOND SEMESTER**

## SYLLABUS

### Transcript Hours - 658

<b>Sr. no.</b>	<b>Subject Code</b>	<b>Subjects</b>	<b>Theory Hours</b>	<b>Practical/ Demonstration/ Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 201	Human Anatomy-II	65	35	<b>100</b>
02.	BPT 202	Human Physiology-II	65	25	<b>90</b>
03.	BPT 203	Electrotherapy-I	120	120	<b>240</b>
04.	BPT 204	Biochemistry	56	04	<b>60</b>
05.	AEC-01	English Communication	08	<b>16</b>	<b>24</b>
06.	AEC-02	Environmental Studies	14	-	<b>14</b>
07.	HVE-01	Universal Human Values & Professional Ethics	30	-	<b>30</b>
08.	-	Observational Clinical Practice	-	100	<b>100</b>
		<b>Total</b>	358	300	<b>658</b>

# HUMAN ANATOMY-II

(Theory : 65 Hours + Practical / Laboratory :25 Hours) **TOTAL :90 Hours**

## COURSE DESCRIPTION:

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

- ✍ Nervous system
- ✍ Cardio vascular system
- ✍ Respiratory system

Sr.No.	Regions	Theory Hours	Practical Hours	Total Hours
01.	NEURO ANATOMY	30	12	<b>42</b>
02.	SYSTEMIC ANATOMY	08	03	<b>11</b>
03.	MUSCULOSKELETAL SYSTEM (LOWER LIMB + HEAD NECK & FACE + TRUNK)	19	17	<b>38</b>
04.	ABDOMEN	04	02	<b>06</b>
05.	ENDOCRINE & EXOCRINE SYSTEM	04	-	<b>04</b>
<b>TOTAL</b>		<b>65</b>	<b>25</b>	<b>90</b>

## OBJECTIVES:

### (1) NEURO ANATOMY

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

### (2) CARDIOVASCULAR & RESPIRATORY ANATOMY

- i- Identify & describe various structures of the Cardio Vascular & Respiratory system and the course of blood vessels
- ii- Identify and describe various structures of Thoracic cage and mechanisms of Respiration
- iii- Be able to apply knowledge of Living anatomy with respect to Cardio Vascular & Respiratory system.

- iv- Understand anatomical basis of clinical conditions of Cardiovascular & Respiratory system.

(3) To Obtain Knowledge of **OTHER SYSTEMS**

<b>Sr.No.</b>	<b>Regions</b>	<b>Theory Hours</b>	<b>Practical Hours</b>	<b>Total Hours</b>
1	<b>NEURO ANATOMY</b>	<b>30</b>	<b>12</b>	<b>42</b>
	a- General organization of Nervous System	5	-	5
	b- Central Nervous System	13	8	21
	c- Cranial nerves	10	4	14
	d- Peripheral Nerves (should be done with respective parts) i. Autonomic Nervous System: ii. Sympathetic iii. parasympathetic	2	-	2
2	<b>SYSTEMIC ANATOMY</b>	<b>8</b>	<b>3</b>	<b>11</b>
	a- Alimentary system	2	-	2
	b- Urinary System	2	-	2
	c- Genital system: i. Male organs ii. Female organs (Pelvic cavity and Pelvic floor)	4	3	7
3	<b>MUSCULOSKELETAL SYSTEM (LOWER LIMB + HEAD NECK &amp; FACE + TRUNK)</b>	<b>23</b>	<b>17</b>	<b>40</b>
	a- Inferior extremity	10	7	17
	b- Head Neck & Face	9	8	17
	i. Skull and Mandible	2	1	3
	ii. Facial Muscles, blood supply, nerve supply	2	2	4
	iii. Triangles of neck, Glands, Tongue & Palate	1	1	2
	iv. Larynx & Pharynx	1	1	2
	v. Muscles of mastication & T.M. joint	1	1	2
	vi. Extra ocular muscles with nerve supply	1	1	2
	vii. Nose & Para nasal sinuses	1	1	2
	c- Living Anatomy:	4	2	6
i. Lower extremity	3	1	4	
ii. Head Neck & Face	1	1	2	
4	<b>ABDOMEN</b>	<b>4</b>	<b>2</b>	<b>6</b>
	Muscles of abdomen	2	1	3

	Muscles of pelvis	2	1	3
5	<b>ENDOCRINE &amp; EXOCRINE SYSTEM</b>	<b>4</b>	<b>-</b>	<b>4</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 4) Identify & describe various parts of Nervous system, structures of the cardio vascular & Respiratory system.
- 5) Understand the Anatomical basis of clinical conditions of Nervous system & cardiovascular & Respiratory system.
- 6) Analyze the movements, structures of various CNS transections, course of peripheral nerves & mechanism of Respiration.
- 7) Application of knowledge of anatomy on the living.

### **RECOMMENDED TEXT BOOKS**

1. Anatomy- Chaurasia, Volume- I,II& III
2. Neuro anatomy -- Inderbir Singh
3. Human Anatomy – Kadasne, Volume- I,II& III
4. Neuroanatomy -- Vishram Singh
5. Human Anatomy – Datta

### **RECOMMENDED REFERENCE BOOKS**

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

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks		
*The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A-Q-1</b>	MCQs – based on <b>MUST KNOW</b> area on <b>HUMAN ANATOMY</b> (1x10)	<b>10</b>
<b>Section B- Q-2</b>	SAQ- Questions based on <b>HUMAN ANATOMY</b> to answer any FIVE out of SIX (5x 2)	<b>10</b>
<b>Section B- Q-3</b>	SAQ – Questions based on <b>HUMAN ANATOMY</b> to answer any THREE out of FOUR (3x 5)	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

<b>PRACTICAL</b>		<b>Marks</b>
<b>35 MARKS + I.A. – 15 MARKS</b>		<b>50</b>
<b>SPOTS</b>	Based on : Neuro anatomy, Systemic anatomy, Cardio-vascular and Respiratory anatomy, Abdomen and Radiology	<b>15</b>
<b>Radiology</b>		<b>02</b>
<b>Living anatomy</b>		<b>03</b>
<b>Viva</b>	Neuro anatomy, Systemic anatomy, Cardio-vascular and Respiratory anatomy, Abdomen and Radiology	<b>10</b>
<b>Practical Manual</b>	Practicals performed during the year	<b>05</b>
Total Marks		<b>35</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory & Practical
2. I.A. to be calculated out of 15 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# HUMAN PHYSIOLOGY-II

(Theory : 65 Hours + Practical / Laboratory : 25 Hours) **TOTAL : 90 Hours**

## COURSE DESCRIPTION:

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

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

<b>Sr. No.</b>	<b>Topics</b>	<b>Theoryhrs</b>	<b>Practical hrs</b>	<b>Total hrs</b>
01.	NERVOUS SYSTEM	30	10	40
02.	EXCRETORY SYSTEM	05	03	08
03.	TEMPERATURE REGULATION	02	03	05
04.	REPRODUCTIVE SYSTEM	05	03	08
05.	CARDIOVASCULARSYSTEM	15	03	18
06.	GASTRO INTESTINALSYSTEM	03	03	06
07.	PHYSIOLOGY OF AGEING	05	-	05
	<b>Total</b>	<b>65</b>	<b>25</b>	<b>90</b>

## OBJECTIVES:

At the end of the course, the candidate will:

- 5- Acquire the knowledge of the relative contribution of each organ system in maintenance of the Milieu Interior (Homeostasis).
- 6- Be able to describe physiological functions of various systems, with special reference to Neuro-motor, Cardio, Uro-genital function, & alterations in function with aging.
- 7- Acquire the skill of basic clinical examination, with special emphasis to Peripheral & Central Nervous system, Cardiovascular & Respiratory system.

## SYLLABUS

Sr. No.	Topics	Theoryhrs	Practical hrs	Total hrs
1-	<b>NERVOUS SYSTEM:</b>	<b>30</b>	<b>10</b>	<b>40</b>
	<ul style="list-style-type: none"> <li>a- Introduction of nervous system, classification – C.N.S., P.N.S. &amp; A.N.S.</li> <li>b- Synapse-structure, properties &amp; transmission;</li> <li>c- Reflexes-classification &amp; properties;</li> <li>d- Receptor physiology: classification, properties.</li> <li>e- Physiology of Touch, Pain, Temperature &amp; Proprioception;</li> <li>f- Sensory and motor tracts: effect of transaxion (complete and incomplete) at various levels.</li> <li>g- Physiology of Muscle Tone (muscle spindle); Stretch reflex</li> <li>h- Connection &amp; function of Basal ganglia, Thalamus, Hypothalamus, Sensory and Motor cortex, Cerebellum, Limbic system, Vestibular Apparatus</li> <li>i- Autonomic nervous system: Structure and functions of the sympathetic and the parasympathetic nervous system.</li> <li>j- Learning, memory &amp; conditioned reflex</li> <li>k- Physiology of Voluntary movement</li> </ul>			
2-	<b>EXCRETORY SYSTEM:</b>	<b>5</b>	<b>3</b>	<b>8</b>
	<ul style="list-style-type: none"> <li>a- Kidney-structure &amp; function:</li> <li>b- Urine formation; (to exclude concentration and dilution)</li> <li>c- Juxtaglomerular apparatus</li> <li>d- Fluid and electrolyte balance – Na, K, H<sub>2</sub>O</li> <li>e- Neural control of Micturation</li> <li>f- Applied physiology. Types of bladder</li> </ul>			
3-	<b>TEMPERATURE REGULATION</b>	<b>2</b>	<b>3</b>	<b>5</b>
4-	<b>REPRODUCTIVE SYSTEM:</b>	<b>5</b>	<b>3</b>	<b>8</b>
	<ul style="list-style-type: none"> <li>a- Physiology of ovary and testis</li> <li>b- Physiology of menstrual cycle and spermatogenesis</li> <li>c- Functions of progesterone, estrogen and testosterone</li> <li>d- Puberty &amp; menopause</li> <li>e- Physiological changes during pregnancy</li> </ul>			
5-	<b>CARDIOVASCULAR SYSTEM:</b>	<b>15</b>	<b>3</b>	<b>18</b>
	<ul style="list-style-type: none"> <li>a- Structure &amp; properties of cardiac muscle</li> <li>b- Cardiac impulse- initiation and conduction</li> <li>c- Cardiac cycle</li> <li>d- Heart rate regulation</li> <li>e- Blood pressure- definition-regulation- Cardiac output-regulation &amp; function affecting; Peripheral resistance, venous return</li> <li>f- Regional circulation-coronary-muscular, cerebral</li> </ul>			

	g- Normal ECG.			
6-	<b>GASTRO INTESTINAL SYSTEM:</b>	<b>3</b>	<b>3</b>	<b>6</b>
	a- Absorption and digestion in brief b- Liver function			
7-	<b>PHYSIOLOGY OF AGEING</b> (With respect to all systems)	<b>5</b>	<b>-</b>	<b>5</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Describe physiological functions of various systems like – Musculo-skeletal, Neuro-motor, cardio-respiratory, endocrine & Uro-genital function.
- 2) Acquire the knowledge of the relative contribution of each organ system in maintenance of Homeostasis.
- 3) Acquire the skill of basic clinical examination of PNS, CNS, CVS& Respiratory system.

### **RECOMMENDED TEXT BOOKS**

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

### **RECOMMENDED REFERENCE BOOKS**

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

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks *The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A-Q-1</b>	MCQs – based on <b>MUST KNOW</b> area on <b>HUMAN PHYSIOLOGY</b> (1x10)	<b>10</b>
<b>Section B- Q-2</b>	SAQ- Questions based on <b>HUMAN PHYSIOLOGY</b> to answer any FIVE out of SIX (5x 2)	<b>10</b>
<b>Section B- Q-3</b>	SAQ – Questions based on <b>HUMAN PHYSIOLOGY</b> to answer any THREE out of FOUR (3x 5)	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

<b>PRACTICAL</b>		<b>Marks</b>
<b>35 MARKS + I.A. – 15 MARKS</b>		<b>50</b>
<b>SPOTS</b>	Based on : Nervous system, Excretory system, Temperature regulation, Reproductive system, Cardiovascular system, Gastro-intestinal system and Physiology of ageing	<b>15</b>
<b>Radiology</b>		<b>02</b>
<b>Living anatomy</b>		<b>03</b>
<b>Viva</b>	Nervous system, Excretory system, Temperature regulation, Reproductive system, Cardiovascular system, Gastro-intestinal system and Physiology of ageing	<b>10</b>
<b>Practical Manual</b>	Practicals performed during the year	<b>05</b>
<b>Total Marks</b>		<b>35</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory & Practical
2. I.A. to be calculated out of 15 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# ELECTROTHERAPY-I

(Theory : 120 Hours + Practical / Laboratory : 120 Hours) **TOTAL : 240 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Practical/ Lab Hours	Total Hours
01	<b>MEDICAL ELECTRONICS AND ELECTRICITY :</b>	<b>70</b>	<b>20</b>	<b>90</b>
	a. Fundamentals of Low frequency currents	35	12	47
	b. Fundamentals of High frequency currents	15	08	23
	c. Electro Magnetic Spectrum	10	-	10
	d. Cellular Bio-physics	5	-	5
	e. Environmental currents	5	-	5
02	<b>ELECTRICAL MODALITIES</b>	<b>30</b>	<b>45</b>	<b>75</b>
03	<b>SUPERFICIAL THERMAL AGENTS</b>	<b>20</b>	<b>55</b>	<b>75</b>
	<b>TOTAL</b>	<b>120</b>	<b>120</b>	<b>240</b>

## OBJECTIVES:

### Cognitive:

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

- Recall the physics principles & Laws of Electricity, Electromagnetic spectrum, & ultra sound
- Describe effects of environmental & man made electromagnetic field at the cellular level & risk factors on prolonged exposure.
- Describe the Main electrical supply, Electric shock, precautions
- Enumerate Types & Production of various Therapeutic electrical currents & describe the panel diagrams of the machines

### Psychomotor:

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

- Test the working of the various electrotherapeutic equipments

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

### SYLLABUS

Sr. No.	Topics	Theory Hours	Practical /Lab Hours	Total Hours
01	<b>MEDICAL ELECTRONICS AND ELECTRICITY</b>	<b>70</b>	<b>20</b>	<b>90</b>
	<b>a. Fundamentals of Low frequency currents</b>	<b>35</b>	<b>12</b>	<b>47</b>
	i. Basic Physics: Structure of atom, Isotopes, States of matter; Compound formation-(covalent formation), Properties of Electric lines of forces, Conductors, Non-conductors, Latent heat, Transmission of heat	3	-	3
	ii. Condenser a) Principles b) Capacity c) Types & construction d) Electric field e) Charging and discharging of the condenser f) Duration of Discharge g) Discharge through inductance h) Capacitive reactance & uses of condenser	3	-	3
	iii. Main supply: a) Production of Electricity b) Types: A.C./ D.C. c) Distribution/ Grid system wiring of the house, colour coding of electrical supply to the apparatus d) Earthing and its importance e) Types of Plugs & Switches	3	4	7

iv.	Shock a) Definition b) Types ( Electric Shock & Earth shock) c) Severity Causes, Effects & Precaution	3	-	3
v.	Static Electricity a) Theory of Electricity b) Production of Electric Charge c) Characteristics of charged electrical body and capacitor and inductance: types & uses d) Potential difference	3	-	3
vi.	Current electricity a) EMF b) Resistance: Combination of resistance in series and parallel c) Ohms Law d) D.C., A.C. e) Devices for regulating current: Identification, functioning & Uses-Rheostat, Potentiometer, Ammeters, Oscilloscopes, Voltmeter f) Voltage and Power g) Thermal effects of electric current- Joule"s Law.	8	8	16
vii.	Electrical Skin Resistance: a) Skin Resistance b) Factors affecting Skin resistance: types of electrodes used, electrode gels, skin threshold, skin type, skin temperature, exercises c) Methods to reduce skin resistance	2	-	2
viii.	Faradic currents: Duration, frequency, wave forms & graphical representation, surging, faradic type current, pulse width modulation,	5	-	5
ix.	Galvanic currents/ Direct current: and interrupted galvanic current, duration, frequency, waveforms & graphical representation	5	-	5
<b>b. Fundamentals of High frequency currents</b>		<b>15</b>	<b>08</b>	<b>23</b>

	i. Electro Magnetic Induction: a) Production b) Direction of induced EMF	2	2	4
	ii. Apparatus for Modification of Currents: a) Interruption of current – Switch & Valve b) C- R timing circuit c) Multivibrator Circuit, Pulse Generator d) Current supplied to patient – Impulse type	3	-	3
	iii. Magnetism: a) Nature and Types b) Molecular theory of Magnetism c) Property of Magnet d) Magnetic effect of electric current – Electro Magnets e) Meters for measuring A.C.	3	-	3
	iv. Sound: a) Wave motion in sound b) Infrasonics c) Normal hearing band d) Characteristics of sound waves and their velocities e) Ultrasonics f) Reflection, Refraction and Attenuation of Sound waves g) Interference of sound waves	2	-	2
	v. D.C. and A.C.: a) Source – Cell and rectified AC b) Rectification of AC c) Thermionic valves – Diode and Triode	5	6	11
	a) Thermionic valves – Diode and Triode b) Metal Rectifier c) Types of Rectification d) Transformers-Types & Functions e) Smoothing circuit f) Semiconductor and its types g) Diodes & Transistors h) Choke coil			1
	<b>c. Electro Magnetic Spectrum</b>	<b>10</b>	<b>-</b>	<b>10</b>
	i. Laws of transmission Reflection –			

	Refraction – Absorption – Attenuation ii. Electro Magnetic Radiation iii. Laws Governing E.M.R. iv. Laws of Reflection, Refraction, Absorption, Attenuation, Cosine Law, Inverse Square Law, Grothus Law			
	<b>d. Cellular Bio-physics</b>	<b>5</b>	<b>-</b>	<b>5</b>
	i. Action potential, ii. Resting membrane potential iii. Transmission of impulses: Saltatory conduction iv. Reception & emission of E.M.F. signals			
	<b>e. Environmental currents</b>	<b>5</b>	<b>-</b>	<b>5</b>
	Environmental currents & fields risk factors on prolonged exposure to E.M. field.			
2	<b>ELECTRICAL MODALITIES Production, Physical principles, Panel diagrams, Testing of apparatus of the following:</b>	<b>30</b>	<b>45</b>	<b>75</b>
	a. S.W.D. b. Ultrasound b. U.V.R. c. I.F.T. d. I.R. e. LASER (no panel diagram) f. Diagnostic Electrical Muscle Stimulator, g. T.E.N.S.			
3	<b>SUPERFICIAL THERMAL AGENTS</b>	<b>20</b>	<b>55</b>	<b>75</b>
	Construction/Design of the Modalities, Scales of temperature, Specific heat & modes of energy transfer, Physiological effects, Therapeutic effects/ Uses, Merits/ demerits, Indications/contraindications, Skills of application: a. Home remedies b. Paraffin wax bath c. whirl pool d. contrast bath e. Hydro-collator hot packs f. Cryotherapy			

### PRACTICAL

Practical demonstrations of:

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

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Recall physics principles and Laws of Electricity, Electro-magnetic spectrum, and ultra - sound.
- 2) Describe in brief, main electrical supply, Electric shock & precautions, certain common electrical components such as transistors, valves, capacitors, transformers etc and the simple instruments used to test /calibrate these components [such as potentiometer, oscilloscope etc] of the circuitry, and will be able to identify such components.
- 3) Acquire knowledge of various superficial thermal agents such as Paraffin wax bath, Cryotherapy, homemade remedies, etc; their physiological and therapeutic effects, Merits/ demerits; and also acquire the skill of application.

### **RECOMMENDED TEXT BOOKS**

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

## RECOMMENDED REFERENCE BOOK

1. Clinical Electrotherapy -- Nelson & Currier

### SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		Marks
70 marks + I.A. – 30 Marks		100
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section -A-</b> M.C.Qs.	Q-1 – based on MUST KNOW area[1x20]	20
<b>Section-B-</b> S.A.Qs.	Q-1 - Answer any FIVE out of SIX [5x2=10] Q-2 - Answer any TWO out of THREE [2X5=10]	20
<b>Section-C-</b> L.A.Qs.	Answer any TWO out of THREE [2X15=30] Q-1 Q-2- Q-3-	30
<b>Total Marks</b>		<b>70</b>

<b>PRACTICAL</b> 70 MARKS + IA – 30 MARKS		Marks 100
<b>LONG CASE</b>	Based on Superficial thermal agent: <ul style="list-style-type: none"> <li>• <i>Cognitive – Medical Electronic, Physiological, Biophysical principles, Therapeutic effects, indications-contraindications - 15 Marks</i></li> <li>• <i>Psychomotor + Affective skills - 10 Marks</i></li> </ul>	25
<b>SHORT CASE</b>	Two Short case on Testing of equipments: <ol style="list-style-type: none"> <li>1. Low &amp; Medium frequency</li> <li>2. High frequency/Actinotherapy (2x20=40 marks) <ul style="list-style-type: none"> <li>• <i>Cognitive – 05 Marks</i></li> <li>• <i>Psychomotor -15 Marks</i></li> </ul> </li> </ol>	40
<b>ASSIGNMENT</b>	Practicals performed during the year	05
<b>TOTAL MARKS</b>		<b>70</b>

**INTERNAL ASSESSMENT:**

1. Exams –Theory & Practical
2. I.A. to be calculated out of 30 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# BIOCHEMISTRY

(Theory : 56 Hours + Demonstrations : 4 Hours) **TOTAL :60 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Demonstrations Hours	Total Hours
01	<b>CARBOHYDRATES</b>	10	-	10
02	<b>PROTEINS</b>	6	-	6
03	<b>ENZYMES</b>	5	-	5
04	<b>VITAMINS</b>	5	-	5
05	<b>MINERALS</b>	5	-	5
06	<b>HORMONES</b>	4	-	4
07	<b>NUTRITION</b>	4	-	4
08	<b>CLINICAL BIOCHEMISTRY</b>	7	4	11
09	<b>LIPID</b>	5	-	5
10	<b>MUSCLE CONTRACTION</b>	5	-	5
<b>TOTAL</b>		<b>56</b>	<b>4</b>	<b>60</b>

## OBJECTIVES:

The student would know:

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Demonstrations Hours	Total Hours
01	<b>CARBOHYDRATES</b>	<b>10</b>	<b>-</b>	<b>10</b>
	a. Chemistry, Definition, Classification with examples, Functions			
	b. Digestion and Absorption, Glycogenesis, Gluconeogenesis, Glycogenolysis and HMP pathway, Glycolysis, Electron transport chain for ATP synthesis, TCA cycle. Hormonal regulation of blood			
	c. Glucose, Glycogen storage disorders, Diabetes mellitus, Glycosuria, changes in Carbohydrate, Protein & Lipid metabolism.			
	d. All the metabolisms should be taught based on the following points such as starting and ending products, tissues of occurrence and the conditions when the pathway is activated, deactivated and significance of the pathway.			
02	<b>PROTEINS</b>	<b>6</b>		<b>6</b>
	a. Definition, Importance, Functional Classification, Digestion & Absorption, decarboxylation, deamination, transamination, transmethylation, Urea cycle, clinical significance of serum urea, function of glycine, Phenylalanine, tryptophan, methionine tyrosine.			
	b. There should be an emphasis on understanding the structure of protein, the essential and non-essential amino acids.			
03	<b>ENZYMES</b>	<b>5</b>	<b>-</b>	<b>5</b>
	Definition, Modern Classification, Factors affecting enzymes Action, diagnostic & therapeutics uses & enzymes, Isoenzymes, Competitive & Non competitive inhibition.			
04	<b>VITAMINS</b>	<b>5</b>	<b>-</b>	<b>5</b>
	Definition, Classification, Fat & water soluble vitamins, functions, Deficiency manifestations sources & RDA			

05	<b>MINERALS</b>	<b>5</b>		<b>5</b>
	Ca, P, Fe, I, Zinc, Selenium, Fluorine, Magnesium include Na and K. Function sources, Deficiency manifestations			
06	<b>HORMONES</b>	<b>4</b>	<b>-</b>	<b>4</b>
	Definition with mechanism of action, Classification			
07	<b>NUTRITION</b>	<b>4</b>	<b>-</b>	<b>4</b>
	Composition of food, balanced diet, Kwashiorkor, Marasmus, Nitrogen balance, major Dietary constituent & their importance. Include energy requirements, factors affecting B.M.R., S.D.A. (Specific Dynamic Action) and R.Q. (Respiratory Quotient)			
08	<b>CLINICAL BIOCHEMISTRY</b>	<b>7</b>	<b>4</b>	<b>11</b>
	<ul style="list-style-type: none"> <li>a. Liver Function Test, Renal Function Test, Lipid profile in serum</li> <li>b. Starvation metabolism, Hemoglobin chemistry and metabolism</li> <li>c. <b>Demonstrations:</b> Demonstration of estimation of various biomolecules and their interpretation Interpret reports of various conditions (including Diabetic profile, Cardiac profile, Uric acid and Gout)</li> </ul>			
09	<b>LIPID</b>	<b>5</b>	<b>-</b>	<b>5</b>
	Definition, classification with examples biomedical importance, Phospholipids & lipoproteins functions. Digestion & absorption of lipid, $\beta$ oxidation of fatty acid with Energetics, Ketone bodies and their metabolism, Prostaglandins and essential fatty acids, Cholesterol, importance of cholesterol, obesity			
10	<b>MUSCLE CONTRACTION</b>	<b>5</b>	<b>-</b>	<b>5</b>
	Mechanism & Biochemical events Connective Tissue- Biochemistry of connective tissue Collagen-Glyco-protein proteoglycans			
<b>TOTAL</b>		<b>56</b>	<b>4</b>	<b>60</b>

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Describe normal functions of different components of food, enzymes and cell in brief.
- 2) Discuss nutritional aspects of carbohydrates, lipids, proteins & vitamins & their metabolism with special reference to obesity.
- 3) Acquire knowledge in brief about the Clinical biochemistry, with special reference to Liver & renal function test, Blood study for Lipid profile, metabolism of fat, Carbohydrates, proteins, bone minerals, and electrolyte balance.

#### RECOMMENDED TEXT BOOKS

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

#### RECOMMENDED REFERENCE BOOK

1. Review of Biochemistry (24<sup>th</sup> edition) – Harpar

### SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY ONLY</b>		Marks
35 marks + I.A. – 15 Marks [There shall be no LAQ in this paper]		<b>50</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section – A-</b> Q-1	MCQs – based on MUST KNOW area [1x10]	<b>10</b>
<b>Section-B-</b> Q-2 & Q-3	SAQ-to answer any FIVE out of SIX [5x2]	<b>10</b>
	SAQ – to answer any THREE out of FOUR [3x5]	<b>15</b>
<b>Total Marks</b>		<b>35</b>

#### INTERNAL ASSESEMENT

1. Exams –Theory & Practical
2. I.A. to be calculated out of 15 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# ENGLISH COMMUNICATION

**TOTAL: 15 Hours**

## **Objective**

The purpose of commencing English communication skills course is to develop in students fundamental communication skills being integral to personal, social and professional interactions. One of the significant associations among human beings is the ability to share thoughts, emotions and ideas through various means of communication: both verbal and non-verbal. The present course hopes to address most of these aspects through an interactive approach of teaching learning process; focusing on various dimensions of communication skills. The course also focuses on enhancing the ability to handle casual and formed situations in terms of personal and intellectual grooming.

## **Syllabus Modules:**

**Module 04** – Conversation in Real life situations

- Meeting people,
- Traveling
- Visiting Places
- Shopping

**Module 05** – Public Speaking skills

- Extempore
- Role Play
- Group Discussion

**Module 06** – Practical Assessment

- Presentations

## **COURSE OUTCOMES:**

6. Projecting the first impression
7. Use simple forms of polite expressions to establish basic social contact and to perform everyday functions including making requests and offers, conducting simple phone conversations, asking and telling time, giving simple directions, asking about price, ordering a meal, etc.
8. Students learn to use general, social and professional language.
9. Polishing manners to behave appropriately in social and professional circles.
10. Handling difficulty situations with grace style and professionalism.

## **BOOKS RECOMMENDED:**

9. An introduction to Professional English and Soft Skills by B. K. Das et al., Cambridge University Press

10. Technical Communication: Principles and Practice, Second Edition by Meenakshi Raman and Sangeeta Sharma, Oxford Publications.
11. Effective Technical Communication by M Ashraf Rizvi, The McGraw-Hill companies.
12. Understanding Body Language by Alan Pease.
13. Communicative Grammar of English by Geoffrey Leech and Ian Svartik.
14. Better English Pronunciation by J.D.O'Connor.
15. English Grammar by Wren and Martin.
16. Strengthen Your English, M. Bhaskaran and D. Horsburgh, Oxford University Press, Delhi 1973

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks		
*The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A-Q-1</b>	MCQs – based on <b>MUST KNOW</b> area on <b>ENGLISH COMMUNICATION</b> (1x10)	<b>10</b>
<b>Section B- Q-2</b>	SAQ- Questions based on <b>ENGLISH COMMUNICATION</b> to answer any FIVE out of SIX (5x2)	<b>10</b>
<b>Section B- Q-3</b>	SAQ – Questions based on <b>ENGLISH COMMUNICATION</b> to answer any THREE out of FOUR (3x 5)	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

<b>PRACTICAL</b>		<b>Marks</b>
<b>35 MARKS + I.A. – 15 MARKS</b>		
		<b>50</b>
<b>PRACTICAL &amp; VIVA</b>	Based on <b>ENGLISH COMMUNICATION</b>	<b>35</b>
	Total Marks	<b>35</b>

## ENVIRONMENTAL STUDIES

**Total : 14 Hours**

### OBJECTIVES:

5. Understanding of major concepts in environmental sciences and creating the awareness about environmental problems among people;
6. Recognize the interconnectedness of multiple factors in environmental challenges;
7. Imparting basic knowledge about the environment and its allied problems to develop an attitude of concern for the environment in respect to environment protection and environment improvement;
8. Motivating students to participate in Develop analytical skills, critical thinking, in identifying and solving environmental problems.

#### **Unit 4: Natural Resource Management and Biodiversity Conservation(8 Hrs)**

Renewable and non renewable energy resources, use of alternate energy resources, Water resources: sources, usage, over-exploitation and sustainable management of water resources; Conflicts over water (international & inter-state); Land resources: land use change, land degradation, soil erosion and desertification; Forest Resources: types of forest in India, importance of forests, deforestation, Disaster management: floods, earthquake, cyclones and landslides.

Conservation of biodiversity: *In-situ and Ex-situ* conservation of biodiversity; IUCN-Red Data Book categories; Hot spots in India; Biomes; Role of Govt. and Non-Government organizations in Conservation of Biodiversity in India; International Biodiversity conservation practices and strategies.

#### **Unit 5: Environmental Education and Management (6 Hrs)**

Environmental Education and movements: Goals of environmental education; Environmental education at primary, secondary and tertiary level Chipko, Silent Valley, Bishnoi, Narmada BachhaoAndolan, and Tehri Dam Conflict; Environmental communication and public awareness; Environmental ethics: Green Politics, Earth Hour, Green Option Technologies; EIA- Principles and Process; ISO standards: ISO 9000 and 14000; Environment Laws and Practices.

**COURSE OUTCOME:** Students will be able,

9. To understand the concept and function of the environment and recognize the physical, chemical, and biological components of the earth's systems and their functions.
10. To acquire the awareness on the ecosystem structure and process which interlinked with human survival, intensively need attention at global and regional level.
11. To identify common and adverse impacts of human activities on biotic communities, soil, water, and air quality and suggest sustainable strategies to mitigate these impacts;
12. Develop an understanding of environmental pollutions and hazards and general measures to control them.
13. To identify surrounding natural resources including renewable resources and non-renewable resources and practices for their restoration.
14. To realize the importance of biodiversity for maintaining ecological balance and Global conservation practices and strategies.
15. To analyze the need for sustainable development in respect of environmental management through Policies, movements and social awareness.
16. To acquire skills required to research and analyze environmental issues scientifically in applied situations such as careers.

#### **REFERENCES:**

#### **BOOKS:**

15. Banerji, K.S., Environmental Chemistry, TMH publication.
16. Bhargava & Gupta, Environmental Pollution & Human Health, CBS publication.
17. D. K. Asthana, Environment : Problems & Solutions, S. Chand Publishing, 2001
18. G. Tyler Miller, Environmental Science Working With the Earth, Cengage Learning.
19. Ghosh, G.K., Environment and Development, ARH publication.
20. Godfrey Boyle, Renewable Energy, Oxford University Press.
21. Kumar, A., Environment Pollution and Management, ARH publication.
22. M K Varshney, Environmental Pollution & Control, Ashian Publication.
23. Odum Eugene P, Fundamental of Ecology, Cengage Learning
24. Rajagopalan, R, Environmental Studies, Oxford University Press
25. Sakarama Somayaji, Environmental Concept and Sustainable Development, TERI.
26. Shivdutt Upadhyay, Environmental Education and Disaster Management, Bharat Publication.
27. Shrivastava, A.K., Environmental Ethics, ARH publication.
28. Trivedi, P.R., Ecology & Environment, ARH publication.

### **SCHEME OF UNIVERSITY EXAMINATION**

<b>THEORY</b>		Marks
70 marks + I.A. – 30 Marks		100
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section -A-</b> M.C.Qs.	Q-1- based on MUST KNOW area[1x20]	20
<b>Section-B-</b> S.A.Qs.	Q-1- Answer any FIVE out of SIX [5x2=10] Q-2- Answer any TWO out of THREE [2X5=10]	20
<b>Section-C-</b> L.A.Qs.	Answer any TWO out of THREE [2X15=30] Q-1- Q-2- Q-3-	30
<b>Total Marks</b>		<b>70</b>

# UNIVERSAL HUMAN VALUES AND PROFESSIONAL ETHICS

**TOTAL : 30 Hours**

## **COURSE OBJECTIVES**

1. To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings.
2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way
3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature

Thus, this course is intended to provide a much needed orientational input in value education to the young enquiring minds.

## **COURSE METHODOLOGY**

1. The methodology of this course is explorational and thus universally adaptable. It involves a systematic and rational study of the human being vis-à-vis the rest of existence.
2. It is free from any dogma or value prescriptions.
3. It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as a proposal and the students are facilitated to verify it in their own right, based on their Natural Acceptance and subsequent Experiential Validation.
4. This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with, and then to continue within the student leading to continuous self-evolution.
5. This self-exploration also enables them to critically evaluate their pre-conditionings and present beliefs.

## **SYLLABUS**

After every two lectures of one hour each, there is a 2 hour practice session.

The teachers are oriented to the inputs through an eight to ten day workshop (Teachers' Orientation Program).

The Teacher's Manual provides them the lecture outline. The outline has also been elaborated into presentations and provided in a DVD with this book to facilitate sharing.

The teacher is expected to present the issues to be discussed as propositions and encourage the students to have a dialogue. The process of dialogue is enriching for both, the teacher as well as the students.

The syllabus for the lectures is given below:

### **COURSE INTRODUCTION**

#### **NEED, BASIC GUIDELINES, CONTENT AND PROCESS FOR VALUE EDUCATION.**

1. Understanding the need, basic guidelines, content and process for Value Education
2. Self Exploration–what is it? - its content and process; ‘Natural Acceptance’ and Experiential Validation- as the mechanism for self exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. Method to fulfill the above human aspirations: understanding and living in **harmony** at various levels

### **GUIDELINES AND CONTENT FOR PRACTICE SESSIONS**

#### **COURSE INTRODUCTION**

#### **NEED, BASIC GUIDELINES, CONTENT AND PROCESS FOR VALUE EDUCATION**

**PS 1:** Introduce yourself in detail. What are the goals in your life? How do you set your goals in your life? How do you differentiate between right and wrong? What have been your achievements and shortcomings in your life? Observe and analyze them.

**Expected outcome:** the students start exploring themselves; get comfortable to each other and to the teacher and start finding the need and relevance for the course.

**PS 2:** Now-a-days, there is a lot of voice about many techno-genic maladies such as energy and natural resource depletion, environmental pollution, global warming, ozone depletion, deforestation, soil degradation, etc. – all these seem to be man-made problems threatening the survival of life on Earth – What is the root cause of these maladies & what is the way out in your opinion?

On the other hand, there is rapidly growing danger because of nuclear proliferation, arms race, terrorism, criminalization of politics, large scale corruption, scams, breakdown of relationships, generation gap, depression & suicidal attempts, etc – what do you think, is the root cause of these threats to human happiness and peace – what could be the way out in your opinion?

**Expected outcome:** the students start finding that technical education without study of human values can generate more problems than solutions. They also start feeling that lack of understanding of human values is the root cause of all problems and the sustained solution could emerge only through understanding of human values and value based living. Any solution brought out through fear, temptation or dogma will not be sustainable.

**PS 3:**

1. Observe that each one of us has Natural Acceptance, based on which one can verify right or not right for him. Verify this in case of

i) What is Naturally Acceptable to you in relationship- Feeling of respect or disrespect?

ii) What is Naturally Acceptable to you – to nurture or to exploit others?

Is your living the same as your natural acceptance or different?

2. Out of the three basic requirements for fulfillment of your aspirations- right understanding, relationship and physical facilities, observe how the problems in your family are related to each. Also observe how much time & effort you devote for each in your daily routine.

**Expected outcome:**

1. The students are able to see that verification on the basis of natural acceptance and experiential validation through living is the only way to verify right or wrong, and referring to any external source like text or instrument or any other person cannot enable them to verify with authenticity; it will only develop assumptions.

2. The students are able to see that their practice in living is not in harmony with their natural acceptance most of the time, and all they need to do is to refer to their natural acceptance to remove this disharmony.

3. The students are able to see that lack of right understanding leading to lack of relationship is the major cause of problems in their family and not the lack of physical facilities in most of the cases, while they have given higher priority to earning of physical facilities in their life ignoring relationships and not being aware that right understanding is the most important requirement for any human being.

## SCHEME OF UNIVERSITY EXAMINATIONS

Subject Code	Subjects	Theory			Practical		
		University	I.A.	Total	University	I.A.	Total
BPT 201	Human Anatomy-II	35	15	50	35	15	50
BPT 202	Human Physiology-II	35	15	50	35	15	50
BPT 203	Electrotherapy-I	70	30	100	70	30	100
BPT 204	Biochemistry	35	15	50	-	-	-
	<b>Total</b>	<b>175</b>	<b>75</b>	<b>250</b>	<b>140</b>	<b>60</b>	<b>200</b>

### Qualifying Courses:

Subject Code	Subjects	Theory			Practical		
		University	I.A.	Total	University	I.A.	Total
AEC-01	English Communication	35	15	50	35	15	50
AEC-02	Environmental Studies	70	30	100	-	-	-
HVE-01	Universal Human Values & Professional Ethics	-	-	-	-	-	-

**Note:** i) English Communication & Environmental Studies Examination will be held in 2<sup>nd</sup> Semester and thereafter every even semester (In case of failure in 2<sup>nd</sup> semester or subsequent even semesters).

ii) Examination of Universal Human Values & Professional Ethics will be held in 8<sup>th</sup> Semester.

**BACHELOR OF PHYSIOTHERAPY  
(BPT)**

**SYLLABUS**

**THIRD SEMESTER**

# SYLLABUS

## Transcript Hours- 785

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subject</b>	<b>Theory Hours</b>	<b>Practical/ Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 301	Exercise Therapy-II	90	180	<b>270</b>
02.	BPT 302	Electrotherapy-II	93	182	<b>275</b>
03.	BPT 303	Microbiology	30	05	<b>35</b>
04.	BPT 304	Sociology	30	-	<b>30</b>
05.	BPT 305	Pharmacology	50	-	<b>50</b>
06.	-	Observational Clinical Practice	-	100	<b>100</b>
		<b>Total</b>	320	465	<b>785</b>

## EXERCISE THERAPY-II

(Theory : 90 Hours + Practical / Laboratory :180 Hours) **TOTAL : 270 Hours**

### COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Practical/ Lab Hours	Total Hours
1.	BIOPHYSICS	40	120	160
2.	POSTURE	08	10	18
3.	MOTOR & POSTURAL CONTROL AND BALANCE	05	00	05
4.	FUNCTIONAL REEDUCATION	06	10	16
5.	NEUROMUSCULAR CO-ORDINATION	06	10	16
6.	GAIT & WALKING AIDS	10	15	25
7.	BRONCHIAL HYGIENE	15	15	30
	<b>TOTAL</b>	<b>90</b>	<b>180</b>	<b>270</b>

### OBJECTIVES:

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

#### Cognitive:

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

#### Psychomotor:

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

6. Analyze normal Human Posture [static & dynamic].
7. Acquire the skill of functional re-education techniques on models
8. Acquire the skill of Balance and Coordination Exercises
9. Acquire the skill of using various walking aids for Gait Training
10. Acquire the skill of demonstrating breathing exercises and retraining on self and others
11. Acquire the skill of demonstrating Postural Drainage on models

## SYLLABUS

Sr. No.	Topics	Theory Hours	Practical/ Lab Hours	Total Hours
<b>01.</b>	<b>BIOPHYSICS</b>	<b>40</b>	<b>120</b>	<b>160</b>
	A. Biophysical Principles: i- Structures & Properties of connective and non connective tissues	2	0	02
	B. Stretching : i- Definition ii- Types iii- Assessment of muscle length and fascia around the joint iv- Principles of stretching v- Techniques for all joints vi. Individual muscle stretching	3	14	17
	C. Joint Mobility : i- Definition ii- Causes of limitation iii- Indication and contra indications iv- Principles v- Techniques vi- Assessment methods vii- Individual joints mobility Exercises– Upper Limb, Lower Limb & Spine (Using active, assisted, passive movements)	10	20	30
	D. Manual Muscle Testing and assessment (subjective & objective) : i- Principle ii- Trick movements iii- Group Muscle Testing iv- Individual Muscle testing – Upper & Lower Limbs, Trunk & Face	6	35	41
	E. Muscle Strengthening:	10	45	55

	<ul style="list-style-type: none"> <li>i- Concepts -Strength, Power, Endurance</li> <li>ii- Factors influencing the Strength of normal muscle/ hypertrophy, recruitment of motor units, change after the training, training with isometric, isotonic &amp; Isokinetic muscle contraction</li> <li>iii- Principles: Overload, Intensity, Motivation, Learning, Duration, Frequency, Reversibility, Specificity, Determinants</li> <li>iv- Methods : Subjective &amp; Objective</li> <li>v- Individual joint Strengthening Exercises Upper Limb, Lower Limb &amp; Spine</li> <li>vi- Concepts- 1 RM, 10 RM &amp; Dynamometry</li> <li>vii- Progressive Resisted Exercise - Delorme, Zinoveiff, Mc queen protocols</li> <li>viii- Use of gymnasium equipments</li> </ul>			
	F. Hydrotherapy: <ul style="list-style-type: none"> <li>i- Physiological effects</li> <li>ii- Indication and Contraindications</li> <li>iii- Techniques</li> </ul>	4	0	04
	G. Traction (Cervical & Lumbar): <ul style="list-style-type: none"> <li>i- Introduction</li> <li>ii- Types( Mechanical / Electrical, Continuous/Intermittent)</li> <li>iii- Indications and Contra indications</li> <li>iv- Techniques</li> <li>v- Effects and uses</li> </ul>	3	6	09
	H. Home Program: <ul style="list-style-type: none"> <li>i- Principles</li> <li>ii- Ergonomic advice for ADLs</li> <li>iii- Home based exercise program</li> </ul>	2	0	02
<b>02</b>	<b>POSTURE</b>	<b>8</b>	<b>10</b>	<b>18</b>
	<ul style="list-style-type: none"> <li>a. Definition</li> <li>b. Human posture –Changes from quadruped to biped</li> <li>c. Correct and faulty posture</li> <li>d. Postural patterns and Postural Mechanism</li> <li>e. Factors affecting posture</li> <li>f. Physiological deviations g. Analysis of all views</li> </ul>			
<b>03.</b>	<b>MOTOR CONTROL, POSTURAL CONTROL AND BALANCE</b>	<b>05</b>	<b>--</b>	<b>05</b>

	<ul style="list-style-type: none"> <li>a. Motor Control</li> <li>b. Postural Alignment &amp; Weight Distribution</li> <li>c. Sensory Organisation</li> <li>d. C.N.S. Integration</li> <li>e. Motor Strategies</li> </ul>			
<b>04.</b>	<b>FUNCTIONAL REEDUCATION</b>	<b>6</b>	<b>10</b>	<b>16</b>
	<ul style="list-style-type: none"> <li>a. Principles &amp; Indications</li> <li>b. Mat exercises- mobility, strength and balance training</li> <li>c. Progression to sitting, standing and walking</li> <li>d. Transfers</li> </ul>			
<b>05</b>	<b>NEUROMUSCULAR CO-ORDINATION AND BALANCE</b>	<b>6</b>	<b>10</b>	<b>16</b>
	<ul style="list-style-type: none"> <li>a. Definition</li> <li>b. Physiology related to coordination &amp; Balance</li> <li>c. Frenkel's exercise ( Principles &amp; Techniques)</li> <li>d. Balancing Exercise</li> </ul>			
<b>06</b>	<b>GAIT &amp; WALKING AIDS</b>	<b>10</b>	<b>15</b>	<b>25</b>
	<ul style="list-style-type: none"> <li>a. Gait <ul style="list-style-type: none"> <li>i- Definition,</li> <li>ii- Gait cycle and measurable Parameters (Step Length, Step Width, Stride Length, Foot Angle, Cadence)</li> </ul> </li> <li>b. Walking Aids <ul style="list-style-type: none"> <li>i- Types</li> <li>ii- Indications</li> <li>iii- Selection / Prescription</li> <li>iv- Pre „Walking Aids“ training</li> <li>v- Measurements</li> <li>vi- Gait with walking aids</li> </ul> </li> </ul>			
<b>07</b>	<b>BRONCHIAL HYGIENE</b>	<b>15</b>	<b>15</b>	<b>30</b>
	<ul style="list-style-type: none"> <li>a. Humidification &amp; Nebulisation <ul style="list-style-type: none"> <li>i- Definition</li> <li>ii- Types</li> <li>iii- Method of delivery</li> <li>iv- Indications and contraindications</li> </ul> </li> <li>b. Breathing Exercise – <ul style="list-style-type: none"> <li>i- Types – Inspiratory , Expiratory</li> </ul> </li> </ul>			

	(including forced expiratory technique)			
	ii- Goals & Uses			
	iii- Techniques			
	iv- ACBT			
	v- Autogenic drainage			
	c. Postural Drainage:			
	i- Definition			
	ii- Indications & Contraindications			
	iii- Assessment & Principles			
	iv- Techniques			

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

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Describe the physiological & Therapeutic uses, merits /demerits of various exercise modes.
- 2) Demonstrate various therapeutic exercises on self & acquire the application skill on models.
- 3) Acquire the skill of assessment of isolated & group muscle strength, & Range of motion of the joints subjectively & objectively.
- 4) Describe the pattern of normal and abnormal movements of various joints and activities.

**RECOMMENDED TEXT BOOKS**

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

**RECOMMENDED REFERENCE BOOKS**

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

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		Marks
70 marks + I.A. – 30 Marks		100
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section -A-</b> M.C.Qs.	Q-1 – based on MUST KNOW area [1x20]	20
<b>Section-B-</b> S.A.Qs.	Q-1 - Answer any FIVE out of SIX [5x2=10] Q-2 - Answer any TWO out of THREE [2X5=10]	20
<b>Section-C-</b> L.A.Qs.	Answer any TWO out of THREE [2X15=30] Q-1 Q-2- Q-3-	30
<b>Total Marks</b>		<b>70</b>

<b>PRACTICAL</b>		Marks
70 marks + I.A. – 30 Marks		<b>100</b>
<b>LONG CASE</b>	Muscle Strengthening / Mobility /Bronchial hygiene (On models)	<b>35</b>
<b>SHORT CASE</b>	Two Short cases on M.M.T. /Coordination/Posture/Gait (Measurable parameters only as mentioned in chapter 6-a)/ Walking aids/ Functional Reeducation / Breathing Exercises 2 x 15 = 30 marks	<b>30</b>
<b>ASSIGNMENT</b>	Documentation- Principles & applications for various Kinesiotherapeutics.	<b>05</b>
<b>TOTAL MARKS</b>		<b>70</b>

### INTERNAL ASSESSMENT:

1. Exams – Theory & Practical.
2. I. A. to be calculated out of 30 marks(Theory & Practical).
3. Internal assessment as per University pattern.

# ELECTROTHERAPY-II

(Theory: 90 Hours + Practical / Laboratory: 180 Hours) **TOTAL: 270 Hours**

## COURSE DESCRIPTION:

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Practical/ Lab Hours	Total Hours
1.	PAIN	03	-	03
2.	LOW FREQUENCY CURRENTS	30	80	110
3.	MEDIUM FREQUENCY CURRENTS	07	15	22
4.	BIOFEEDBACK	05	-	05
5.	HIGH FREQUENCY CURRENTS	10	20	30
6.	SOUND	10	25	35
7.	ACTINOTHERAPY	15	25	40
8.	ELECTROTHERAPY: WOUNDCARE	10	15	25
	TOTAL	90	180	270

## OBJECTIVES:

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

### Cognitive:

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

### Psychomotor:

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Practical/ Lab Hours	Total Hours
<b>1.</b>	<b>PAIN</b>	<b>03</b>	<b>-</b>	<b>03</b>
	<ul style="list-style-type: none"> <li>a. Pain pathway</li> <li>b. Pain gate theory</li> <li>c. Descending pain suppressing system</li> <li>d. Physiological block</li> </ul>			
<b>2</b>	<b>LOW FREQUENCY CURRENTS</b>	<b>30</b>	<b>80</b>	<b>110</b>
	<ul style="list-style-type: none"> <li>i. Faradic currents: Physiological &amp; Therapeutic effects, indications, contraindications:                             <ul style="list-style-type: none"> <li>A. Faradic type</li> <li>B. Strong Surged Faradic</li> <li>C. Sinusoidal currents</li> <li>D. Application of Faradic current                                     <ul style="list-style-type: none"> <li>a) Faradism Under pressure – Indications, Principle of application, Technique of application</li> <li>b) Faradic re-education: Indications, Principle of application, Technique of application</li> </ul> </li> <li>E. Short/Long pulse currents Motor Points: Definition., Identification</li> </ul> </li> <li>ii. Galvanic / Direct currents (Continuous DC &amp; Interrupted DC): Physiological &amp; Therapeutic effects, Indications, Contraindications                             <ul style="list-style-type: none"> <li>A. Definition: Galvanic &amp; Interrupted Galvanic Currents</li> <li>B. Property of Accommodation</li> <li>C. Technique &amp; Methods of Application of Galvanic currents</li> <li>D. Types – Anodal &amp; Cathodal, Therapeutic effects &amp; uses, Technique &amp; Methods of application, Dangers &amp; precautions</li> <li>E. Ionization /Iontophoresis: Theory of Medical Ionisation, Effects &amp; Uses of various Ions, Indications and contraindications, Dangers and</li> </ul> </li> </ul>	10	20	30
		10	20	30

	precautions			
	iii. High Voltage Currents	1	-	1
	iv. Micro Currents	1	-	1
	v. Didynamic Currents	1	-	1
	vi. Transcutaneous Electrical Nerve Stimulation (T.E.N.S.)	4	20	24
	A. Definition, Types			
	B. Physiological & Therapeutic effects			
	C. Technique & Methods of Application			
	D. Indications & contraindications			
	vii. Strength Duration Curves on model	3	20	23
	A. Principle of S-D curves			
	B. Technique of plotting			
	C. Interpretation of normal curves			
	D. Chronaxie and Rheobase			
<b>3</b>	<b>MEDIUM FREQUENCY CURRENTS</b>	<b>7</b>	<b>15</b>	<b>22</b>
	a. Interferential Therapy			
	i. Definition , Types,			
	ii. Physiological & Therapeutic effects			
	iii. Technique & Methods of Application			
	iv. Electrodes types ( including vacuum),			
	Effects & Uses v. Advantages of I.F.T.			
	over Low frequency currents			
	v. Indications & contraindications			
	b. Russian Currents			
<b>4</b>	<b>BIOFEEDBACK</b>	<b>5</b>	<b>-</b>	<b>5</b>
	i.Principle			
	ii.Methods: Electro biofeedback.			
	iii.Uses of Biofeedback			
<b>5</b>	<b>HIGH FREQUENCY CURRENTS</b>	<b>10</b>	<b>20</b>	<b>30</b>
	S.W.D			
	i. Types: continuous / Pulsed			
	ii. Definition and types			
	iii. Physiological & Therapeutic effects			
	iv. Technique & Methods of Application			
	v. Electrodes types, Effects & Uses			
	vi. Indications & contraindications			
	vii. Dangers & Precautions			
<b>6</b>	<b>SOUND</b>	<b>10</b>	<b>25</b>	<b>35</b>

	Therapeutic Ultra Sound: Pulsed / Continuous i. Physiological & Therapeutic effects ii. Technique & Methods of Application iii. Phonophoresis iv. Indications & Contraindications v. Dangers & Precautions			
<b>7</b>	<b>ACTINOTHERAPY</b>	<b>15</b>	<b>25</b>	<b>40</b>
	a. Radiant heat [I.R.] i. Physiological & Therapeutic effects ii. Technique & Methods of Application iii. Effects & Uses iv. Indications & contraindications v. Dangers & Precautions	5	5	10
	b. U.V.R. i. Types : a, b, c ii. Physiological & Therapeutic effects iii. Technique & Methods of Application iv. Effects & Uses v. Indications & contraindications v. Dangers & Precautions vi. Test Dose	6	20	26
	c. Laser – He/ Ne, & I.R. combination i. Physiological & Therapeutic effects ii. Technique & Methods of Application iii. Effects & Uses iv. Indications & Contraindications v. Dangers & Precautions vi. Dosage	4	-	4
<b>8</b>	<b>ELECTROTHERAPY: WOUNDCARE</b>	<b>10</b>	<b>15</b>	<b>25</b>
	i. Types of wound ii. Application of Therapeutic currents, Ultrasound, U.V.R. & LASER			

**PRACTICAL:**

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

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Describe the Production & Physiological effects, Therapeutic uses, merits, demerits indication & contraindications of various low/medium Frequency Currents modes.
- 2) Describe the Physiological effects & therapeutic uses of various therapeutic ions & Topical Pharmaco-therapeutic agents to be used for the application of Iontophoresis & sono/phonophoresis
- 3) Acquire the skill of Application of the Electro therapy modes like UVR and LASER on models, for the purpose of Assessment & Treatment.
- 4) Acquire an ability to select the appropriate mode as per the tissue specific & area specific application.

**RECOMMENDED TEXT BOOKS**

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

**RECOMMENDED REFERENCE BOOK**

1. Clinical Electro Therapy – Nelson & Currier

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		Marks
70 marks + I.A. – 30 Marks		100
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section -A-</b> M.C.Qs.	Q-1 – based on MUST KNOW area [1x20]	20
<b>Section-B-</b> S.A.Qs.	Q-1 - Answer any FIVE out of SIX [5x2=10] Q-2 - Answer any TWO out of THREE [2X5=10]	20
<b>Section-C-</b> L.A.Qs.	Answer any TWO out of THREE [2X15=30] Q-1 Q-2- Q-3-	30
<b>Total Marks</b>		<b>70</b>

<b>PRACTICAL</b>		Marks
70 marks + I.A. – 30 Marks		100
<b>LONG CASE</b>	Motor points /Strength Duration Curve / Faradism under pressure (On models)	35
<b>SHORT CASE</b>	1. Based on Low or Medium Frequency modalities / High Frequency modalities 2. Actinotherapy (I.R./U.V.R./LASER) 2x15= 30 (Skill of application on models & rationale for selection of modality)	30
<b>ASSINGMENT</b>	Documentation- Principles & applications for various Electrotherapy Modalities.	05
<b>TOTAL MARKS</b>		<b>70</b>

### INTERNAL ASSESSMENT:

4. Exams –Theory & Practical
5. I.A. to be calculated out of 30 marks (Theory & Practical)
6. Internal assessment as per University pattern.

# MICROBIOLOGY

(Theory : 30 Hours + Demonstration : 5 Hours) **TOTAL : 35 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Practical/Lab Hours	Total Hours
1.	<b>GENERAL MICROBIOLOGY</b>	4	2	6
2.	<b>LABORATORY DIAGNOSIS OF INFECTION</b>	2	1	3
3.	<b>IMMUNOLOGY</b>	5	-	5
4.	<b>SYSTEMIC BACTERIOLOGY</b>	6	-	6
5.	<b>MYCOLOGY</b>	2	1	3
6.	<b>VIROLOGY</b>	5	-	5
7.	<b>PARASITOLOGY</b>	3	1	4
8.	<b>APPLIED MICROBIOLOGY</b>	3	-	3
	<b>TOTAL</b>	30	5	35

## OBJECTIVES:

At the end of the course, the candidate will

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Practical/Lab Hours	Total Hours
1.	<b>GENERAL MICROBIOLOGY</b>	<b>4</b>	<b>2</b>	<b>6</b>
	a. Introduction & scope			

	<ul style="list-style-type: none"> <li>b. Classification of Micro-organisms and Bacterial Anatomy (cell wall, capsule, spore, flagella and types as per their shape and arrangement)</li> <li>c. Sterilization</li> <li>d. Disinfection</li> <li>e. Demonstration for General Microbiology</li> </ul>			
2.	<b>LABORATORY DIAGNOSIS OF INFECTION</b>	<b>2</b>	<b>1</b>	<b>3</b>
	<ul style="list-style-type: none"> <li>a. Culture media and identification of bacteria</li> <li>b. Sample collection for smear examination and cultures</li> <li>c. Demonstration of Gram staining, ZN staining and culture media</li> </ul>			
3.	<b>IMMUNOLOGY</b>	<b>5</b>	<b>-</b>	<b>5</b>
	<ul style="list-style-type: none"> <li>a. Innate immunity &amp; acquired immunity</li> <li>b. Structure and function of immune system and Immune response – normal / abnormal</li> <li>c. Define Antigen, Antibody and Antigen - antibody reaction &amp; application for diagnosis</li> <li>d. Hyper – sensitivity</li> <li>e. Auto-immunity</li> </ul>			
4.	<b>SYSTEMIC BACTERIOLOGY</b>	<b>6</b>	<b>-</b>	<b>6</b>
	<ul style="list-style-type: none"> <li>i. Infection caused by gram +ve cocci Staphylococcus, Streptococcus and Pneumococcus</li> <li>ii. Infection caused by gram –ve cocci Gonococci and Meningococci</li> <li>iii. Clostridium</li> <li>iv. Enterobacteriaceae (E.Coli, Klebsiella) and Pseudomonas</li> <li>v. Salmonella and Vibrio</li> <li>vi. Mycobacterial infection: <ul style="list-style-type: none"> <li>i. Tuberculosis-Leprosy</li> <li>ii. Atypical Mycobacterium</li> </ul> </li> <li>vii. Syphilis and Leptospirosis- Morphology &amp; pathogenesis</li> </ul>			
5.	<b>MYCOLOGY</b>	<b>2</b>	<b>1</b>	<b>3</b>
	<ul style="list-style-type: none"> <li>a. Introduction and Superficial mycosis</li> <li>b. Mycetoma and opportunistic fungal infection</li> <li>c. Mycology and Virology demonstration</li> </ul>			

6.	<b>VIROLOGY</b>	<b>5</b>	<b>-</b>	<b>5</b>
	a. Introduction & general properties, b. DNA virus c. Measles, Mumps, Rubella, polio and congenital viral infections d. Hepatitis and Rabies e. H.I.V.			
7.	<b>PARASITOLOGY</b>	<b>3</b>	<b>1</b>	<b>4</b>
	a. Introduction- Entamoeba histolytica b. Malaria, Filaria c. Toxoplasma – Cystisarcosis& Echinococcus			
8.	<b>APPLIED MICROBIOLOGY</b>	<b>3</b>	<b>-</b>	<b>3</b>
	a. Hospital acquired infections, Universal safety precautions and Waste disposal b. Diseases involving Bones, Joints- Nerves- Muscles-Skin-Brain- Cardiopulmonary system, Burn and wound infections			
	<b>TOTAL</b>	<b>30</b>	<b>5</b>	<b>35</b>

#### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Acquire knowledge of common Immunological disorders & their resultant effects on the human body.
- 2) Understand in brief, about the Hematological diseases & investigations necessary to diagnose them & determine their prognosis.
- 3) At the end of the Microbiology course, the candidate will have sound knowledge of the agents responsible for causing human infections, pertaining to C.N.S., C.V.S. Musculoskeletal & Respiratory system.

#### **RECOMMENDED TEXT BOOK**

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

#### **RECOMMENDED REFERENCE BOOK**

1. Text book of Microbiology – R. Ananthnarayan& C.K. Jayram Panikar

## SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

<b>THEORY</b>		<b>Marks</b>
40 marks + I.A. – 10 Marks [There shall be no LAQ in this paper] *The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A-Q-1</b>	MCQs – based on <b>MUST KNOW</b> area on <b>MICROBIOLOGY</b> (1x10)	<b>10</b>
<b>Section B- Q-2</b>	SAQ- Questions based on <b>MICROBIOLOGY</b> to answer any FIVE out of SIX (5x 2)	<b>10</b>
<b>Section B- Q-3</b>	SAQ – Questions based on <b>MICROBIOLOGY</b> to answer any THREE out of FOUR (3x 5)	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### INTERNAL ASSESSMENT

1. Exams –Theory & Practical
2. I.A. to be calculated out of 15 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# SOCIOLOGY

**Total: 30 Hours**

## **COURSE DESCRIPTION:**

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

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

## **SYLLABUS**

<b>Sr. No.</b>	<b>Topics</b>	<b>Theory Hours</b>
<b>1.</b>	<b>INTRODUCTION:</b>	<b>1</b>
	Definition & Relevance with Physiotherapy and social factors affecting Health status, Decision Making in taking treatment.	
<b>2.</b>	<b>SOCIALIZATION:</b>	<b>2</b>
	Definition, Influence, of Social Factors, on Personality, Socialization in the Hospital & Rehabilitation of the patients.	
<b>3.</b>	<b>SOCIAL GROUPS:</b>	<b>2</b>
	Concepts, Influence of formal & informal groups of Health & Diseases, Role of Primary & Secondary Groups in the Hospital & Rehabilitation Setting.	
<b>4.</b>	<b>FAMILY:</b>	<b>2</b>
	Influence on human personality, Role of family in health and disease	
<b>5.</b>	<b>COMMUNITY ROLE:</b>	<b>2</b>
	Rural & Urban communities in Public Health, Role of community in determining Beliefs, Practices & Home Remedies in Treatment.	
<b>6.</b>	<b>CULTURE:</b>	<b>2</b>
	Component's impact on human behavior, Role of community in determining beliefs, practices and health seeking behavior and home remedies	
<b>7.</b>	<b>SOCIAL CHANGE FACTORS:</b>	<b>2</b>
	Human Adaptation, Stress, Deviance, Health Programme Role of Social Planning in the improvement of Health & in Rehabilitation.	
<b>8.</b>	<b>SOCIAL CONTROL:</b>	<b>2</b>
	Definition, Role of norms, Folkways, Customs, Morals, Religion, Law & other means of social controls in the regulation of Human Behavior, Social Deviance & Disease	

<b>9.</b>	<b>POPULATION GROUPS :</b>	<b>5</b>
	a. Children: Street children, Child labour, Juvenile delinquency b. Women's: Victims of domestic violence and addiction, C.S.W., physically and /or mentally challenged c. Role of NGOs, Social support systems	
<b>10.</b>	Social Security & Social Legislation in relation to the Disabled	<b>2</b>
<b>11.</b>	Role of a Medical Social Worker	<b>2</b>
<b>12.</b>	Sociology of Brain Death and/ or Organ donation:	<b>2</b>
<b>13.</b>	<b>SOCIAL PROBLEMS:</b>	<b>4</b>
	Population explosion, Poverty, Dowry, Illiteracy- Causes, prevention & Control measures.	
	<b>Total</b>	<b>30</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Sociology & Health – Social factors affecting Health Status, Social Consciousness & Perception of Illness, Decision Making in taking Treatment
- 2) Socialization – Definition, Influence, of Social Factors, on Personality, Socialization in the Hospital & Rehabilitation of the patients.
- 3) Community Role of Rural & Urban communities in Public Health, Role of community in determining Beliefs, Practices & Home Remedies in Treatment.

### **RECOMMENDED TEXT BOOKS**

1. An Introduction to Sociology – Sachdeva & Bhushan
2. Indian Social Problems - Madan, Vol-I-Madras

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY ONLY</b>		Marks
35 marks + <b>I.A.</b> – 15 Marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section -A-Q-1</b>	MCQs – based on MUST KNOW area[1x10]	
<b>Section-B-Q-2 &amp; Q-3</b>	SAQ-to answer any FIVE out of SIX [5x2]	<b>10</b>
	SAQ – to answer any THREE out of FOUR[3x5]	<b>15</b>
<b>Total Marks</b>		<b>35</b>

### INTERNAL ASSESEMENT

1. Exams –Theory & Practical
2. I.A. to be calculated out of 15 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# PHARMACOLOGY

**THEORY: 50 Hours**

## **COURSE DESCRIPTION:**

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

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

## **OBJECTIVES:**

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

### **Cognitive:**

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

### **Psychomotor:**

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

## SYLLABUS

Sr. No.	Topics	Theory Hours
1.	<b>GENERAL PHARMACOLOGY</b>	<b>04</b>
	a. Pharmacokinetics b. Routes of administration c. Adverse drug reaction and reporting d. Factors modifying drug effect.	
2.	<b>Drugs acting on C.N.S.</b>	<b>11</b>
	a. Introduction	01
	b. Alcohols + Sedatives & Hypnotics	02
	c. Anti-convulsants	01
	d. Drug therapy in parkinsonism	02
	e. Analgesics & antipyretics –especially Gout & R.A.	03
	f. Psycho Therapeutics	01
	g. Local anaesthetics, counter irritants	01
3.	<b>DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM</b>	<b>07</b>
	a. Adrenergic b. Cholinergic c. Skeletal muscle relaxants	
4.	<b>DRUGS ACTING ON C.V.S.</b>	<b>07</b>
	a. Antihypertensives	02
	b. Antianginal- Antiplatelets, Myocardial Infarction	02
	c. C.C.F.	01
	d. Shock	01
	e. Coagulants and Anticoagulants	01
5.	<b>DRUGS ACTING ON RESPIRATORY SYSTEM</b>	<b>03</b>
	a. Cough b. Bronchial asthma c. C.O.P.D.	
6.	<b>CHEMOTHERAPY</b>	<b>03</b>
	a. General principles b. Anti Tuberculosis c. Anti -Leprosy	
7.	<b>OTHER CHEMO THERAPEUTIC DRUGS</b>	<b>03</b>

	a. Drugs used in Urinary Tract Infection b. Tetra / chlora c. Penicillin d. Cephalosporin e. Aminoglycocides f. Macrolides	
8.	<b>ENDOCRINE</b>	<b>08</b>
	a. Insulin and oral Anti diabetic drugs b. Steroids-Anabolic steroids c. Drugs for osteoporosis, Vitamin D, Calcium, Phosphorus d. Thyroid & Antithyroid e. Estrogen + Progesterone	2 2 2 1 1
9	<b>DRUGS IN G.I. TRACT</b>	<b>2</b>
	a- Peptic ulcer b- Diarrhoea, Constipation & Antiemetics	
10	<b>HEAMATINICS</b> i. Vitamin B, Iron	<b>1</b>
11	<b>DERMATOLOGICAL DRUGS</b> i. Scabies, Psoriasis, Local antifungal	<b>1</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Describe Pharmacological effects of commonly used drugs by patients referred for Physiotherapy, list their adverse reactions, precautions to be taken & contraindications, Formulation& route of administration.
- 2) Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice-versa
- 3) Indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency & safety for individual needs.
- 4) Get the awareness of other essential &commonly used drugs by patients-The bases for their use & common as well as serious adverse reactions

### **RECOMMENDED TEXT BOOKS**

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

## SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

<b>THEORY ONLY</b>		Marks
35 marks + <b>I.A.</b> – 15 Marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section -A-Q-1</b>	MCQs – based on MUST KNOW area[1x10]	<b>10</b>
<b>Section-B- Q-2 &amp; Q-3</b>	SAQ-to answer any FIVE out of SIX [5x2]	<b>10</b>
	SAQ – to answer any THREE out of FOUR[3x5]	<b>15</b>
<b>Total Marks</b>		<b>35</b>

### INTERNAL ASSESSMENT

1. Exams –Theory & Practical
2. I.A. to be calculated out of 15 marks (Theory & Practical)
3. Internal assessment as per University pattern.

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY ONLY</b> 35 marks + <b>I.A.</b> – 15 Marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		Marks
		<b>50</b>
<b>Section -A-Q-1</b>	MCQs – based on MUST KNOW area[1x10]	<b>10</b>
<b>Section-B-Q-2 &amp; Q-3</b>	SAQ-to answer any FIVE out of SIX [5x2]	<b>10</b>
	SAQ – to answer any THREE out of FOUR[3x5]	<b>15</b>
<b>Total Marks</b>		<b>35</b>

## SCHEME OF UNIVERSITY EXAMINATIONS AT A GLANCE

Subject Code	Subject	Theory			Practical		
		University	I.A.	Total	University	I.A.	Total
BPT 301	Exercise Therapy-II	70	30	100	70	30	100
BPT 302	Electrotherapy-II	70	30	100	70	30	100
BPT 303	Microbiology	35	15	50	-	-	-
BPT 304	Sociology	35	15	50	-	-	-
BPT 305	Pharmacology	35	15	50	-	-	-
	<b>Total</b>	<b>280</b>	<b>120</b>	<b>400</b>	<b>140</b>	<b>60</b>	<b>200</b>

**BACHELOR OF PHYSIOTHERAPY  
(BPT)**

**SYLLABUS**

**FOURTH SEMESTER**

# SYLLABUS

## Transcript Hours- 550

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subject</b>	<b>Theory Hours</b>	<b>Practical/ Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 401	Biomechanics & Kinesiology	90	120	<b>210</b>
02.	BPT 402	Pathology	50	-	<b>50</b>
03.	BPT 403	Psychiatry	30	-	<b>30</b>
04.	BPT 404	Psychology	30	-	<b>30</b>
05.	BPT 405	Basic Professional Practice and Ethics	30	-	<b>30</b>
06.	HVE-01	Universal Human Values & Professional Ethics	30	-	<b>30</b>
07.	-	Observational Clinical Practice	-	200	<b>200</b>
		<b>Total</b>	230	320	<b>550</b>

**Note:**\*Observational Clinical Practice includes student's work, conduct & behaviour during his/her practical & clinical hours.

# BIOMECHANICS & KINESIOLOGY

(Theory : 90 Hours + Practical / Laboratory : 120 Hours) **TOTAL : 210 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours
1.	INTRODUCTION TO BIOMECHANICS	20
2.	REGIONAL KINESIOLOGY	50
3.	KINETICS AND KINEMATICS OF GAIT & ADLs	20

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

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Practical Hours
<b>1.</b>	<b>INTRODUCTION TO BIOMECHANICS</b>	<b>20</b>	<b>20</b>
	A. Muscle Biomechanics	10	10
	i. Elements of muscle structure – fiber, size, motor unit, length tension, arrangement & number relationship		
	ii. Classification of muscles		
	iii. Mobility and Stability of muscles		
	iv. Types of muscle contraction and factors affecting muscle function.		
	B. Joint Biomechanics	10	10
	i. Basic principles of joint design		
	ii. Classification of joints		
	iii. Osteokinematics & Arthrokinematics		
	iv. Concave Convex Rule		
	v. Joint function, kinetics & kinematics		
<b>2.</b>	<b>REGIONAL KINESIOLOGY</b>	<b>50</b>	<b>40</b>

	i. Vertebral Column	10	8
	ii. Thorax	3	4
	iii. Shoulder Complex	6	4
	iv. Elbow joint	4	4
	v. Wrist And Hand Complex	6	4
	vi. Hip Joint	6	4
	vii. Knee Complex	6	4
	iii. Ankle – Foot complex	6	4
	ix. Temporo-Mandibular Joint	3	4
<b>3.</b>	<b>KINETICS AND KINEMATICS OF GAIT &amp; ADLs</b>	<b>20</b>	<b>40</b>
	a. GAIT	10	20
	i. Human locomotion		
	ii. Subjective & Objective evaluation		
	iii. Gait cycle & Measurable parameters (Step Length, Step Width, Stride Length, Foot Angle, Cadence)		
	iv. Kinetics and kinematics of gait		
	v. Determinants of gait		
	b. KINETICS AND KINEMATICS OF VARIOUS ACTIVITIES OF DAILY LIVING	10	20
	i. Supine to Sitting, Sitting to Standing, Squatting, Climbing up & down		
	ii. Lifting, Pulling, Pushing, Overhead activities,		
	iii. Running, Jogging.		

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Acquire the knowledge of axis and planes
- 2) Acquire the knowledge of forces acting at various joints.
- 3) Acquire the knowledge of muscle and joint work in activities of daily living.
- 4) Acquire the knowledge of kinetics and kinematics of Spine, Extremities, Temporo-Mandibular joint, Thoracic cage
- 5) Acquire the knowledge of Musculo skeletal movements during normal Gait and Activities of Daily Living

### **RECOMMENDED TEXT BOOKS**

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

### **RECOMMENDED REFERENCE BOOKS**

1. Kinesiology of the Human Body – Steindler
2. Kinesiology of the Musculoskeletal system – Neumann & Donald

3. Kinesiology – The mechanics and Pathomechanics of Human motion – Oatis & Carol
4. Biomechanical Basis of Human Motion – Joseph and Hamill
5. Physiology of the Joints – Kapandji Vol.- I,II,&III

### SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		Marks
70 marks + I.A. – 30 Marks		
* The question paper will give appropriate weightage to all the topics in the syllabus.		100
<b>Section -A-</b> M.C.Qs.	Q-1 – based on MUST KNOW area [1x20]	20
<b>Section-B-</b> S.A.Qs.	Q-1 - Answer any FIVE out of SIX [5x2=10] Q-2 - Answer any TWO out of THREE [2X5=10]	20
<b>Section-C-</b> L.A.Qs.	Answer any TWO out of THREE [2X15=30] Q-1 Q-2- Q-3-	30
<b>Total Marks</b>		<b>70</b>

<b>PRACTICAL</b>		Marks
70 MARKS + IA – 30 MARKS		100
<b>LONG CASE</b>	Based on Massage /Goniometry /Movements (passive) <ul style="list-style-type: none"> <li>• Cognitive – Biomechanical principles, indications.</li> <li>• <i>Documentation of findings etc</i> - 15 Marks</li> <li>• <i>Psychomotor + Affective skills</i> - 10 Marks</li> </ul>	25
<b>SHORT CASE</b>	Two Short case based on <ul style="list-style-type: none"> <li>• Basic evaluation</li> <li>• Skill (2x10 = 20 marks)</li> <li>• <i>Cognitive -05 Marks</i></li> <li>• <i>Psychomotor -15 Marks</i></li> </ul>	40
<b>JOURNAL</b>	Year work on practicals performed	05
<b>TOTAL MARKS</b>		<b>70</b>

#### INTERNAL ASSESSMENT

1. Exams –Theory & Practical
2. I.A. to be calculated out of 30 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# PATHOLOGY

(Theory : 50 Hours) **TOTAL : 50 Hours**

## COURSE DESCRIPTION:

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

The course more deals with structural impairments as an important part in ICF Classification.

Sr. No.	Topics	Theory Hours
1.	GENERAL PATHOLOGY	4
2.	INFLAMMATION & REPAIR	6
3.	IMMUNO -PATHOLOGY	4
4.	CIRCULATORY DISTURBANCES	4
5.	PATHOLOGIC CHANGES IN VITAMIN DEFICIENCIES	1
6.	GROWTH DISTURBANCES	4
7.	MEDICAL GENETICS	1
8.	SPECIFIC PATHOLOGY	10
9.	MUSCULAR DISORDERS	3
10.	NEURO-MUSCULAR JUNCTION	1
11.	BONE & JOINTS	5
12.	G.I. SYSTEM	1
13.	ENDOCRINE	2
14.	HEPATIC DISEASES	1
15.	CLINICAL PATHOLOGY	3
	<b>TOTAL</b>	<b>50</b>

## OBJECTIVES:

At the end of the course, the candidate:

### Cognitive:

- b) Will have sound knowledge of concepts of cell injury & changes produced by different tissues, organs and capacity of the body in healing process.

- c) Acquire the knowledge of general concepts of neoplasia with reference to the Etiology, gross & microscopic features, & diagnosis, in different tissues, & organs of the body.
- d) Acquire knowledge of common immunological disorders & their resultant effects on the human body.

**Psychomotor:**

- a) Recall the Etiology–pathogenesis, the pathological effects & the clinico–pathological correlation of common infections & non-infectious diseases.
- b) Understand in brief, about the common Haematological disorders & investigations necessary to diagnose them.
- c) Correlate normal & altered morphology of different organ systems in different diseases needed for understanding disease process & their clinical significance

### SYLLABUS

Sr. No.	Topics	Theory Hours
1.	<b>GENERAL PATHOLOGY</b>	<b>4</b>
	<ul style="list-style-type: none"> <li>a) Cell injury-Causes, Mechanism &amp; Toxic injuries with special reference to Physical including ionizing radiation, Chemical &amp; Biological</li> <li>b) Reversible injury (degeneration)- types morphology- cloudy swelling, hyaline, fatty changes</li> <li>c) Intra-cellular Accumulation- Mucin, Protein</li> <li>d) Irreversible cell injury-types of necrosis- Apoptosis–Calcification- Dystrophic &amp; Metastasis</li> <li>e) Extra-cellular accumulation-Amyloidosis</li> </ul>	
2.	<b>INFLAMMATION &amp; REPAIR</b>	<b>6</b>
	<ul style="list-style-type: none"> <li>a) Acute inflammation – features, causes, vascular &amp; cellular events</li> <li>b) Morphologic variations-Ulcers</li> <li>c) Inflammatory cells &amp; Mediators</li> <li>d) Chronic inflammation: Causes, Types, Non specific &amp; Granulomatous – with examples</li> <li>e) Wound healing by primary &amp; secondary union, factors promoting &amp; delaying healing process</li> <li>f) Healing at various sites- bone, nerve &amp; muscle</li> <li>g) Regeneration &amp; Repair</li> </ul>	
3.	<b>IMMUNO –PATHOLOGY</b>	<b>4</b>

	<ul style="list-style-type: none"> <li>a. Immune system: organization-cells-antibodies-regulation of immune responses</li> <li>b. Hyper-sensitivity (types and examples including graft rejection)</li> <li>c. Secondary Immuno-deficiency including H.I.V.</li> <li>d. Basic concepts of autoimmune disease (emphasis on S.L.E. &amp; R.A.)</li> </ul>	
4.	<b>CIRCULATORY DISTURBANCES</b>	<b>4</b>
	<ul style="list-style-type: none"> <li>i- Oedema - pathogenesis - types - transudates / exudates</li> <li>ii- Chronic venous congestion- lung, liver</li> <li>iii- Thrombosis – formation – fate – effects</li> <li>iv- Embolism – types- clinical effects</li> <li>v- Infarction – types – common sites</li> <li>vi- Gangrene – types – etiopathogenesis</li> <li>vii- Shock – Pathogenesis, types</li> </ul>	
5.	<b>PATHOLOGIC CHANGES IN VITAMIN DEFICIENCIES</b>	<b>1</b>
6.	<b>GROWTH DISTURBANCES</b>	<b>4</b>
	<ul style="list-style-type: none"> <li>a. Atrophy, Hypertrophy, Hypoplasia, Metaplasia, Agenesis, Dysplasia</li> <li>b. Neoplasia classification, Histogenesis, Biologic behaviors, difference between Benign &amp; Malignant tumour</li> <li>c. Malignant neoplasms- grades-stages-local &amp; distal spread</li> <li>d. Carcinogenesis: Physical, Chemical, Occupational, Heredity, Viral, Nutritional</li> <li>e. Precancerous lesions &amp; Carcinoma in situ</li> <li>f. Tumour&amp; host interactions–local and systemic effects-metastatic (special reference to bones and C.N.S.)</li> </ul>	
7.	<b>MEDICAL GENETICS</b>	<b>1</b>
	<ul style="list-style-type: none"> <li>a. Classifications with examples of Genetic disorders</li> </ul>	
8.	<b>SPECIFIC PATHOLOGY</b>	<b>10</b>
	<ul style="list-style-type: none"> <li>a) <b>C.V.S.</b> <ul style="list-style-type: none"> <li>i. Atherosclerosis - Ischemic Heart Diseases –Myocardial Infarction– Pathogenesis /Pathology</li> <li>ii. Hypertension</li> <li>iii. C.C.F.</li> <li>iv. Rheumatic Heart Diseases</li> <li>v. Peripheral Vascular Diseases</li> </ul> </li> </ul>	

	<b>b) Respiratory</b> <ol style="list-style-type: none"> <li>i. C.O.P.D.</li> <li>ii. Pneumonia (lobar, bronchial, viral), Lung Abscess</li> <li>iii. T. B.: Primary, Secondary – morphologic types</li> <li>iv. Pleuritis &amp; its complications Lung collapse – Atelectasis</li> <li>v. Occupational Lung diseases(with special emphasis on Silicosis, Asbestosis,</li> <li>vi. Anthracosis)</li> <li>vii. A.R.D.S.</li> </ol> <b>c) Neuropathology:</b> <ol style="list-style-type: none"> <li>i. Reaction of nervous tissue to injury, infection &amp; ischemia</li> <li>ii. Meningitis: Pyogenic, T.B.M., Viral</li> <li>iii. Cerebro-Vascular Diseases – Atherosclerosis – Thrombosis, Embolism, Aneurysm, Hypoxia, Infarction &amp; Hemorrhage, Hydrocephalous, Increased Intracranial Pressure</li> <li>iv. Leprosy</li> <li>v. Parkinsonism</li> </ol>	
9.	<b>MUSCULAR DISORDERS</b> <ol style="list-style-type: none"> <li>a. Classification of Muscular disorders with emphasis on Muscular Dystrophies</li> </ol>	<b>3</b>
10.	<b>NEURO-MUSCULAR JUNCTION</b> <ol style="list-style-type: none"> <li>a) Myasthenia gravis</li> <li>b) Myasthenic syndrome</li> </ol>	<b>1</b>
11.	<b>BONE &amp; JOINTS</b> <ol style="list-style-type: none"> <li>a. Osteomyelitis – Rickets – Osteomalacia – Osteoporosis</li> <li>b. Arthritis- degenerative (Osteoarthritis, Calcaneal spur, Periarthritis, Spondylosis) - inflammatory (R.A., Ankylosing Spondylitis, Gout)</li> <li>c. Miscellaneous-P.I.D., Haemarthrosis</li> <li>d. Infective-T.B.</li> </ol>	<b>5</b>
12.	<b>G.I. SYSTEM</b> <ol style="list-style-type: none"> <li>a) Gastric / Duodenal ulcer, Enteric fever, T.B., Enteritis, Gastritis (related to consumption of NSAID)</li> </ol>	<b>1</b>
13.	<b>ENDOCRINE</b> <ol style="list-style-type: none"> <li>a) Hypo and Hyperthyroidism</li> <li>b) Diabetes</li> </ol>	<b>2</b>
14.	<b>HEPATIC DISEASES</b> <ol style="list-style-type: none"> <li>a) Cirrhosis – emphasis to systemic effects of portal hypertension</li> </ol>	<b>1</b>
15.	<b>CLINICAL PATHOLOGY</b>	<b>3</b>

a. Anemia – (deficiency) – T.C./D.C./ Eosinophilia Anaemia	
b. Muscle / Skin / Nerve biopsy	
c. Microscopic appearance of muscle necrosis – fatty infiltration	
<b>TOTAL</b>	<b>50</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Acquire the knowledge of concepts of cell injury & changes produced thereby in different tissues & organs - capacity of the body in healing process
- 2) Recall the Etio – pathogenesis, the pathological effects & the clinico – pathological correlation of common infections & non-infectious diseases.

### **RECOMMENDED TEXT BOOKS**

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

### **RECOMMENDED REFERENCE BOOKS**

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

### **SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)**

<b>THEORY</b> 40 marks + I.A. – 10 Marks [There shall be no LAQ in this paper]  *The question paper will give appropriate weightage to all the topics in the syllabus.		<b>Marks</b>  <b>50</b>
<b>Section A-Q-1</b>	MCQs – based on <b>MUST KNOW</b> area on <b>PATHOLOGY</b> (1x10)	<b>10</b>
<b>Section B- Q-2</b>	SAQ- Questions based on <b>PATHOLOGY</b> to answer any FIVE out of SIX (5x 2)	<b>10</b>
<b>Section B- Q-3</b>	SAQ – Questions based on <b>PATHOLOGY</b> to answer any THREE out of FOUR (3x 5)	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### **INTERNAL ASSESSMENT**

1. Exams –Theory & Practical
2. I.A. to be calculated out of 15 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# PSYCHIATRY

(Theory : 20 Hours + Practical / Clinical :10 Hours) **TOTAL : 30 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Clinical Hours	Total Hours
1.	<b>PSYCHIATRY</b>	20	10	30
	<b>TOTAL</b>	<b>20</b>	<b>10</b>	<b>30</b>

## OBJECTIVES:

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

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

## SYLLABUS

Sr. No.	Topics	Theory Hours
1.	<b>PSYCHIATRY</b>	20
	a. Psychiatric History & Mental Status Examination	1
	b. Classification of Mental disorders	1
	c. Schizophrenia & its types	1
	d. Other psychotic disorders (Psychotic disorder, Delusional disorder, Schizo-affective disorders, Post partum psychosis)	1
	e. Mood disorder	2
	f. Organic brain disorders (delirium, dementia, Amnestic syndromes, Organic personality disorder)	2
	g. Anxiety disorders: Phobia, Obsessive Compulsive Disorder, Post Traumatic Disorders and Conversion disorder	2

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

## **CLINICAL**

**HOURS: 10hrs**

### **History, Mental Status Examination & evaluation of:**

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

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Acquire the knowledge in brief, about the pathological & etiological factors, signs / symptoms & management of various Psychiatric conditions.

### **RECOMMENDED TEXT BOOKS:**

1. A short book of Psychiatry – 3rd edn- Ahuja – Jaypee bros – medical publishers
2. Short Textbook of Psychiatry- 7th edition -M.S. Bhatia
3. Shah L.P. Handbook of Psychiatry

## **PSYCHIATRY**

## SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A-Q-1</b>	MCQs – based on <b>MUST KNOW</b> area on <b>PSYCHIATRY</b> (1x10)	<b>10</b>
<b>Section B- Q-2</b>	SAQ- Questions based on <b>PSYCHIATRY</b> to answer any FIVE out of SIX (5x 2)	<b>10</b>
<b>Section B- Q-3</b>	SAQ – Questions based on <b>PSYCHIATRY</b> to answer any THREE out of FOUR (3x 5)	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### **INTERNAL ASSESMENT:**

1. Exams –Theory & Practical
2. I.A. to be calculated out of 15 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# PSYCHOLOGY

(Theory : 20 Hours + Practical / Clinical :10 Hours) **TOTAL : 30 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Clinical Hours	Total Hours
1.	<b>PSYCHOLOGY</b>	20	10	30
	<b>TOTAL</b>	<b>20</b>	<b>10</b>	<b>30</b>

## OBJECTIVES:

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

- Define the term Psychology & its importance in the Health delivery system, & will gain knowledge of Psychological maturation during human development & growth & alterations during aging process.
- Understand the importance of psychological status of the person in health & disease; environmental & emotional influence on the mind & personality.
- Have the knowledge and skills required for good interpersonal communication.

## Psychomotor:

- Understand the patient more empathetically.

## SYLLABUS

Sr. No.	Topics	Theory Hours
1.	<b>PSYCHOLOGY</b>	20
	a. Psychology: Definition, understanding, Nature & its fields and subfields	2
	b. Developmental psychology (childhood, adolescence, adulthood and old age) and its theories in brief	4
	c. Learning: Theories of learning, Role of learning in human life	4
	d. Memory – types – Forgetting causes	4
	e. Attention & perception Nature of attention [in brief] Nature of perception, Principles of grouping]	2

	f. Motivation and theories: conflict and frustration – Types of Common Defence mechanisms, Stress - common reactions to frustrations	4
--	--	---

**CLINICAL**

**HOURS: 10hrs**

**Seminar/ Workshop on Communication skills**

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Understand the importance of psychological status of the person in health & disease; environmental & emotional influence on the mind & personality.
- 2) Have the knowledge and skills required for good interpersonal communication
- 3) Understand the patient more empathetically.

**RECOMMENDED TEXT BOOKS:**

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 Co.]
3. Clinical Psychology – Akolkar
4. Developmental Psychology-Elizabeth B. Hurlock(5th edition, Tata Mc-Graw Hill)

**SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)**

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A-Q-1</b>	MCQs – based on <b>MUST KNOW</b> area on <b>PSYCHOLOGY</b> (1x10)	<b>10</b>
<b>Section B- Q-2</b>	SAQ- Questions based on <b>PSYCHOLOGY</b> to answer any FIVE out of SIX (5x 2)	<b>10</b>
<b>Section B- Q-3</b>	SAQ – Questions based on <b>PSYCHOLOGY</b> to answer any THREE out of FOUR (3x 5)	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

**INTERNAL ASSESMENT:**

1. Exams –Theory
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

# BASIC PROFESSIONAL PRACTICE AND ETHICS

TOTAL : 30 Hours

## COURSE DESCRIPTION:

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

## OBJECTIVES:

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

**Cognitive:** The student will

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

**Psychomotor:** The student will be able to:

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

**Affective:**

- d) Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals.
- e) Be able to develop bed side behavior, respect & maintain patient's confidentiality.

## SYLLABUS

Sr.No.	Regions	Theory Hours	Practical Hours	Total Hours
01.	Introduction to the history of Physiotherapy	02	05	15
02.	Orientation to the curriculum, clinical areas and geographical location	03		
03.	Concept of morality and ethics	03		
04.	Concept of professionalism and Professional dress code	02		
05.	Ethical Code of Conduct	03	10	15
06.	Communication skills	1		
	Physiotherapist – Patient relationship Interviewing –Types of Interview, Skills of interviewing	1		
	<b>Total</b>	<b>15</b>	<b>15</b>	<b>30</b>

### COURSE OUTCOMES:

At the end of the course, a student would be able to :

- 1) Understand Concepts of morality, Ethics & Legality-rules of professional conduct & their Medico-legal & moral implications-The need of Council Act for Physiotherapy.
- 2) Acquire knowledge of Functioning of the World Confederation of Physical therapy [W.C.P.T.] & its various branches-Special Interest groups [brief]

### RECOMMENDED TEXT BOOKS

1. Ethical Issues (Vol. I & II) – Kavitha Raja, Fiddy Davis
2. Physical Therapy Ethics – Donald L. Gabard

# UNIVERSAL HUMAN VALUES AND PROFESSIONAL ETHICS

(Theory : 30 Hours) **TOTAL : 30 Hours**

## COURSE OBJECTIVES

1. To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings
2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way
3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature

Thus, this course is intended to provide a much needed orientational input in value education to the young enquiring minds.

## COURSE METHODOLOGY

1. The methodology of this course is explorational and thus universally adaptable. It involves a systematic and rational study of the human being vis-à-vis the rest of existence.
2. It is free from any dogma or value prescriptions.
3. It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as a proposal and the students are facilitated to verify it in their own right, based on their Natural Acceptance and subsequent Experiential Validation.
4. This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with, and then to continue within the student leading to continuous self-evolution.
5. This self-exploration also enables them to critically evaluate their pre-conditionings and present beliefs.

## SYLLABUS

After every two lectures of one hour each, there is a 2 hour practice session.

The teachers are oriented to the inputs through an eight to ten day workshop (Teachers' Orientation Program).

The Teacher's Manual provides them the lecture outline. The outline has also been elaborated into presentations and provided in a DVD with this book to facilitate sharing.

The teacher is expected to present the issues to be discussed as propositions and encourage the students to have a dialogue. The process of dialogue is enriching for both, the teacher as well as the students.

The syllabus for the lectures is given below:

## **UNDERSTANDING HARMONY IN THE HUMAN BEING - HARMONY IN MYSELF!**

1. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
  2. Understanding the needs of Self ('I') and 'Body' - *Sukh* and *Suvidha*
  3. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
  4. Understanding the characteristics and activities of 'I' and harmony in 'I'
  5. Understanding the harmony of I with the Body: *Sanyam* and *Swasthya*; correct appraisal of Physical needs, meaning of Prosperity in detail
  6. Programs to ensure *Sanyam* and *Swasthya*
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

### **GUIDELINES AND CONTENT FOR PRACTICE SESSIONS**

**PS 4:** List down all your desires. Observe whether the desire is related to Self (I) or Body. If it appears to be related to both, see which part of it is related to Self (I) and which part is related to Body.

**Expected outcome:** the students are able to see that they can enlist their desires and the desires are not vague. Also they are able to relate their desires to 'I' and 'Body' distinctly. If any desire appears related to both, they are able to see that the feeling is related to I while the physical facility is related to the body. They are also able to see that 'I' and 'Body' are two realities, and most of their desires are related to 'I' and not body, while their efforts are mostly centered on the fulfillment of the needs of the body assuming that it will meet the needs of 'I' too.

#### **PS 5:**

1. a. Observe that any physical facility you use, follows the given sequence with time :  
Necessary & tasteful → unnecessary & tasteful → unnecessary & tasteless → intolerable
- b. In contrast, observe that any feeling in you is either naturally acceptable or not acceptable at all. If naturally acceptable, you want it continuously and if not acceptable, you do not want it any moment!
2. List down all your activities. Observe whether the activity is of 'I' or of Body or with the participation of both 'I' and Body.
3. Observe the activities within 'I'. Identify the object of your attention for different moments (over a period of say 5 to 10 minutes) and draw a line diagram connecting these points. Try to observe the link between any two nodes.

#### **Expected outcome:**

1. The students are able to see that all physical facilities they use are required for a limited time in a limited quantity. Also they are able to see that in case of feelings, they want continuity of the naturally acceptable feelings and they do not want feelings which are not naturally acceptable even for a single moment.
2. the students are able to see that activities like understanding, desire, thought and selection are the activities of 'I' only, the activities like breathing, palpitation of different parts of the body are fully the activities of the body with the acceptance of 'I' while the activities they do with their sense organs like hearing through ears, seeing through eyes, sensing through touch,

tasting through tongue and smelling through nose or the activities they do with their work organs like hands, legs etc. are such activities that require the participation of both 'I' and body.

3. The students become aware of their activities of 'I' and start finding their focus of attention at different moments. Also they are able to see that most of their desires are coming from outside (through preconditioning or sensation) and are not based on their natural acceptance.

**PS 6:**

1. Chalk out programs to ensure that you are responsible to your body- for the nurturing, protection and right utilisation of the body.
2. Find out the plants and shrubs growing in and around your campus. Find out their use for curing different diseases.

**Expected outcome:** The students are able to list down activities related to proper upkeep of the body and practice them in their daily routine. They are also able to appreciate the plants wildly growing in and around the campus which can be beneficial in curing different diseases.

## SCHEME OF UNIVERSITY EXAMINATIONS AT A GLANCE

Subject Code	Subject	Theory			Practical		
		University	I.A.	Total	University	I.A.	Total
BPT 401	Biomechanics Kinesiology	70	30	100	70	30	100
BPT 402	Pathology	35	15	50	-	-	-
BPT 403	Psychiatry	35	15	50	-	-	-
BPT 404	Psychology	35	15	50	-	-	-
BPT 405	Basic Professional Practice & Ethics	35	15	50	-	-	-
HVE-01	Universal Human Values & Professional Ethics*	-	-	-	-	-	-
	<b>Semester Total</b>	<b>210</b>	<b>90</b>	<b>300</b>	<b>70</b>	<b>30</b>	<b>100</b>

\*Note: Examination of Universal Human Values & Professional Ethics will be held in 8<sup>th</sup> Semester.

**BACHELOR OF PHYSIOTHERAPY  
(BPT)**

**SYLLABUS**

**FIFTH SEMESTER**

# SYLLABUS

## Transcript Hours- 425

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subject</b>	<b>Theory Hours</b>	<b>Practical / Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 501	Orthopaedics	60	20	80
02.	BPT 502	Neurology	60	10	70
03.	BPT 503	Paediatrics	60	10	70
04.	BPT 504	Obstetrics &Gynaecology	30	10	40
05.	BPT 505	Dermatology	30	05	35
06.	BPT 506	Basics of Computer Application	20	10	30
07.	-	Supervised Clinical Practice	-	100	100
		<b>TOTAL</b>	<b>260</b>	<b>165</b>	<b>425</b>

**Note:**\*Supervised Clinical Practice includes student's work, conduct &behaviour during his/her practical & clinical hours.

# ORTHOPAEDICS

(Theory : 60 Hours + Practical / Clinical : 20 Hours) **TOTAL : 80 Hours**

## COURSE DESCRIPTION:

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

<b>Sr. No.</b>	<b>Topics</b>	<b>Theory Hours</b>	<b>Clinical Hours</b>	<b>Total Hours</b>
1.	<b>FRACTURES</b>	10	3	<b>13</b>
2.	<b>DISLOCATIONS &amp; SUBLUXATIONS</b>	05	2	<b>07</b>
3.	<b>SOFT TISSUE AND TRAUMATIC INJURIES</b>	05	2	<b>07</b>
4.	<b>DEFORMITIES AND ANOMALIES</b>	15	3	<b>18</b>
5.	<b>DEGENERATIVE AND INFLAMMATORY CONDITIONS</b>	10	3	<b>13</b>
6.	<b>MANAGEMENT OF METABOLIC DISORDERS</b>	05	2	<b>07</b>
7.	<b>GENERAL ORTHOPAEDIC DISORDERS</b>	05	3	<b>08</b>
8.	<b>TUMORS</b>	05	2	<b>07</b>
	<b>TOTAL</b>	<b>60</b>	<b>20</b>	<b>80</b>

## OBJECTIVES:

At the end of the course, the candidate will –

- Be able to discuss the, aetiology, Pathophysiology, clinical manifestations & conservative / surgical management of various traumatic & cold cases of the Musculoskeletal Conditions.
- Gain the skill of clinical examination; apply special tests & interpretation of the preoperative old cases & all the post-operative cases.
- Be able to read & interpret salient features of the X-ray of the Spine & Extremities and correlate the radiological findings with the clinical findings.
- Be able to interpret Pathological / Biochemical studies pertaining to Orthopaedic conditions.

## SYLLABUS

Sr. No.	Topics	Theory Hours	Clinical Hours	Total Hours
1.	<b>FRACTURES</b>	<b>10</b>	<b>3</b>	<b>13</b>
	a. Definition, Classification, Causes, Clinical features, healing of fractures & Complications. b. Principles of general management of <ol style="list-style-type: none"> <li>i. Fracture of the Upper Extremity</li> <li>ii. Fracture of the Lower Extremity</li> <li>iii. Fracture of the vertebral column, thorax and pelvis</li> <li>iv. Emergency care and first aid.</li> </ol>			
2.	<b>DISLOCATIONS &amp; SUBLUXATIONS</b>	<b>5</b>	<b>2</b>	<b>7</b>
	a. Definition, General description, Principles of general description and management of traumatic dislocation and subluxation of common joints. <ol style="list-style-type: none"> <li>i. Shoulder joint</li> <li>ii. Acromioclavicular joint</li> <li>iii. Elbow joint</li> <li>iv. Hip joint</li> <li>v. Knee joint</li> </ol>			
3.	<b>SOFT TISSUE AND TRAUMATIC INJURIES</b>	<b>5</b>	<b>2</b>	<b>7</b>
	a. Introduction, Anatomy & physiology general description, grade of injury and management of injuries of <ol style="list-style-type: none"> <li>i. Ligaments, Bursae, Fascia</li> <li>ii. Muscles &amp; Tendons</li> <li>iii. Muscles and tendons injuries of upper and lower limb</li> </ol> b. Cervicolumbar injuries ,Whiplash of the cervical spine c. Crush injuries of hand & foot			
4.	<b>DEFORMITIES AND ANOMALIES</b>	<b>15</b>	<b>3</b>	<b>18</b>

	<p>a. Definition ,Causes , Classification , Congenital and acquired deformities Physical and clinical and radiological features, Complications</p> <p>b. Principles of medical and surgical management of the deformities</p> <p>c. General description of following deformities :</p> <p><b>i. Deformities of the spine:</b></p> <p>a) Scoliosis</p> <p>b) Kyphosis</p> <p>c) Lordosis</p> <p>d) Flat back</p> <p>e) Torticollis</p> <p><b>ii. Deformities of the lower limb:</b></p> <p>a) C.D.H., coxa vara , coxa valga , anteversion, Retroversion</p> <p>b) Genu valgum, Genu varum, Genu recurvatum, C.D.K.</p> <p>c) Talipes calcaneusequinus, varus &amp; valgus</p> <p>d) Pes cavus, Pes planus</p> <p>e) Hallux valgus &amp; varus, Hallux rigidus and hammer toe</p> <p><b>iii. Deformities of Shoulder &amp; Upper limb</b></p> <p>a) Sprengel's shoulder, Cubitus varus, Cubitus valgus</p> <p>b) Dupuytren's contracture</p>			
5.	<b>DEGENERATIVE AND INFLAMMATORY CONDITIONS</b>	<b>10</b>	<b>3</b>	<b>13</b>
	<p>a. Osteo-orthosis/Arthritis</p> <p>b. Spondylosis</p> <p>c. Spondylolysis and listhesis</p> <p>d. Pyogenic arthritis</p> <p>e. Rheumatoid arthritis</p> <p>f. Juvenile arthritis</p>			
	<p>g. Tuberculous arthritis</p> <p>h. Gouty arthritis</p> <p>i. Haemophilic arthritis</p> <p>j. Neuropathic arthritis</p> <p>k. Ankylosing spondylitis</p> <p>l. Psoriatic arthritis</p>			
6.	<b>MANAGEMENT OF METABOLIC DISORDERS</b>	<b>5</b>	<b>2</b>	<b>7</b>
	<p>a. Osteoporosis</p> <p>b. Osteomalacia&amp; Rickets</p>			

7.	<b>GENERAL ORTHOPAEDIC DISORDERS</b>	<b>5</b>	<b>3</b>	<b>8</b>
	a. Carpel tunnel syndrome /Entrapment nerve injuries b. Compartment syndrome, Ischemic contracture c. Avascular necrosis of bone in adult and children i. Gangrene ii. Backache /P.I.D.			
8.	<b>TUMORS</b>	<b>5</b>	<b>2</b>	<b>7</b>
	i. Classification, Principles of general management ii. General description of benign and malignant tumours of musculoskeletal system			

### **CLINICAL (20 HRS)**

Independent clinical orthopaedic evaluation presentation & recording of:

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

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Be able to discuss the Patho-physiology, clinical manifestations & conservative/Surgical management of various traumatic & cold cases of the Musculo-skeletal Conditions
- 2) Gain the skill of clinical examination & interpretation of the preoperative cold cases & all the post- operative cases
- 3) Will be able to read & interpret a] salient features of the X-ray of the spine & Extremities
- 4) pathological/ biochemical studies pertaining to Orthopaedic Conditions
- 5) Will be able to correlate the radiological findings with the clinical findings

### **RECOMMENDED TEXT BOOKS**

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

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		<b>Marks</b>
35 MARKS + I.A. – 15 MARKS		<b>50</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on <b>MUST KNOW</b> area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10]	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15]	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### **INTERNAL ASSESSMENT:**

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

# NEUROLOGY

(Theory : 60 Hours + Practical / Clinical : 10 Hours) **TOTAL : 70 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Clinical Hours	Total Hours
1.	NEUROLOGY	60	10	70

## OBJECTIVES:

At the end of the course, the candidate will:

1. Be able to describe Aetiology, Pathophysiology, signs & Symptoms & Management of the various Neurological conditions.
2. Acquire skill of history taking and clinical examination of Neurological conditions as a part of clinical teaching.
3. Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.

## SYLLABUS

Sr. No.	Topics	Theory Hours	Clinical Hours	Total Hours
1.	NEUROLOGY	60	10	70
	a. Introduction to Nervous System i. Applied anatomy ii. Applied physiology	4	-	4
	b. Cerebro Vascular Accidents i. Thrombosis, Embolism, Haemorrhage ii. Level of Lesion & symptoms iii. Management	8	1	9
	c. Extra Pyramidal lesions – Basal Ganglia i. Parkinsonism ii. Athetosis, Chorea, Dystonia	6	1	7
	d. Differential diagnosis of muscle wasting	10	2	12

	i. Approach to neuropathies ii. Myopathies and neuromuscular junction disorders.			
	e. Disorders of Anterior Horn cell with differential diagnosis of Motor Neuron Disease, S.M.A., Syringomyelia, Peroneal Muscular Atrophy, and Poliomyelitis.	4	2	6
	f. Multiple Sclerosis	4	-	4
	g. Infections of the nervous system: Encephalitis, Neurosyphilis, H.I.V. infection, Herpes, Meningitis, Tabes Dorsalis	6	-	6
	h. Tetanus	2	-	2
	i. Epilepsy	2	-	2
	j. Alzheimer's Disease, Dementia	2	-	2
	k. Disorders of cerebellar function	2	2	4
	l. Disorders of cranial nerves & Special Senses	4	-	4
	m. Disorders of Spinal cord i. Syndromes ii. Bladder dysfunction iii. Autonomic dysfunction	6	2	8

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Be able to describe Etiology, Pathophysiology, Signs &Symptoms &Management of the various Neurological conditions.
- 2) Acquire skill of clinical examination of Neurological System.
- 3) Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.

### **RECOMMENDED TEXT BOOKS:**

1. Davidson's Principles and Practice of Medicine
2. Textbook of Neurology- Victor Adams
3. Brains Clinical Neurology.
4. Illustrated Neurology & Neurosurgery: Lindsay
5. Brains Diseases of Nervous System
6. Davidson's Principles and Practice of Medicine
7. Textbook of Neurology- Victor Adams

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		<b>Marks</b>
35 MARKS + I.A. – 15 MARKS , TOTAL = 50.		<b>50</b>
** The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on <b>MUST KNOW</b> area[1x10=10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10] * Based on topics – NEUROLOGY	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15] * Based on topics – NEUROLOGY	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

# PAEDIATRICS

(Theory : 60 Hours + Practical / Clinical : 10 Hours) **TOTAL : 70 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Clinical Hours	Total Hours
1.	PAEDIATRICS	60	10	70

## OBJECTIVES:

At the end of the course, the candidate will:

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Clinical Hours	Total Hours
1.	PAEDIATRICS	60	10	70
	a. Normal intra-uterine development of foetus with special reference to Central Nervous System, Neuromuscular System, Cardiovascular Respiratory System	4	-	-

b. Normal development & growth	4	-	4
c. Immunization and breast-feeding	4	1	5
d. Sepsis, Prematurity, Asphyxia Hyperbilirubinemia and birth injuries	4		4
e. Cerebral Palsy- Medical Management including early intervention	4	2	6
f. Developmental disorders associated with spinal cord: Spinal Dysraphism, Spina Bifida, Meningocele, Myelomeningocele, hydrocephalus	4	2	6
g. Common infections i. C.N.S.& Peripheral Nervous System ii. Typhoid, Rubella, Mumps, Measles, Diphtheria, Chicken gunia, Malaria	4	1	5
h. Epilepsy	4	-	4
i. Mental Retardation and Down's Syndrome	4	1	5
j. Genetically transmitted neuro- muscular conditions	4	-	4
k. Malnutrition and Vitamin deficiency conditions	4	-	4
l. Juvenile R. A. & other Rheumatologic conditions of Musculoskeletal system	4	1	5
m. Common diseases of the Respiratory system: Asthma, Bronchitis, Bronchiectasis, T.B., Pneumonia, Lung collapse, Pleural effusion.	4	2	6
n. Respiratory distress in neonate	4	-	4
o. Rheumatic & Congenital Heart disease	4	-	4

### **CLINICAL (10 HRS)**

1. History taking and general examination in neonate and child
2. Examination of neonate and neonatal reflexes.
3. Examination of the nervous system
4. Examination of respiratory system
5. Examination of cardiovascular system
6. Examination of musculoskeletal system
7. Ventilatory care in neonate and child.

**COURSE OUTCOMES:**

At the end of the course, a student would be able to:

- 1) Acquire knowledge in brief about intra-uterine development of the foetus
- 2) Be able to describe normal development & growth of a child, importance of Immunization & breast-feeding & psychological aspect of development.
- 3) Acquire skill of clinical examination of a neonate /child with respect to neurological, Musculoskeletal, Respiratory & Cardiovascular conditions

**RECOMMENDED TEXT BOOKS:**

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

**SCHEME OF UNIVERSITY EXAMINATION**

<b>THEORY</b>		35 MARKS + I.A. – 15 MARKS	<b>Marks</b>
** The question paper will give appropriate weightage to all the topics in the syllabus.			<b>50</b>
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on <b>MUST KNOW</b> area [1x10]		<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10] * Based on topics – PAEDIATRICS		<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15] * Based on topics – PAEDIATRICS		<b>15</b>
<b>TOTAL MARKS</b>			<b>35</b>

**INTERNAL ASSESSMENT:**

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

# OBSTETRICS & GYNAECOLOGY

(Theory : 30 Hours + Practical / Clinical : 10 Hours) **TOTAL : 40 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Clinical/ Lab Hours	Total Hours
1.	<b>PHYSIOLOGY OF PUBERTY &amp; MENSTRUATION</b>	3	-	<b>3</b>
2.	<b>PHYSIOLOGY OF PREGNANCY</b>	4	-	<b>4</b>
3.	<b>PHYSIOLOGY OF LABOR</b>	5	-	<b>5</b>
4.	<b>POST NATAL PERIOD</b>	3	5	<b>8</b>
5.	<b>INFERTILITY</b>	2	-	<b>2</b>
6.	<b>URO-GENITAL DYSFUNCTION</b>	4	1	<b>5</b>
7.	<b>GYNAECOLOGICAL SURGERIES</b>	3	1	<b>4</b>
8.	<b>PRE, PERI &amp; POST MENOPAUSE</b>	3	1	<b>4</b>
9.	<b>PELVIC INFLAMMATORY DISEASES</b>	3	2	<b>5</b>
	<b>TOTAL</b>	30	10	<b>40</b>

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

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Clinical/ Lab Hours	Total Hours
1.	<b>PHYSIOLOGY OF PUBERTY &amp; MENSTRUATION:</b> Abnormalities & common problems of Menstruation	3	-	3
2.	<b>PHYSIOLOGY OF PREGNANCY</b>	4	-	4
	a. Development of the foetus, Normal/ Abnormal / multiple gestations, b. Common Complications during pregnancy: i. Anaemia, ii. P I H iii. Eclampsia iv. Diabetes, v. Hepatitis, vi. TORCH infection or HIV			
3.	<b>PHYSIOLOGY OF LABOR</b>	5	-	5
	a. Normal – Events of Ist, IInd&IIIrd Stages of Labor b. Complications during Labor& management c. Caesarean section- elective/ emergency & post operative care			
4.	<b>POST NATAL PERIOD</b>	3	5	8
	a. Puerperium & Lactation b. Complications of repeated child bearing with small gaps c. Methods of contraception			
5.	<b>INFERTILITY</b>	2	-	2
	a. Management with emphasis on PCOS/PCOD			
6.	<b>URO-GENITAL DYSFUNCTION</b>	4	1	5
	a. Uterine prolapse – Classification & Management (Conservative / Surgical) b. Cystocoele, Rectocoele, Enterocoele, Urethrocoele			
7.	<b>GYNAECOLOGICAL SURGERIES</b> (Pre and post surgical management)	3	1	4
8.	<b>PRE, PERI &amp; POST MENOPAUSE</b>	3	1	4
	a. Physiology b. Complications & c. Management			

<b>9.</b>	<b>PELVIC INFLAMMATORY DISEASES</b> with special emphasis to backache due to Gynaecological / Obstetrical conditions	<b>3</b>	<b>2</b>	<b>5</b>
	<b>TOTAL</b>	<b>30</b>	<b>10</b>	<b>40</b>

**CLINICAL (10 hrs)**

1. Evaluation & presentation of One case Each in:
  - a) Uro-genital dysfunction
  - b) Antenatal care
  - c) Postnatal care
  - d) Following normal Labor
  - e) Following Caesarean section
  - f) Pelvic Inflammatory Diseases
2. Observation – One Normal & One Caesarean delivery & One Hysterectomy / Repair of the Uro-genital Prolapse

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Be able to describe the normal & abnormal physiological events during the Puberty, Pregnancy, Labor, Puerperium, & Pre, Peri & Post Menopause.
- 2) Be able to discuss common complications during Pregnancy, Labor, Puerperium & Pre, Peri & Post Menopausal stage & various aspects of Urogenital Dysfunction & the management in brief.

**RECOMMENDED TEXT BOOKS**

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

## SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on MUST KNOW area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2= 10] * Based on topics – OBSTETRICS	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3= 15] * Based on topics – GYNAECOLOGY	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### **INTERNAL ASSESSMENT:**

1. Exams –Theory & Practical
2. I.A. to be calculated out of 30 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# DERMATOLOGY

(Theory : 30 Hours + Practical / Clinical : 05 Hours) **TOTAL : 35 Hours**

## OBJECTIVES:

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Clinical Hours
1.	Introduction to Dermatology, basic skin lesions & History taking	3	5
2.	a. Skin infections (Part I) – Scabies / Pediculosis / Bacterial infections b. Skin infection (Part II) Viral / Fungal / Cutaneous T.B.	5	
3.	Connective tissue disorder-Scleroderma, S.L.E., Dermatomyositis, Morphia	4	
4.	a. Hand eczema, Psoriasis, Psoriatic arthritis, Reiter's Syndrome b. Cutaneous hyperplasia-Keloid, Hypertrophic scar, Corn, Callosity	4	
5.	Leprosy & Deformity	5	
6.	a. Cutaneous Manifestation of HIV b. Hyperhidrosis	4	
7.	a. Drug reaction b. Urticaria Genodermatosis -Epidermolysis bullosa c. Sexually Transmitted skin lesions PUVA Treatment	5	
	<b>TOTAL</b>	<b>30</b>	<b>5</b>

## COURSE OUTCOMES:

At the end of the course, a student would be able to :

- 1) Describe the Pathophysiology, Signs & Symptoms, Clinical Features, Examination & Management of Common Skin Conditions

## RECOMMENDED TEXT BOOK

1. Textbook of dermatology – Dr. Khopkar

## SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks [There shall be no LAQ in this paper]  * The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on MUST KNOW area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10] * Based on topics – DERMATOLOGY	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15] * Based on topics – DERMATOLOGY	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### **INTERNAL ASSESSMENT:**

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks.
3. Internal assessment as per University pattern.

# BASICS OF COMPUTER APPLICATION

(Theory : 20 Hours + Practical / Clinical : 10 Hours) **TOTAL : 30 Hours**

## OBJECTIVES:

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

1. Develop good skills for better communication.
2. Effectively use Microsoft Office to communicate with patients while rendering care.
3. To utilize PowerPoint presentations and Picture management for effective teaching and Learning.
4. To learn the use of computer for basic statistics using excel.
5. To learn the use of Internet services for Research and Documentation.

## SYLLABUS

Sr. No.	Topics	Theory Hours	Practical Hours	Total Hours
1.	Introduction of Computer application for Physiotherapy practice.	2	1	3
2.	Introduction of use of computers in teaching, learning, research.	3	1	4
3.	Windows, MS office, Word, Excel, Power Point.	4	2	6
4.	Internet, Literature search.	4	2	6
5.	Introduction to Statistical Package	4	2	6
6.	Introduction to Hospital management information system software.	3	2	5
	<b>TOTAL</b>	<b>20</b>	<b>10</b>	<b>30</b>

## COURSE OUTCOMES:

At the end of the course, a student would be able to :

- 1) Effectively use Microsoft Office to communicate with patients while rendering care.
- 2) To utilize PowerPoint presentations and Picture management for effective teaching and Learning.
- 3) Learn the use of Internet services for Research and Documentation

## RECOMMENDED TEXT BOOK

1. Fundamental of Computer system

## SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks [There shall be no LAQ in this paper]  * The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on MUST KNOW area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10] * Based on topics – COMPUTER APPLICATION	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15] * Based on topics – COMPUTER APPLICATION	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### **INTERNAL ASSESSMENT:**

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks.
3. Internal assessment as per University pattern.

# FUNCTIONAL DIAGNOSIS & PHYSIOTHERAPEUTIC SKILLS-I

(Theory: 60 Hours + Practical / Clinical: 60 Hours) **TOTAL: 120 Hours**

Note: Examination in 6<sup>th</sup> semester

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Practical / Laboratory Skills Hours	Total Hours
1.	SECTION-I INTERNATIONAL CLASSIFICATION OF FUNCTION, DISABILITY & HEALTH (ICF)	10	10	20
2.	SECTION-II MUSCULOSKELETAL EVALUATION & MANIPULATIVE SKILLS	50	50	100
	<b>TOTAL</b>	<b>60</b>	<b>60</b>	<b>120</b>

## OBJECTIVES:

### Cognitive:

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

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

**Psychomotor:**

Student will be able to:

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

**Affective:**

Student will be able to:

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Practical/ Clinical Hours	Total Hours
1.	<b>SECTION-I</b> Functional Diagnosis using International Classification of Function, Disability & Health (I.C.F.) (Applicable for all the Sections mentioned below)	<b>10</b>	-	<b>10</b>
2.	<b>SECTION-II</b> <b>MUSCULOSKELETAL EVALUATION AND MANIPULATIVE SKILLS</b> (Theory-50 + Practical 50= 100 Hours)			
	<b>a. Assessment of Musculoskeletal System:</b>	<b>05</b>	<b>02</b>	<b>07</b>

	<ul style="list-style-type: none"> <li>i. Soft tissue flexibility</li> <li>ii. Joint mobility</li> <li>iii. Muscle strength &amp; Endurance</li> <li>iv. Trick movements</li> <li>v. Sensations</li> <li>vi. Limb length</li> <li>vii. Abnormal posture</li> <li>viii. Gait deviations due to musculoskeletal dysfunction</li> </ul>			
	<b>b. Assessment of Joints with special tests:</b>	<b>10</b>	<b>08</b>	<b>18</b>
	<ul style="list-style-type: none"> <li>i. <b>Cervical Spine:</b> Foraminal compression, Distraction, Shoulder depression, vertebral artery, Dizziness tests.</li> <li>ii. <b>Shoulder:</b> Yergason's, Speed's, Drop-Arm, Supraspinatus, Impingement, Anterior &amp; Posterior Apprehension, Allen, Adson.</li> <li>iii. <b>Elbow:</b> Cozen's, Miller's, Tinel's sign</li> <li>iv. <b>Forearm, Wrist &amp; Hand:</b> Phalen's, Bunnel-Littler, Froment's sign</li> <li>v. <b>Lumbar Spine:</b> Schober's, SLR, Prone Knee Bending, Slump</li> <li>vi. <b>Sacro Iliac joint:</b> Faber- Patrick's, Gaenslen, Gillet, March</li> <li>vii. <b>Hip:</b> Nelaton's line, Bryant's triangle, Thomas, Ober's, Tripod sign, Trendlenburg sign,</li> <li>viii. <b>Knee:</b> Tests for collateral &amp; cruciate ligaments (valgus, varus, Lachman, Sag, Drawer's, McMurray's, Fluctuation, Patellar tap, Q- angle, Clarke )</li> <li>ix. <b>Ankle &amp; Foot:</b> Anterior Drawer, Talar Tilt, Homan's &amp; Moses (for D.V.T.)</li> </ul>			
	<b>c. Response of soft tissues to trauma :</b>	<b>05</b>	<b>-</b>	<b>05</b>
	<ul style="list-style-type: none"> <li>i. Trigger points</li> <li>ii. Spasm</li> <li>iii. Ligament Sprains</li> <li>iv. Muscle Strains</li> </ul>			
	<b>d. Basics in Manual Therapy and Applications with Clinical Reasoning:</b>	<b>10</b>	<b>05</b>	<b>15</b>

	<ul style="list-style-type: none"> <li>i. Assessment of Articular and extra-articular soft tissue status <ul style="list-style-type: none"> <li>a) Contractile tissues</li> <li>b) Non contractile tissues</li> </ul> </li> <li>ii. Examination of joint integrity <ul style="list-style-type: none"> <li>a) Accessory movement</li> <li>b) End feel</li> </ul> </li> </ul>			
	<b>e. Examination of musculoskeletal Dysfunction:</b>	<b>05</b>	<b>05</b>	<b>10</b>
	<ul style="list-style-type: none"> <li>i- Subjective examination</li> <li>ii- Objective examination</li> <li>iii- Special tests</li> <li>iv- Functional Diagnosis using ICF</li> </ul>			
	<b>f. Assessment of Pain:</b>	<b>05</b>	<b>05</b>	<b>10</b>
	<ul style="list-style-type: none"> <li>i- Types of pain: Somatic, Somatic referred, Neurogenic, Visceral</li> <li>ii- Subjective Assessment: <ul style="list-style-type: none"> <li>a) Location, duration, progression, distribution, quality, diurnal variations, modifying factors.</li> <li>b) Severity, nature of pain, tissue irritability</li> </ul> </li> <li>iii- Objective Measurement &amp; Documentation- <ul style="list-style-type: none"> <li>a) Visual Analogue Scale (V.A.S).</li> <li>b) Numerical Rating Scale(N.R.S.)</li> <li>c) McGill's modified questionnaire(including Body charts)</li> </ul> </li> </ul>	Assessment By V.A.S. & N.R.S.		
	<b>g. Basic principles, indications, contra indications of mobilization skills for joints and Soft tissues:</b>	<b>10</b>	<b>25</b>	<b>35</b>
	<ul style="list-style-type: none"> <li>i. Maitland</li> <li>ii. Mulligan</li> <li>iii. Kaltenborn</li> <li>iv. Mckenzie</li> <li>v. Cyriax</li> <li>vi. Myofascial Release Technique</li> <li>vii. Muscle Energy Technique</li> <li>viii. Neural Tissue Mobilization (Neuro Dynamic Testing)</li> </ul>	Practice of Manual Therapy in Kaltenborn, Maitland's, M.E.T. & Neural Mobilisation on extremities on Models only		

**DOCUMENTATION:**

A	Documentation & Interpretation of following investigations:
---	---

	<ul style="list-style-type: none"> <li>i. Electro diagnosis : 2 each <ul style="list-style-type: none"> <li>a) S.D.C.</li> <li>b) Faradic Galvanic Test</li> <li>c) E.M.G. &amp; N.C. Studies</li> </ul> </li> <li>ii. Cardio Vascular &amp; Pulmonary: (1 each) – A.B.G., P.F.T., E.C.G., X-ray Chest, Exercise Tolerance Test.</li> <li>iii. Neurological Scales (1 each)– Modified Ashworth, Berg’s Balance, D.G.I., Glasgow</li> <li>iv. Coma, Barthel Index, F.I.M.</li> </ul>
B	<p>Case presentation with Functional diagnosis :</p> <ul style="list-style-type: none"> <li>i. Total 12 cases</li> <li>ii. Three cases each in – <ul style="list-style-type: none"> <li>a) Musculoskeletal</li> <li>b) Neurological</li> <li>c) Cardiovascular &amp; Respiratory (Including General Medical &amp; Surgical Cases)</li> <li>d) General &amp; Community Health (Including Fitness &amp; Health, Women &amp; Child Health, Occupation Health)</li> </ul> </li> </ul>
<p><b>To maintain the Record/ Journal of the term work &amp; to get each assignment duly signed by respective Head of the Dept.</b></p>	

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Understand the use of appropriate tools or instruments of assessment in Musculoskeletal, Neurological and Cardio-vascular conditions.
- 2) Understand the theoretical basis and principles of manipulative skills, neurotherapeutic skills and skills of cardiopulmonary care and resuscitation
- 3) Perform assessment of measures of body structures and functions related to tissue mechanics.
- 4) Perform assessment of measures of body structures and functions related to motor control affecting activity and participation, quality of life and independence.
- 5) Demonstrate skills of manual therapy musculoskeletal, neurotherapeutics and cardiovascular and respiratory skills on models (Laboratory work).
- 6) Follow the principles of appropriate handling technique that is draping, hand placement, body part positioning, manual techniques, lifting and transfer techniques.

**RECOMMENDED TEXT BOOKS**

1. Orthopaedic Physical Examination –Magee
2. Clinical Electro Therapy – Nelson – Currier - Appleton & Lange publication

3. Clinical Electromyography – Mishra
4. Therapeutic Exercises - Colby & Kisner
5. Physical Rehabilitation, Assessment and treatment - Susan B O's Sullivan 6.  
Neurological Examination - John Patten

#### **RECOMMENDED REFERENCE BOOKS**

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

## SCHEME OF EXAMINATIONS AT A GLANCE

Subject Code	Subjects	Theory			Practical			Grand Total
		Maximum Marks						
		External	Internal	Total	External	Internal	Total	
BPT 501	Orthopaedics	35	15	50	-	-	-	50
BPT 502	Neurology	35	15	50	-	-	-	50
BPT 503	Paediatrics	35	15	50	-	-	-	50
BPT 504	Obstetrics & Gynaecology	35	15	50	-	-	-	50
BPT 505	Dermatology	35	15	50	-	-	-	50
BPT 506	Basics of Computer Application	35	15	50	-	-	-	50
-	Functional Diagnosis & Physiotherapeutic Skills-I	-	-	-	-	-	-	-
	<b>TOTAL</b>	210	90	300	-	-	-	300

\***Note:** Examination of Functional Diagnosis & Physiotherapeutic Skills-I will be held in 6<sup>th</sup> Semester (Final Semester).

**BACHELOR OF PHYSIOTHERAPY  
(BPT)**

**SYLLABUS**

**SIXTH SEMESTER**

# SYLLABUS

## Transcript Hours- 705

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subject</b>	<b>Theory Hours</b>	<b>Practical / Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 601	Functional Diagnosis & Physiotherapeutic Skills	60	60	120
02.	BPT 602	Medicine	60	30	90
03.	BPT 603	Surgery	60	30	90
04.	BPT 604	Community Medicine	30	30	60
05.	BPT 605	First Aid & Emergency Care	30	30	60
06.	BPT 606 (MT/PTP)	Choice Based Course- Manual Therapy/ PT in Paediatrics	75	60	135
07.	BPT 607(P)	Supervised Clinical Practice	-	120	120
08.	HVE-01	Universal Human Values And Professional Ethics	30	-	30
		<b>TOTAL</b>	<b>345</b>	<b>360</b>	<b>705</b>

# FUNCTIONAL DIAGNOSIS & PHYSIOTHERAPEUTIC SKILLS (BPT-601)

(Theory: 60 Hours + Practical / Clinical: 60 Hours) **TOTAL: 120 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Practical / Laboratory Skills Hours	Total Hours
1.	SECTION –III CARDIO VASCULAR RESPIRATORY EVALUATION & RELATED SKILLS	30	20	50
2.	SECTION – IV NEUROTHERAPEUTIC EVALUATION & ELECTRO DIAGNOSIS	30	40	70
	<b>TOTAL</b>	<b>60</b>	<b>60</b>	<b>120</b>

## OBJECTIVES:

### Cognitive:

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

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

6. Document results of assessment to evaluate the patient from time to time.

**Psychomotor:**

Student will be able to:

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

**Affective:**

Student will be able to:

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Practical/ Clinical Hours	Total Hours
1	<b>SECTION –I</b> <b>CARDIO VASCULAR RESPIRATORY EVALUATION &amp; RELATED SKILLS</b> <div style="text-align: right;">(Theory-30 + Practical 20= 50 Hours)</div>			
	<b>a. Assessment of Cardio Vascular &amp; Pulmonary System:</b>	<b>10</b>	<b>10</b>	<b>20</b>
	i. Vital parameters ii. Chest expansion iii. Symmetry of chest movement iv. Breath Holding Test v. Breath Sounds vi. Rate of Perceived Exertion (R.P.E.) vii. Energy Systems & Exercise Physiology –	Identification of abnormal breath sounds, measurement of chest expansion, pattern of breathing, Vital parameters, Grades of		

	<ul style="list-style-type: none"> <li>a) Physiological response to immobility and activity.</li> <li>b) Aerobic &amp; Anaerobic metabolisms</li> <li>c) Evaluation of Functional Capacity using sub maximal tests (Exercise Tolerance – Six Minutes Walk test)</li> <li>d) Theoretical bases of different protocols for maximal exercise testing (e.g.: Bruce Protocol, Modified Bruce Protocol, Balke)</li> <li>viii. Interpretation of reports – A.B.G., P.F.T., P.E.F.R., E.C.G.- (Normal &amp; Variations due to Ischemia &amp; Infarction), X-ray Chest, Biochemical Reports</li> <li>ix. Ankle Brachial Index</li> <li>x. Tests for Peripheral Arterial &amp; Venous circulation.</li> </ul>	Dyspnoea, Rate of Perceived Exertion, Ankle Brachial Index, Exercise Tolerance Testing – 6 Minutes Walk Test		
	<b>b. Examination of Cardiovascular Respiratory Dysfunction:</b>	<b>05</b>	<b>05</b>	<b>15</b>
	<ul style="list-style-type: none"> <li>i. Subjective examination</li> <li>ii. Objective examination</li> <li>iii. Special tests: Exercise Tolerance Testing – 6 Minutes Walk Test, Breath Holding Test, P.E.F.R.</li> <li>iv. Functional Diagnosis using I.C.F.</li> </ul>			
	<b>c. Assessment of Fitness &amp; Health</b>	<b>15</b>	<b>05</b>	<b>20</b>
	<ul style="list-style-type: none"> <li>i. Screening for risk factors</li> <li>ii. Body composition-B.M.I., use of skin fold calipers, Girth measurement</li> <li>iii. Physical fitness: Flexibility, Strength, Endurance, Agility</li> <li>iv. Physical Activity Readiness Questionnaire</li> <li>v. Screening for health and fitness in childhood, adulthood and geriatric group</li> <li>vi. Quality of life</li> <li>vii. Principles &amp; components of exercise prescription for healthy</li> </ul>			
2	<b>SECTION – IV</b> <b>NEUROTHERAPEUTICEVALUATION &amp;ELECTRO DIAGNOSIS</b> (Theory-30 + Practical 40= 70 Hours)			
	<b>a. General principles of Human development &amp; maturation</b>	<b>05</b>	<b>05</b>	<b>10</b>

	<ul style="list-style-type: none"> <li>i. Aspects : <ul style="list-style-type: none"> <li>a) Physical</li> <li>b) motor</li> <li>c) Sensory</li> <li>d) Cognitive &amp; Perceptive</li> <li>e) Emotional</li> <li>f) Social</li> </ul> </li> <li>ii. Factors influencing human development &amp; growth: <ul style="list-style-type: none"> <li>a) Biological</li> <li>b) Environmental inherited.</li> </ul> </li> <li>iii. Principles of maturation in general &amp; anatomical directional pattern – <ul style="list-style-type: none"> <li>a) Cephalo – caudal</li> <li>b) Proximo – distal</li> <li>c) Centro – lateral</li> <li>d) Mass to specific pattern</li> <li>e) Gross to fine motor development</li> <li>f) Reflex maturation tests</li> </ul> </li> <li>iv. Development in specific fields - Oromotor development, sensory development, neurodevelopment of hand function.</li> </ul>			
	<b>b. Basics in Neuro Therapeutics Skills &amp; Applications with Clinical reasoning.</b>	<b>10</b>	<b>10</b>	<b>20</b>
	<ul style="list-style-type: none"> <li>i. Principles, Technique &amp; Indications for Application of <ul style="list-style-type: none"> <li>a) Bobath</li> <li>b) Neuro Developmental Technique</li> <li>c) Rood's Technique</li> <li>d) P.N.F.</li> <li>e) Brunnstrom,</li> <li>f) Techniques of Motor Relearning Program (M.R.P.)</li> </ul> </li> </ul>	Therapeutic Skills of N.D.T., P.N.F., Bobath, Rood's Technique & Brunnstrom, M.R.P. on models only		
	<b>c. Assessment of Movement Dysfunction</b>	<b>05</b>	<b>10</b>	<b>15</b>
	<ul style="list-style-type: none"> <li>i. Higher functions</li> <li>ii. Cranial nerves</li> <li>iii. Sensations , sensory organization &amp; body image</li> <li>iv. Joint mobility</li> <li>v. Tone</li> <li>vi. Reflexes-Superficial &amp; Deep</li> </ul>			

	<ul style="list-style-type: none"> <li>vii. Voluntary control</li> <li>viii. Muscle Strength</li> <li>ix. Co-ordination</li> <li>x. Balance</li> <li>xi. Endurance</li> <li>xii. Trick movements</li> <li>xiii. Limb Length</li> <li>xiv. Posture deviations</li> <li>xv. Gait deviations due to neurological dysfunction</li> <li>xvi. Functional Diagnosis using I.C.F.</li> <li>xvii. Interpretation of Electro diagnostic findings, routine Biochemical investigations</li> </ul>			
	<b>d. Electro diagnosis</b>	<b>05</b>	<b>10</b>	<b>15</b>
	<ul style="list-style-type: none"> <li>i. Physiology of resting membrane potential, action potential, Propagation of Action Potential</li> <li>ii. Physiology of muscle contraction</li> <li>iii. Motor unit &amp; Recruitment pattern of motor unit – Size principle</li> <li>iv. Therapeutic current –as a tool for electro diagnosis. <ul style="list-style-type: none"> <li>a) Electrophysiology of muscle &amp; nerve</li> <li>b) Faradic Galvanic Test, Strength Duration Curve-tests should be carried out on relevant patients,</li> <li>c) Test for Sensory &amp; Pain Threshold/ Pain Tolerance – technique only</li> </ul> </li> <li>v. Electro-Myography <ul style="list-style-type: none"> <li>a) Definition Instrumentation – Basic components like C.R.O., Filter, Amplifier &amp; Preamplifier, and Types of Electrodes</li> <li>b) Normal &amp; Abnormal E.M.G. pattern <ul style="list-style-type: none"> <li>i. at rest</li> <li>ii. on minimal contraction</li> <li>iii. on maximal contraction</li> </ul> </li> <li>c) Nerve Conduction Studies <ul style="list-style-type: none"> <li>i. Principles &amp; Technique</li> <li>ii. F wave</li> <li>iii. H reflex</li> </ul> </li> </ul> </li> </ul>	Test for S.D.C. & Faradic/ Galvanic Test		

	e. <b>SCALES:</b> Berg Balance, Modified Ashworth, F.I.M., Barthel Index, G.C.S., D.G.I., M.M.S., S.T.R.E.A.M. & A.S.I.A.	<b>05</b>	<b>05</b>	<b>10</b>
--	---	-----------	-----------	-----------

<b>DOCUMENTATION:</b>	
A	<p>Documentation &amp; Interpretation of following investigations:</p> <ul style="list-style-type: none"> <li>v. Electro diagnosis : 2 each <ul style="list-style-type: none"> <li>a) S.D.C.</li> <li>b) Faradic Galvanic Test</li> <li>c) E.M.G. &amp; N.C. Studies</li> </ul> </li> <li>vi. Cardio Vascular &amp; Pulmonary: (1 each) – A.B.G., P.F.T., E.C.G., X-ray Chest, Exercise Tolerance Test.</li> <li>vii. Neurological Scales (1 each)– Modified Ashworth, Berg’s Balance, D.G.I., Glasgow</li> <li>viii. Coma, Barthel Index, F.I.M.</li> </ul>
B	<p>Case presentation with Functional diagnosis :</p> <ul style="list-style-type: none"> <li>iii. Total 12 cases</li> <li>iv. Three cases each in – <ul style="list-style-type: none"> <li>a) Musculoskeletal</li> <li>b) Neurological</li> <li>c) Cardiovascular &amp; Respiratory (Including General Medical &amp; Surgical Cases)</li> <li>d) General &amp; Community Health (Including Fitness &amp; Health, Women &amp; Child Health, Occupation Health)</li> </ul> </li> </ul>
<b>To maintain the Record/ Journal of the term work &amp; to get each assignment duly signed by respective Head of the Dept.</b>	

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Understand the use of appropriate tools or instruments of assessment in Musculoskeletal, Neurological and Cardio-vascular conditions.
- 2) Understand the theoretical basis and principles of manipulative skills, neurotherapeutic skills and skills of cardiopulmonary care and resuscitation
- 3) Perform assessment of measures of body structures and functions related to tissue mechanics.
- 4) Perform assessment of measures of body structures and functions related to motor control affecting activity and participation, quality of life and independence.
- 5) Demonstrate skills of manual therapy musculoskeletal, neurotherapeutics and cardiovascular and respiratory skills on models (Laboratory work).

- 6) Follow the principles of appropriate handling technique that is draping, hand placement, body part positioning, manual techniques, lifting and transfer techniques.

### RECOMMENDED TEXT BOOKS

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

### RECOMMENDED REFERENCE BOOKS

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

### SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		Marks
70 marks + I.A. – 30 Marks		100
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section -A-</b> M.C.Qs.	Q-1 – based on MUST KNOW area[1x20]	20
<b>Section-B-</b> S.A.Qs.	Q-1 - Answer any FIVE out of SIX [5x2=10] Q-2 - Answer any TWO out of THREE [2X5=10]	20
<b>Section-C-</b> L.A.Qs.	Answer any TWO out of THREE [2X15=30] Q-1 Q-2- Q-3-	30
<b>Total Marks</b>		<b>70</b>

<b>PRACTICAL</b> 70 marks + I.A. – 30 Marks		<b>Marks</b> <b>100</b>
<b>LONG CASE</b>	[Time maximum 30 minutes for students for evaluation] 1. Psychomotor & affective: <ul style="list-style-type: none"> <li>• Skill of History taking [05 marks]</li> <li>• Skill of clinical examination [10 marks]</li> <li>• Skill of objective diagnostic procedure[10mrk]</li> </ul> 2. Cognitive : <ul style="list-style-type: none"> <li>• Ability to justify bases for functional diagnosis by I.C.F. [10 marks]</li> </ul> [To be evaluated in cognitive, psychomotor and affective domains.]	35
<b>SHORT CASE</b>	Two Short cases on : 1. Mobilization Technique: Kaltborn, Maitland, M.E.T. or Neural Mobilisation (On Models) [10marks] 2. Neuro Therapeutic Skills: N.D.T. / P.N.F. / Rood's / Brunnstrom (On Models) [10 marks] OR Electro Diagnosis: S.D. Curve / Faradic Galvanic Test (On Patient) [10 marks] OR Exercise Tolerance Test: Six Minutes Walk Test (On Model) [10 marks]	20
<b>SPOTS</b>	5 spots - (5x2 Marks= 10 Marks) 3minutes for each spot a) X ray (on section 2/3/4) b) Pulmonary Function Test c) Blood gas analysis d) E.C.G. e) E.M.G. / N.C. studies	10
<b>ASSIGNMENT</b>	Documentations- Assessment, Evaluation, Diagnosis with I.C.F.	05
<b>Total Marks</b>		<b>70</b>

**INTERNAL ASSESSMENT:**

1. Exams –Theory & Practical
2. I.A. to be calculated out of 30 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# MEDICINE

(Theory : 60 Hours + Practical / Clinical : 20 Hours) **TOTAL : 80 Hours**

## COURSE DESCRIPTION:

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

Sr. No.	Topics	Theory Hours	Clinical Hours	Total Hours
1.	<b>CARDIO-VASCULAR &amp; RESPIRATORY MEDICINE</b>	40	10	<b>50</b>
2.	<b>GENERAL MEDICINE, RHEUMATOLOGY &amp; GERONTOLOGY</b>	20	10	<b>30</b>
	<b>TOTAL</b>	<b>60</b>	<b>20</b>	<b>80</b>

## OBJECTIVES:

**At the end of the course, the candidate will:**

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Clinical Hours	Total Hours
1.	<b>CARDIO-VASCULAR &amp; RESPIRATORY MEDICINE</b>	<b>40</b>	<b>10</b>	<b>50</b>
	<b>a. Cardio-Vascular Diseases</b>	<b>20</b>	<b>5</b>	<b>25</b>
	i. Hypertension – systemic	4	-	4
	ii. Cardiac Conditions- a) I.H.D. (Angina, Myocardial infarction) b) R.H.D. c) Infective Endocarditis d) Cardio myopathy e) Heart Failure	5	-	5
	iii. Valvular Heart Disease a) Congenital b) Acquired	4	-	4
	iv. Congenital Heart Disease	2	-	2
	v. Investigations a) Basics of E.C.G. [ Normal & Abnormal (Ischaemia, Infarction & Arrhythmias)] b) Observation of conduction of stress test on patient c) 2D Echo (Ejection Fraction & Wall motion Abnormality)	5	-	5
	<b>b. Diseases of the Respiratory System :</b>	<b>20</b>	<b>5</b>	<b>25</b>
	i. Common Infectious diseases like Tuberculosis, Pneumonia, Lung Abscess, and Bronchiectasis.	3	-	3
	ii. Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydropneumothorax, and Empyema.	3	-	3
	iii. ILD & Occupational lung diseases like Silicosis, Asbestosis, Pneumoconiosis, Brucellosis, Farmer's Lung.	3	-	3
	iv. Obstructive Airway Diseases (C.O.P.D. with Cor Pulmonale, Pulmonary Hypertension, Bronchial Asthma & Cystic Fibrosis)	3	-	3

	<ul style="list-style-type: none"> <li>v. Intensive Care Unit <ul style="list-style-type: none"> <li>a) Infrastructure</li> <li>b) Instrumentation.</li> <li>c) Mechanical Ventilation (settings &amp; monitoring)</li> <li>d) Assessment, monitoring &amp; management of patient in I.C.U.</li> </ul> </li> </ul>	3	-	3
	vi. Basic Life Support :Introduction & Demonstration	3	-	3
	<ul style="list-style-type: none"> <li>vii. Investigation: Normal &amp; Abnormal <ul style="list-style-type: none"> <li>1. Chest X-ray</li> <li>2. Blood Gas Analysis</li> <li>3. PFT(Observation of conduction on patient)</li> </ul> </li> </ul>	2	-	2
2.	<b>GENERAL MEDICINE, RHEUMATOLOGY &amp; GERONTOLOGY</b>	<b>20</b>	<b>10</b>	<b>30</b>
	<ul style="list-style-type: none"> <li><b>a. General Medicine</b> <ul style="list-style-type: none"> <li>i. Disorders of Endocrine system (Diabetes) Introduction, pathophysiology, types, role of physical activity, complications of diabetes (autonomic neuropathy, myopathy, weakness) &amp; medications.</li> <li>ii. Thyroid, Pituitary &amp; Adrenal conditions Cushing's syndrome</li> <li>iii. Obesity</li> <li>iv. Nutrition Deficiency Disease (Rickets, Vit. E, Vit. D, Vit. B , micro nutrients,(Zn, Se)</li> <li>v. Intoxication (Drug abuse; Alcohol, smoking, cocaine dependence)</li> </ul> </li> </ul>	10	4	14
	<ul style="list-style-type: none"> <li><b>b. Rheumatological Conditions</b> <ul style="list-style-type: none"> <li>i. Rheumatoid Arthritis</li> <li>ii. S L E</li> <li>iii. S S A</li> <li>iv. Gout</li> <li>v. Polymyositis</li> <li>vi. Fibro myalgia</li> <li>vii. Ankylosing spondylitis</li> </ul> </li> </ul>	5	4	9

	<b>c. Geriatric Conditions</b>	5	2	7
	i. Aging Process (physiological changes due to aging)			
	ii. CVS & RS complications			
	iii. Osteoporosis			

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Describe Etiology, Pathophysiology, Signs & Symptoms & Management of the various Endocrinal, Metabolic, Geriatric & Nutrition Deficiency conditions.
- 2) Describe Etiology, Pathophysiology, Signs & Symptoms, Clinical Evaluation & Management of the various Rheumatological Cardiovascular and Respiratory Conditions.
- 3) Interpret Chest X-ray, Blood gas analysis, P.F.T. findings, Blood investigations done for various medical and Rheumatological conditions.
- 4) Describe the principles of Management at the Medical Intensive Care Unit

### **RECOMMENDED TEXT BOOKS**

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

### **RECOMMENDED REFERENCE BOOK**

1. Principles & Practice of Medicine -- Davidson

### **CLINICAL - 10 HRS**

1. History taking, Evaluation –General Examination & Systemic examination (Inspection, Palpation, Percussion & Auscultation )
2. Presentation and recording of Two cases Each in:
  - i. Muscular disorders
  - ii. Respiratory Conditions
  - iii. Cardio Vascular Conditions
  - iv. Degenerative / Rheumatological Condition
  - v. Obesity
  - vi. Nutritional disorders
  - vii. Diabetes Mellitus & Metabolic bone disorders.

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		<b>Marks</b>
35MARKS + I.A. –15 MARKS		<b>50</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on <b>MUST KNOW</b> area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2= 10] * Based on topics – GENERAL MEDICINE, HEUMATOLOGY & GERONTOLOGY	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15] * Based on topics – CARDIOVASCULAR & RESPIRATORY MEDICINE	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

# **SURGERY**

(Theory : 60 Hours + Practical / Clinical : 20 Hours) **TOTAL : 80 Hours**

## **COURSE DESCRIPTION:**

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

<b>Sr. No.</b>	<b>Subject</b>	<b>Theory Hours</b>	<b>Practical / Clinical Hours</b>	<b>Total Hours</b>
<b>01</b>	<b>GENERAL SURGERY</b>	30	10	<b>40</b>
<b>02</b>	<b>CARDIO VASCULAR AND THORACIC SURGERY</b>	20	5	<b>25</b>
<b>03</b>	<b>CARDIO VASCULAR AND THORACIC SURGERY</b>	10	5	<b>15</b>
	<b>TOTAL</b>	<b>60</b>	<b>20</b>	<b>80</b>

## **OBJECTIVES:**

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

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Clinical Hours	Total Hours
1.	<b>GENERAL SURGERY</b>	<b>30</b>	<b>10</b>	<b>40</b>
	<b>GENERAL :</b> i. Anaesthesia types, Effect, indications and contraindications and common postoperative complications ii. Haemorrhage and Shock, classification, description and treatment iii. Water & Electrolyte imbalance iv. Inflammation – acute & chronic-signs, symptoms, complications & management v. Wounds & Ulcers, Cellulitis – classification, healing process, management, bandaging, Dressing solutions and its uses and debridement Procedure, hand washing and universal precautions. vi. Enumerate Common abdominal surgical incisions – classification, indications, opening – closure, advantages and disadvantages, complications (including burst abdomen and fecal fistula), minimally invasive surgery. vii. Mastectomy and oncosurgery– approach, complications & management viii. Amputation – types, sites, complications & management ix. Burns – causes, complications, classification & management x. Varicose veins and PVD xi. Hernias-surgery, precautions and complications xii. Transplantation approach, risk problems related to donor and recipient, precautions.	16	10	26
	<b>NEUROSURGERY</b> ii. Head Injury – management iii. Intra cranial & Spinal tumors iv. Intracranial Aneurysm and AV malformation v. Post operative Neurosurgical care	8	-	8
	<b>E.N.T. Surgery</b> i. Tracheostomy – indications, surgical	4	-	4

	<p>approach &amp; management</p> <p>ii. Surgical procedures in VIIth cranial nerve palsy</p> <p>iii. Vertigo</p>			
	<p><b>Ophthalmic Surgery</b></p> <p>Surgeries for IIIrd, IVth, VIth Cranial Nerve palsy</p>	2	-	2
2.	<p><b>CARDIO VASCULAR AND THORACIC SURGERY</b></p> <p>a. Introduction, Cardiorespiratory resuscitation, cardiopulmonary bypass, Special investigation procedures in cardiac surgery, Basic techniques in cardiac surgery approach, incisions, Types of operation, Complications of cardiac surgery, Lines, drains and tubes.</p> <p>b. Brief description of indications, surgery, complications for following surgery :</p> <p>i. Surgeries of thorax</p> <p>ii. Surgeries of the lung</p> <p>iii. Surgeries of pleura and pericardium</p> <p>iv. Surgery for coronary artery disease</p> <p>v. Valvular surgeries v. Surgery for Congenital Heart Disease</p> <p>vi. Peripheral arterial disorder, Burger's disease, Raeynaud's disease and Aneurysm</p> <p>vii. Gangrene, Amputation,DVT</p>	<b>20</b>	<b>5</b>	<b>25</b>
3.	<p><b>CARDIO VASCULAR AND THORACIC SURGERY</b></p> <p>a. Skin grafts &amp; flaps – Types, indications with special emphasis to burns, wounds</p> <p>b. Ulcers, complications and postoperative care</p> <p>c. Tendon transfers, with special emphasis to hand, foot &amp; facial paralysis, &amp; repair of Flexor &amp; Extensor Tendon Injuries</p> <p>d. Keloid &amp; Hypertrophied scar management</p> <p>e. Reconstructive surgery of peripheral nerves</p> <p>f. Micro vascular surgery- reimplantation and revascularization</p>	<b>10</b>	<b>5</b>	<b>15</b>

**CLINICAL (20hrs)**

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

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Understand & describe pre operative evaluation various surgical indications in abdominal thoracic, Neuro Surgical & Peripheral vascular conditions.
- 2) Understand surgical steps & approaches in short & should be able to describe components of soft tissues cut to reach target tissue & complications.
- 3) Assess post operative complications & its implications in ward treatment, prognosis, morbidity & mortality.
- 4) Describe effects of surgical trauma & Anaesthesia in post operative course.

**RECOMMENDED TEXT BOOKS**

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

## SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks [There shall be no LAQ in this paper]		<b>50</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on MUST KNOW area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5 x 2 = 10] * Based on topics – GENERAL SURGERY & PLASTIC SURGERY	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5 x 3 = 15] * Based on topics – CARDIOVASCULAR & THORACIC SURGERY	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

# COMMUNITY MEDICINE

(Theory : 30 Hours + Practical / Clinical : 10 Hours) **TOTAL : 40 Hours**

## COURSE DESCRIPTION:

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

## OBJECTIVES:

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

## SYLLABUS

Sr. No.	Topics	Theory Hours
<b>1.</b>	<b>GENERAL CONCEPTS &amp; DETERMINANTS OF HEALTH &amp; DISEASES:</b>	<b>04</b>
	a. National & International Definition of Health, Role of Socio-Economic & Cultural Environment in Health & Disease.	1
	b. Epidemiology – Definition & scope, uses with relevance to physiotherapy	1
	c. Environmental Hygiene including man & his surrounding, Occupational & Industrial hygiene, Village & Town Sanitation, Bacteriology of Water, Milk, & Food Hygiene.	2
<b>2.</b>	<b>NATIONAL PUBLIC HEALTH ADMINISTRATION</b>	<b>1</b>
<b>3.</b>	<b>HEALTHCARE DELIVERY SYSTEM:</b>	<b>2</b>
	a. Healthcare Delivery System of India	
	b. National Health Programmes	
	c. Role of W.H.O.	
	d. Millennium Development Goals for All	
<b>4.</b>	<b>PRIMARY HEALTHCARE:</b>	<b>1</b>
	a. Definition	
	b. Principles,	
	c. Elements & its application	
<b>5.</b>	<b>EPIDEMIOLOGY OF SOCIO-ECONOMICAL &amp; CULTURAL ISSUES</b> - related to morbidity in relation to the following vulnerable groups.	<b>6</b>

	a. Women: i. Pregnant and lactating women, maternal health (ANC,PNC,INC) ii. Perimenopausal women's health: physical & psychological	1
	b. Infants: (Low Birth Weight, Breast feeding, Complimentary feeding, IYCN,IMNCI Vaccine preventable diseases, Immunization programmes, Infant and childhood mortality)	2
	c. Children: Child health, Growth monitoring under five clinic, ICDS, PEM	2
	d. School aged population health: Early detection and prevention of disabilities, behavioral problems	1
<b>6.</b>	<b>DEMOGRAPHY AND OBJECTIVES OF NATIONAL FAMILY WELFARE PROGRAMMES AND NATIONAL POPULATION POLICY</b>	<b>2</b>
<b>7.</b>	<b>COMMUNICABLE DISEASES</b>	<b>3</b>
	An over-view [including prevention & control] T.B., H.I.V., Leprosy, Vector borne diseases- Malaria / Filariasis / Dengue/ Chikungunya/ Japanese encephalitis.	
<b>8.</b>	<b>NON COMMUNICABLE DISEASES:</b>	<b>2</b>
	Diabetes Mellitus, Hypertension, Coronary Heart Disease / Obesity / Blindness/ Accidents /Stroke/ Cancer.	
<b>9.</b>	<b>NUTRITIONAL DISEASES:</b>	<b>4</b>
	Malnutrition, Nutritional disorders and National nutrition programmes, Osteomalacia, Rickets, Neuropathies due to Vitamin - deficiency, Skeletal Deformities.	
<b>10.</b>	<b>MENTAL HEALTH:</b>	<b>2</b>
	a. Socio-economical & cultural aspects b. Substance abuse and addiction –tobacco, alcohol and others	
<b>11.</b>	<b>OCCUPATIONAL HEALTH:</b>	<b>1</b>
	Occupational diseases & hazards - definition, scope, prevention & legislations, Occupational lung diseases & Physical injuries/pains.	
<b>12.</b>	<b>GERIATRIC HEALTH:</b>	<b>1</b>
	a. Physical, social, economical aspects b. Osteoporosis, Malnutrition, Alzheimer's disease, Parkinson's disease	
<b>13.</b>	<b>HOSPITAL WASTE MANAGEMENT:</b>	<b>1</b>
	Universal Safety Precautions, Immunization of health care providers including their vaccination.	

	<b>COMMUNITY VISITS:</b> <b>Community health centers: Urban &amp; Rural – 10 Hours</b>	
--	---	--

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Know National & International Definition of Health, Role of Socio-Economic & Cultural Environment in Health & Disease.
- 2) Understand Epidemiology of socio-economical & cultural issues - related to morbidity
- 3) Acquire knowledge of Demography and objectives of national family welfare programmes and national population policy

**RECOMMENDED TEXT BOOKS**

1. Park’s Textbook of Preventive & Social Medicine - K. Park
2. Textbook of Preventive & Social Medicine - P.K. Mahajan & M.C. Gupta
3. Essential of Community Medicine - Baride and Kulkarni

**SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)**

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks [There shall be no LAQ in this paper]		<b>50</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on MUST KNOW area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10] * Based on topics – COMMUNITY MEDICINE	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15] * Based on topics – COMMUNITY MEDICINE	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

**INTERNAL ASSESSMENT:**

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

# FIRST AID AND EMERGENCY CARE

(Theory : 20 Hours + Practical / Clinical : 10 Hours) **TOTAL : 30 Hours**

## OBJECTIVES:

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

- Acquire knowledge about first aid, emergencies

## SYLLABUS

Sr. No.	Topics	Theory Hours	Practical Hours	Total Hours
1.	<b>SECTION I</b> Introduction to First Aid – Assessment, immediate • actions and the priorities within first aid Bandages – Types, binders, splints •& slings. Promoting safety consciousness. • Examination of Vital Signs. • First Aid <ul style="list-style-type: none"> <li>➤ RTA including fractures and spinal cord injuries</li> <li>➤ Cardiac arrest</li> <li>➤ Respiratory failure</li> <li>➤ Burns</li> <li>➤ Shock-Electric, Hypovolemic</li> <li>➤ control of– Bleeding</li> <li>➤ Hypothermia</li> <li>➤ Hyperthermia</li> <li>➤ Drowning</li> <li>➤ Poisoning</li> <li>➤ Snake Bite</li> </ul>	15	7	22
2.	<b>SECTION II</b> Medical Triage- concept of Emergency: Definition importance and rules, code tags and triage terminology.	3	1	4
3.	Instruments used in First Aid (First Aid kit).	2	2	4
	<b>TOTAL</b>	<b>20</b>	<b>10</b>	<b>30</b>

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Acquire skills for assessment, immediate actions and the priorities within first aid Bandages
- 2) Understand concept of Emergency Definition importance and rules, code tags and triage terminology.

**RECOMMENDED TEXT BOOK**

1. First Aid and Emergency Management-Surabhi Arya

**SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)**

<b>THEORY</b>		<b>Marks</b>
35 marks + I.A. – 15 Marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on MUST KNOW area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10] * Based on topics – FIRST AID	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15] * Based on topics – EMERGENCY CARE	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

**INTERNAL ASSESSMENT:**

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

# CHOICE BASED COURSE- PT IN PAEDIATRICS

(Theory : 70 Hours + Practical / Clinical : 60 Hours) **TOTAL : 130 Hours**

## OBJECTIVES:

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

1. Acquire the knowledge of normal neurodevelopment, with specific reference to Locomotion
2. Embryology of nervous system, Embryology of cardiovascular, pulmonary & musculoskeletal system , Developmental & congenital anomalies, Deformities of vertebral column, deformities of chest wall

## SYLLABUS

Sr. No.	Topics	Theory Hours	Practical Hours	Total Hours
1.	Embryology of nervous system, Embryology of cardiovascular, pulmonary & musculoskeletal system , Developmental deformities & congenital anomalies, Deformities of vertebral column, deformities of chest wall	5	2	7
2.	Congenital dislocation of hip ,CTEV, vertical talus, Blount disease, Perthe's disease, slipped capital femoral epiphysis, limb length discrepancies and Osteogenesis Imperfecta.	6	4	10
3.	Traumatic injuries in child – fractures, dislocations, epiphyseal injuries	5	3	8
4.	Assessment of Reflex & Reactions	2	2	4
5.	Cerebral palsy -assessment & management with approaches, Roods, Vojta, Sensory integration, N.D.T	4	4	8
6.	Attention deficit Hyperactive disorder, Autism	2	2	4
7.	Gravitational insecurity, Mental retardation, Epilepsy	4	3	7
8.	Genetic disorder – Down's syndrome, Marfan's syndrome	2	2	4
9.	Movement disorder – Chorea, Athetosis, Dystonia, Choreoathetosis, Ataxia	4	4	8
10.	Disorder of muscle – Muscular dystrophy (Duchenne's, Becker's, Limb girdle, Facio-scapulohumeral, Spinal muscular atrophy)	5	5	10
11.	Developmental anomalies – Spina bifida,	5	5	10

	hydrocephalus, crano-vertebral junction anomalies			
<b>12.</b>	Traumatic head injury	4	4	<b>8</b>
<b>13.</b>	Neonatal ICU, Paediatric ICU, Complications of low birth Weight	4	6	<b>10</b>
<b>14.</b>	Anatomical & physiological differences of cardiovascular & respiratory system in neonates, childhood & adults	4	4	<b>8</b>
<b>15.</b>	Fetal circulation,.Congenital heart disease – pathodynamics, clinical presentation, investigation, medico-surgical & physiotherapy management of cyanotic & acyanotic heart disease , Rheumatic heart disease	6	4	<b>10</b>
<b>16.</b>	Respiratory disorder in childhood – IRDS, Bronchopulmonary dysplasia, pneumonia, lung abscess, asthma, cystic fibrosis, bronchitis, bronchiectasis, bronchiolitis, pertusis, CROUP, epiglottitis, chronic lung disease, primary ciliary dyskinesia, fatigue, sleep apnoea, hyperventilation syndrome	6	4	<b>10</b>
<b>17.</b>	Role of Orthotics in Paediatric conditions.	2	2	<b>4</b>
	<b>TOTAL</b>	<b>70</b>	<b>60</b>	<b>130</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Embryology of nervous system, Embryology of cardiovascular, pulmonary & musculoskeletal system , Developmental & congenital anomalies, Deformities of vertebral column, deformities of chest wall.
- 2) Acquire the knowledge of normal neurodevelopment, with specific reference to Locomotion

### **RECOMMENDED TEXT BOOK**

1. Paediatric physical Therapy- Stephen Tecklin
2. Physical therapy for children –Campbell
3. Nelson Textbook of Paediatrics
4. Handbook of Paediatric physical therapy-Toby M Long

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY ONLY</b>		Marks
35 marks + I.A. – 15 Marks[There shall be no LAQ in this paper]		
* The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section-A- Q-1</b>	MCQs – based on MUST KNOW area[1x10]	<b>10</b>
<b>Section-B- Q-2 &amp; Q-3</b>	SAQ-to answer any FIVE out of SIX [5x2]	<b>10</b>
	SAQ – to answer any THREE out of FOUR[3x5]	<b>15</b>
<b>Total Marks</b>		<b>35</b>

<b>PRACTICAL</b>		Marks
35 MARKS + IA – 15 MARKS		50
<b>LONG CASE</b>	Based on the History	<i>- 10 Marks</i>
	Evaluation	<i>- 05 Marks</i>
	Treatment Plan on Patient	<i>- 05 Marks</i>
<b>SHORT CASE</b>	Two Short case based on	
	• Basic evaluation	<i>-05 Marks</i>
	• Skill performance.	<i>-05 Marks</i>
<b>ASSIGNMENT</b>	Practicals performed during the year	05
<b>TOTAL MARKS</b>		<b>35</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory & Practical
2. I.A. to be calculated out of 30 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# CHOICE BASED COURSE- MANUAL THERAPY

(Theory : 70 Hours + Practical / Clinical : 60 Hours) **TOTAL : 130 Hours**

## OBJECTIVES:

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

1. Acquire the knowledge and skill of various approaches of Manual therapy for joints of the limbs/spine.
2. Be able to integrate the manual therapies to rehabilitate the Mechanical Neuro-Muscular problems.
3. Be able to impart knowledge and train the undergraduate in Manual Therapy

## SYLLABUS

Sr. No.	Topics	Theory Hours	Practical Hours	Total Hours
1.	Introduction to Manual Therapy. Definition and Terminologies	4	-	4
2.	History of Manual Therapy.	4	-	4
3.	Subjective and Objective Assessment of Pain	4	4	8
4.	Basic principles, Indications & Contra-Indications of Maitland's school of thought	4	4	8
5.	Basic principles, Indications & Contra-Indications of Kaltenborn's Technique	5	5	10
6.	Basic principles, Indications & Contra-Indications of Mulligan's concept	5	5	10
7.	Basic principles, Indications & Contra-Indications of Mckenzie's Mechanical Diagnosis and Treatment (MDT)	5	5	10
8.	Basic principles, Indications & Contra-Indications of Butler's neural mobilization	5	5	10
9.	Basic principles, Indications & Contra-Indications of Neurodynamic Testing	5	5	10
10.	Basic principles, Indications & Contra-Indications of Muscle Energy Technique	5	5	10
11.	Basic principles, Indications & Contra-Indications of Myofascial Release Technique	5	5	10
12.	Basic principles, Indications & Contra-Indications of Cyriax's concept	5	5	10
13.	Introduction to osteopathy	3	4	7
14.	Introduction to Chiropractics	4	3	7

<b>15.</b>	Introduction to Cranio-sacral Therapy	3	3	<b>6</b>
<b>16.</b>	Introduction to Clinical Reasoning	4	2	<b>6</b>
	<b>TOTAL</b>	<b>70</b>	<b>60</b>	<b>130</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

1. Integrate the manual therapies to rehabilitate the Mechanical Neuro-Muscular problems.
2. Acquire the knowledge and skill of various approaches of Manual therapy for joints of the limbs/spine.

### **RECOMMENDED TEXT BOOK**

1. MaitlandsBook on Manual therapy
2. Orthopaedic Physical examination – by Magee
3. Mobilization Methods – Kaltonborn
4. CyriaxMobilisation– James H.Cyriax

### **SCHEME OF UNIVERSITY EXAMINATION**

<b>THEORY ONLY</b>		Marks
35 marks + <b>I.A.</b> – 15 Marks [There shall be no LAQ in this paper]		<b>50</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section -A-</b> Q-1	MCQs – based on MUST KNOW area[1x10]	<b>10</b>
<b>Section-B-</b> Q-2 & Q-3	SAQ-to answer any FIVE out of SIX [5x2]	<b>10</b>
	SAQ – to answer any THREE out of FOUR[3x5]	<b>15</b>
<b>Total Marks</b>		<b>35</b>

<b>PRACTICAL</b>		Marks
35 MARKS + IA – 15 MARKS		50
<b>LONG CASE</b>	Based on the History - 10 Marks Evaluation - 05 Marks Treatment Plan on Patient - 05 Marks	20
<b>SHORT CASE</b>	Two Short case based on <ul style="list-style-type: none"> <li>• Basic evaluation -05 Marks</li> <li>• Skill performance. -05 Marks</li> </ul>	10
<b>ASSIGNMENT</b>	Practicals performed during the year	05
<b>TOTAL MARKS</b>		<b>35</b>

**INTERNAL ASSESSMENT:**

- 1) Exams –Theory & Practical
- 2) I.A. to be calculated out of 15 marks (Theory & Practical)
- 3) Internal assessment as per University pattern.

# UNIVERSAL HUMAN VALUES AND PROFESSIONAL ETHICS

(Theory : 30 Hours) **TOTAL : 30 Hours**

## COURSE OBJECTIVES

1. To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings
2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way
3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature

Thus, this course is intended to provide a much needed orientational input in value education to the young enquiring minds.

## COURSE METHODOLOGY

1. The methodology of this course is explorational and thus universally adaptable. It involves a systematic and rational study of the human being vis-à-vis the rest of existence.
2. It is free from any dogma or value prescriptions.
3. It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as a proposal and the students are facilitated to verify it in their own right, based on their Natural Acceptance and subsequent Experiential Validation.
4. This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with, and then to continue within the student leading to continuous self-evolution.
5. This self-exploration also enables them to critically evaluate their pre-conditionings and present beliefs.

## SYLLABUS

After every two lectures of one hour each, there is a 2 hour practice session.

The teachers are oriented to the inputs through an eight to ten day workshop (Teachers' Orientation Program).

The Teacher's Manual provides them the lecture outline. The outline has also been elaborated into presentations and provided in a DVD with this book to facilitate sharing.

The teacher is expected to present the issues to be discussed as propositions and encourage the students to have a dialogue. The process of dialogue is enriching for both, the teacher as well as the students.

The syllabus for the lectures is given below:

## **UNDERSTANDING HARMONY IN THE FAMILY AND SOCIETY- HARMONY IN HUMAN-HUMAN RELATIONSHIP**

Understanding Harmony in the family – the basic unit of human interaction

1. Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*;
2. Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship
3. Understanding the meaning of *Vishwas*; Difference between intention and competence
4. Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship
5. Understanding the harmony in the society (society being an extension of family): *Samadhan*, *Samridhi*, *Abhay*, *Sah-astitva* as comprehensive Human Goals
6. Visualizing a universal harmonious order in society- Undivided Society (*Akhand Samaj*), Universal Order (*SarvabhaumVyawastha* )- from family to world family!

Practice Exercises and Case Studies will be taken up in Practice Sessions.

### **GUIDELINES AND CONTENT FOR PRACTICE SESSIONS**

**PS 7:** Form small groups in the class and in that group initiate dialogue and ask the eight questions related to trust. The eight questions are :

- 1a. Do I want to make myself happy?
- 2a. Do I want to make the other happy?
- 3a. Does the other want to make him happy?
- 4a. Does the other want to make me happy?

*What is the answer?*

Intention (Natural Acceptance)

- 1b. Am I able to make myself always happy?
- 2b. Am I able to make the other always happy?
- 3b. Is the other able to make him always happy?
- 4b. Is the other able to make me always happy?

*What is the answer?*

Competence

Let each student answer the questions for himself and everyone else. Discuss the difference between intention and competence. Observe whether you evaluate your intention & competence as well as the others' intention & competence.

**Expected outcome:** The students are able to see that the first four questions are related to our Natural Acceptance i.e. Intention and the next four to our Competence. They are able to note that the intention is always correct, only competence is lacking! We generally evaluate ourselves on the basis of our intention and others on the basis of their competence! We seldom look at our competence and others' intention as a result we conclude that I am a good person and other is a bad person.

**PS 8:**

1. Observe on how many occasions you are respecting your related ones (by doing the right evaluation) and on how many occasions you are disrespecting by way of under-evaluation, over-evaluation or otherwise evaluation.
2. Also observe whether your feeling of respect is based on treating the other as yourself or on differentiations based on body, physical facilities or beliefs.

**Expected outcome:** The students are able to see that respect is right evaluation, and only right evaluation leads to fulfilment in relationship. Many present problems in the society are an outcome of differentiation (lack of understanding of respect), like gender biasness, generation gap, caste conflicts, class struggle, dominations through power play, communal violence, clash of isms, and so on so forth. All these problems can be solved by realizing that the other is like me as he has the same natural acceptance, potential and program to ensure a happy and prosperous life for him and for others though he may have different body, physical facilities or beliefs.

**PS 9:**

1. Write a note in the form of story, poem, skit, essay, narration, dialogue to educate a child. Evaluate it in a group.
2. Develop three chapters to introduce 'social science- its need, scope and content' in the primary education of children

**Expected outcome:** The students are able to use their creativity for educating children. The students are able to see that they can play a role in providing value education for children. They are able to put in simple words the issues that are essential to understand for children and comprehensible to them. The students are able to develop an outline of holistic model for social science and compare it with the existing model.

### SCHEME OF EXAMINATIONS AT A GLANCE

Subject Code	SUBJECTS	UNIVERSITY EXAMINATIONS					
		Theory			Clinical / Practical		
		University	I.A.	Total	University	I.A.	Total
BPT 601	Functional Diagnosis & Physiotherapeutic Skills	70	30	100	70	30	100
BPT 602	Medicine	35	15	50	---	---	---
BPT 603	Surgery	35	15	50	---	---	---
BPT 604	Community Medicine	35	15	50	---	---	---
BPT 605	First Aid & Emergency Care	35	15	50	---	---	---
BPT 606 (MT/PTP)	Choice Based Course- PT in Paediatrics/ Manual Therapy	35	15	50	35	15	50
HVE-01	Universal Human Values & Professional Ethics	-	-	-	-	-	-
	<b>Total</b>	<b>245</b>	<b>105</b>	<b>350</b>	<b>105</b>	<b>45</b>	<b>150</b>

\*Note: Examination of Universal Human Values & Professional Ethics will be held in 8<sup>th</sup> Semester.

**BACHELOR OF PHYSIOTHERAPY  
(BPT)**

**SYLLABUS**

**SEVENTH SEMESTER**

# SYLLABUS

## Transcript Hrs-730

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subjects</b>	<b>Theory Hours</b>	<b>Practical/ Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 701	Musculoskeletal Physiotherapy	120	80	200
02.	BPT 702	Cardiovascular-Respiratory Physiotherapy	120	80	200
03.	BPT 703	Principles of Bio-engineering	25	05	30
04.	BPT 704	Advance Professional Practice & Ethics	15	15	30
05.	BPT 706 (PTS/PTH)	Choice Based Course- PT in Sports/ PT in Hand Conditions	70	60	130
06.	-	Supervised Clinical Practice	-	100	100
07.		<b>Grand Total</b>	<b>350</b>	<b>340</b>	<b>690</b>

# MUSCULOSKELETAL PHYSIOTHERAPY

(Theory : 120 Hours + Practical / Laboratory : 80 Hours) **TOTAL : 200 Hours**

## COURSE DESCRIPTION:

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

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

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

Sr. No.	Topics	Theory Hours	Clinical Hours
1.	Use of ICF model in physiotherapy management of health condition of musculoskeletal system	04	00
2.	Outcome measures – and Evidence Based Practice	04	00
3.	Biomechanical / Physiological basis of physiotherapy intervention skills	08	05
4.	Physiotherapy interventions with goal setting for dysfunctions due to musculoskeletal health conditions secondary to conservative or surgical management of:		
	Manifestations of trauma and their complications	44	20
	Degenerative Arthritis	14	10
	Inflammatory conditions	08	05
	Infectious Diseases of bones & joints	04	05
	Metabolic & Hormonal Disorders	04	05
	Congenital & Acquired Deformities	12	05
	Peripheral Nerve Injuries & Plexus Injuries	06	05
	Soft tissue injuries during sports and as a result of Over-use	04	05
	Musculo-skeletal complications in Cerebral Palsy & Poliomyelitis and reconstructive surgeries.	02	05-
	Tumours of bone,	01	01
	Vascular disorders	01	02

	Traumatic Amputations	04	03
<b>TOTAL</b>		<b>120</b>	<b>80</b>

**OBJECTIVES:**

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

**Cognitive:**

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

**Psychomotor:**

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

**Affective:**

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

## SYLLABUS

Sr. No.	TOPICS	Theory Hours	Practical Hours	Total Hours
1.	<p><b>Use of ICF model (Bio, Psycho and Social) to plan Short term and Long term goals in physiotherapy management of health condition of musculoskeletal system</b></p> <p>a. Identification of short term and long term goals based on</p> <p>i) Capacity and Performance related to activities and participation to enhance functioning</p> <p>ii) Personal and Environment factors -facilitators and barriers that affect disablement and functioning</p> <p>b. Documentation of disability and functioning</p> <p>Red flags- Recognizing signs and symptom</p>	04	--	04
2.	<p>a. Introduction to functional scales as outcome measures – Generic and Disease specific.</p> <p>b. Evidence base practice in musculoskeletal health conditions- levels of evidence, clinical application</p>	02	-	02
3.	<p>Biomechanical / Physiological basis of following modes physiotherapy interventions implemented during all three stages of tissue healing -</p> <p>a. Electrotherapeutic modes for pain- acute and chronic pain syndromes, swelling, wound healing, re- education</p> <p>b. Therapeutic exercise to alleviate pain, increase mobility, muscle performance (strength) endurance, motor control, muscle length, posture and gait training</p> <p>c. Taping techniques for pain relief, support and posture correction</p> <p>i. Principles</p> <p>ii. Indications / Contraindications</p> <p>iii. Types of tapes and terminologies used</p> <p>iv. Techniques</p>	02	00	02
		04	00	04
		02	05	07
	<p>The following topics are applicable to all conditions related to musculo-skeletal dysfunction throughout lifespan in acute care setting , hospital, chronic conditions at home and in community on the basis of:</p>			

	<ol style="list-style-type: none"> <li>1. Evaluation, interpretation of investigations and appropriate clinical reasoning for Functional diagnosis (ICF).</li> <li>2. Evidence-based analysis of tools and techniques, (including Quality of Life questionnaires), and planning, prescription &amp; implementation of short term &amp; long term goals of Physiotherapy with appropriate documentation of the same.</li> </ol>			
	<ol style="list-style-type: none"> <li>3. Application of appropriate electro therapeutic modes for relief of acute &amp; chronic pain, swelling and for wound healing, muscle / movement re-education etc with clinical reasoning.</li> <li>4. Application of appropriate exercise therapeutic modes for improving joint mobility, muscle strength &amp; endurance and motor control.</li> <li>5. Application of advanced therapeutic modes of manual mobilization techniques (non-thrust techniques to be applied on extremities only), Friction Massage, Myofascial Release, Muscle Energy Techniques and Neuro Dynamic Techniques on patients.</li> <li>6. Application of appropriate therapeutic exercise using therapeutic gymnasium tools as and when indicated, for relief of pain, enhancing structural stability, strength &amp; endurance, and functional maintenance &amp;/ or restoration including posture correction and gait training including preventive measures.</li> <li>7. Prescription of appropriate orthotic &amp; prosthetic devices.</li> <li>8. Various taping techniques for support &amp; pain relief; principles, indications, contra- indications, types of tapes used &amp; relevant terminology.</li> <li>9. Appropriate Home Program &amp; Ergonomic advise for preventive measures &amp; functional efficiency at home, work place and during recreation. Advice to Parents &amp; Care Givers.</li> </ol>			
4.	<p><b>Physiotherapy interventions with goal setting for dysfunctions due to impairments of Pain, Mobility, Muscle performance(Strength), Endurance, Motor Control, Muscle length, Posture and Movement Balance and Gait for common health conditions secondary to conservative or surgical management of the following regions, with appropriate consideration of red flags:</b></p>			
	<ol style="list-style-type: none"> <li>1. <b>Manifestations of trauma and their complications:</b></li> </ol>	44	20	64

a. Bones – fractures & fracture-dislocations of extremities & spine and their complications & management	22	10	
b. Soft tissues injuries of extremities & spine and their complications & Management, contused lacerated wounds (CLWs) Burns complications and management, Crush injuries and its conservative and post surgical management.	22	10	
<b>2. Degenerative Arthritis</b>	14	10	24
a. Osteoarthritis of knee			
b. Peri-arthritis of shoulder			
c. Spinal degenerative conditions like Sponylosis, Spondylysis, Spondylolisthesis, and Spinal Canal Stenosis			
<b>3. Inflammatory conditions</b>	08	05	13
a. Rheumatoid, Gouty, Septic arthritis			
b. Spondylo-arthropathies e.g. Ankylosing Spondylitis.			
c. Cellulites and its complications.			
d. Post incisional inflammation and infection.			
e. Myositis ossificans and traumatica.			
f. Avascular necrosis			
<b>4. Infectious Diseases of bones &amp; joints of extremities &amp; spine</b>	04	05	09
a. Tuberculosis			
b. Osteomyelitis			
<b>5. Metabolic &amp; Hormonal Disorders</b>	04	05	09
a. Osteoporosis			
b. Osteomalacia			
<b>6. Congenital &amp; Acquired Deformities of extremities &amp; spine</b>	12	05	17
a. CTEV			
b. DDH			
b. Kyphosis			
d. Scoliosis			
e. Genu valgus / varus			
f. Cubitus varus / valgus			
g. Coxa vara / valga etc.			
h. Deformities of the foo			
<b>7. Peripheral Nerve Injuries &amp; Plexus Injuries- complications &amp; management</b>	06	05	11

<b>8. Soft tissue injuries during sports and as a result of Over-use:</b> conservative and operative management	04	05	09
<b>9. Musculo-skeletal complications in Cerebral Palsy &amp; Poliomyelitis and reconstructive surgeries.</b>	02	05	07
<b>10. Tumours of bone tissue.</b>	01	-	01
<b>11. Vascular disorders affecting musculoskeletal system-</b> V .I.C., C.R.P.S., Compartment syndrome	01	02	03
<b>12. Traumatic Amputation</b> a. Types b. Complications and management inclusive of prosthetic prescription & training	04	08	12

### CLINICAL:

#### **SUPERVISED CLINICAL PRACTICE:**

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

#### **CLINICAL COMPETENCIES:**

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

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

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

community, tasks, or leisure activities.

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

#### **B. COMPETENCY IN DEVELOPING PLAN OF CARE:**

Student should be able to:

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

#### **C. COMPETENCY IN PHYSIOTHERAPEUTIC INTERVENTION:**

Important influences on Musculo-skeletal physiotherapy management choices may include but not limited to:

1. Diverse settings of care including critical, acute, long term, rehabilitation, and community care;
2. Lifespan issues ranging from the neonatal stage to those associated with aging;
3. Life style modification for diseases and for prevention
4. Skill of application of physical and electrical agents for relief of acute & chronic pain and swelling.
5. Facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skillful use of various therapeutic exercise techniques with appropriate therapeutic gymnasium equipment.

6. Skill of application of therapeutic modes of improving joint mobility and soft tissue flexibility like joint mobilization techniques and soft tissue techniques like Muscle Energy Techniques, Myofascial Release, Friction Massage, Neuro Dynamic Techniques etc.
7. Functional training in self care, home, work (job, school and play), community and leisure activities

#### **DOCUMENTATION**

#### **Presentation & Documentation of 8 Cases (4 traumas, 4 cold) for patient management using ICF model as following:**

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

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

#### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

1. Identify, discuss & analyze, the Musculoskeletal Dysfunction in terms of Biomechanical, Kinesiology & Biophysical basis & correlate the same with the provisional diagnosis, routine radiological & Electrophysiological investigations & arrive at appropriate Functional diagnosis with clinical reasoning.
2. Plan & Prescribe as well as acquire the skill of executing short & long term Physiotherapy treatment by selecting appropriate modes of Mobilization / Manipulations, Electro-Therapy, Therapeutic exercise & appropriate Ergonomic advise for the relief of pain, restoration / Maintenance of function & rehabilitation for maximum functional independence in A.D.L. at home & work place.

#### **RECOMMENDED TEXT BOOKS**

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

## RECOMMENDED REFERENCE BOOKS

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

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		Marks
70 marks + I.A. – 30 Marks		100
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section -A-</b> M.C.Qs.	Q-1 – based on MUST KNOW area[1x20]	20
<b>Section-B-</b> S.A.Qs.	Q-1 - Answer any FIVE out of SIX [5x2=10] Q-2 - Answer any TWO out of THREE [2X5=10]	20
<b>Section-C-</b> L.A.Qs.	Answer any TWO out of THREE [2X15=30] Q-1 Q-2- Q-3-	30
<b>Total Marks</b>		<b>70</b>

<b>PRACTICAL</b> 70 MARKS + I.A. – 30 MARKS		<b>Marks</b> <b>100</b>
LONG CASE	a. Subjective and Physical Examination –10 marks b. Evaluation and Physical therapy diagnosis (ICF)– - 10marks c. Plan of care - Goal setting, Demonstration of any one important test and treatment intervention on patient –15 marks [Student will be evaluated in cognitive, psychomotor and affective domains.]	35
SHORT CASE	Two Short cases on Demonstrations of physiotherapy intervention skills for effective patient management (one traumatic & one cold case)2x10 marks	20
SPOTS	5 spots - (5 x2 Marks= 10 Marks) 3minutes for each spot X– ray of extremities and spine, Orthoses, Prostheses, Metal Implant	10
ASSIGNMENT	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	05
<b>Total Marks</b>		<b>70</b>

**INTERNAL ASSESSMENT:**

1. Exams –Theory & Practical
2. I.A. to be calculated out of 30 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# CARDIO-VASCULAR & RESPIRATORY PHYSIOTHERAPY

(Theory : 120 Hours + Practical / Laboratory : 80 Hours) **TOTAL : 200 Hours**

## COURSE DESCRIPTION:

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

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

<b>Sr. No.</b>	<b>Topics</b>	<b>Theory Hours</b>	<b>Clinical / Lab Hours</b>	<b>Total Hours</b>
<b>1.</b>	<b>REVIEW OF BASIC APPLIED ANATOMY &amp; PHYSIOLOGY</b>	5	-	<b>5</b>
<b>2.</b>	<b>INVESTIGATION AND EXERCISE TESTING</b>	10	7	<b>17</b>
<b>3.</b>	<b>EXERCISE PHYSIOLOGY</b>	10	7	<b>17</b>
<b>4.</b>	<b>PHYSIOTHERAPY SKILLS</b>	15	20	<b>35</b>
<b>5.</b>	<b>APPLICATION OF ICF MODEL</b>	5	-	<b>5</b>
<b>6.</b>	<b>PHYSIOTHERAPY MANAGEMENT</b>	50	35	<b>85</b>
<b>7.</b>	<b>CARDIAC REHABILITATION</b>	10	5	<b>15</b>
<b>8.</b>	<b>PULMONARY REHABILITATION</b>	5	4	<b>9</b>
<b>9.</b>	<b>INTRODUCTION TO FUNCTIONAL SCALES</b>	10	2	<b>12</b>
	<b>TOTAL</b>	<b>120</b>	<b>80</b>	<b>200</b>

## OBJECTIVES:

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

### Cognitive:

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

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

**Psychomotor:**

- a. Utilise skills such as executing exercise tests, PFT, Ankle brachial index, arterial & venous insufficiency tests
- b. Utilise psychomotor skills to implement appropriate bronchial hygiene therapy, therapeutic exercise, electrotherapeutic modalities, CPR, Intensive (critical) care, joint and soft tissue mobilisations, offering ergonomic & energy conservation advice for patients with cardio-vascular & pulmonary dysfunction.
- c. Utilise the knowledge about contextual factors to enhance capacity and performance of activities and participation in society
- d. Utilise the skill to deliver cardiac, pulmonary & vascular rehabilitation

**Affective:**

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

**SYLLABUS**

Sr. No.	Topics	Theory Hours	Clinical/ Lab Hours	Total Hours
1.	<b>REVIEW OF BASIC APPLIED ANATOMY &amp; PHYSIOLOGY</b>	5	-	5
	a. Pulmonary Anatomy & Physiology b. Cardiac anatomy & Physiology c. Cardiac and Respiratory Pharmacology d. Biomechanics of Thorax (Revision)			
2.	<b>INVESTIGATION AND EXERCISE TESTING</b>	10	07	17
	a. Investigation & Clinical Implication - X-ray, PFT, ABG, ECG, ABI, claudication time, pulses, auscultation, postural hypotension b. Stress testing i. 6 Minute Walk test & Harward Step test Skill & Interpretation ii. Shuttle Walk Test & Modified Bruce Protocol (should be interpretation only)			
3.	<b>EXERCISE PHYSIOLOGY</b>	10	07	17
	a. Nutrition (Bioenergetics) b. Total energy expenditure (MET) sources			

	<ul style="list-style-type: none"> <li>c. Acute and chronic adaptation to exercise</li> <li>d. Complication of bed rest/ Immobilization &amp; prevention</li> <li>e. Aerobic &amp; Anaerobic Training,</li> <li>f. Principles of Exercise Prescription</li> </ul>			
<b>4.</b>	<b>PHYSIOTHERAPY SKILLS</b>	15	20	<b>35</b>
	<ul style="list-style-type: none"> <li>a. Bronchial Hygiene Therapy- Postural Drainage, Forced Expiratory Technique, ACBT, Autogenic Drainage</li> <li>b. Adjunct Therapy – Flutter &amp; PEP Therapy</li> <li>c. Therapeutic positioning to improve ventilation &amp; perfusion matching,</li> <li>d. Therapeutic positioning to alleviate dyspnoea</li> <li>e. Nebulisation &amp; Humidification,</li> <li>f. Lung Expansion Therapy</li> <li>g. Neurophysiologic facilitation of respiration</li> <li>h. Electrotherapeutic modalities for pain, swelling, &amp; wound healing.</li> <li>i. Therapeutic exercise program to alleviate pain, to achieve mobility, to correct posture and improve peripheral circulation.</li> <li>j. Therapeutic exercise program to strengthen respiratory muscles</li> <li>k. Deliver Ergonomic advice, energy conservation advice, Home exercise Program, &amp; modifications of contextual factors.</li> <li>l. Applied Yoga in Cardio-respiratory conditions</li> </ul>			
<b>5.</b>	<b>APPLICATION OF ICF MODEL</b>	5	-	<b>5</b>
	<ul style="list-style-type: none"> <li>a. To plan effective Short term and long term goals to enhance functioning of Cardiovascular &amp; Respiratory Dysfunction</li> <li>b. Set patient specific goals and expected outcome within time frame with clinical reasoning</li> <li>c. Documentation</li> </ul>			
<b>6.</b>	<b>PHYSIOTHERAPY MANAGEMENT</b>	50	35	<b>85</b>
	<ul style="list-style-type: none"> <li><b>a. Medical &amp; Surgical Cardiovascular Diseases</b> <ul style="list-style-type: none"> <li>i. Hypertension</li> <li>ii. I.H.D. , Myocardial Infarction</li> <li>iii. Valvular Heart Disease</li> <li>iv. Congenital</li> <li>v. Acquired</li> <li>vi. Thrombosis, Phlebitis and Phlebothrombosis</li> </ul> </li> </ul>	10	4	<b>14</b>

	vii. Varicose Veins and ulcers viii. Other Arterial disorders			
	<b>b. Obstructive &amp; Restrictive Respiratory disorders</b> i. Bronchitis ii. Emphysema iii. Bronchial Asthma iv. Cystic Fibrosis v. Occupational lung diseases vi. Interstitial Lung Diseases	5	4	<b>9</b>
	<b>c. General Respiratory Infection</b> i. Tuberculosis ii. Pneumonia iii. Lung Abscess iv. Bronchiectasis v. Pneumothorax vi. Hydropneumothorax vii. Atelectasis viii. Pleuritis ix. Pleural Effusion x. Empyema & other Pleural Disorders	5	4	<b>9</b>
	<b>d. Neonatal &amp; Paediatric Respiratory Infection</b> i. ARDS ii. Meconium aspiration iii. Pneumonitis iv. Pneumonia v. Childhood Asthma vi. Cystic fibrosis and chronic lung disease	5	3	<b>8</b>
	<b>e. Pulmonary Surgeries</b> Traumatic and Surgical conditions of Chest, Lung, Pleura and Mediastinum	5	3	<b>8</b>
	<b>f. General abdominal &amp; Oncological Surgeries</b> i. Pre and Post Operative care ii. Complication & Management.	5	4	<b>9</b>
	<b>g. Burns (Head Face neck &amp; thoracic, inhalation burns)</b> Acute care Management Only	3	4	<b>7</b>
	<b>h. Diabetic &amp; Vascular Ulcers/ Amputations (Stump care only)</b>	5	3	<b>8</b>
	<b>i. Metabolic Syndrome</b> i. Diabetes (Mellitus & Insipidus)	5	3	<b>8</b>

	ii. Obesity			
	j. Musculoskeletal dysfunction i. Flail chest ii. Scoliosis iii. Kyphosis	2	3	5
<b>7.</b>	<b>CARDIAC REHABILITATION</b>	10	05	<b>15</b>
	a. Definition, b. Indications, Contraindications c. Phases( I,II,III,& IV) d. Outcome Measures			
<b>8.</b>	<b>PULMONARY REHABILITATION</b>	5	4	<b>9</b>
	a. Definition, b. Indications c. Contraindications d. Components of management e. Outcome mea			
<b>9.</b>	<b>INTRODUCTION TO FUNCTIONAL SCALES</b>	10	2	<b>12</b>
	a. Generic and disease specific b. Patient's perception of his disability and functioning and correlating the same with therapist evaluation			
	<b>TOTAL</b>	<b>120</b>	<b>80</b>	<b>200</b>

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

	program & identifying comorbid & contextual factors affecting it.
8.	Familiarity and skill of use of various monitoring and treatment equipments in ICU.
9.	Use of physical and electrical agents for pain relief and wound care 10 Skill of administering basic life support

**CLINICAL COMPETENCIES:**

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

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

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

**B] COMPETENCY IN DEVELOPING PLAN OF CARE:**

Student should be able to:

1. Identify patient goals and expectations.
2. Design a Plan of Care with measurable, prioritized and time bound functional goals (short-term and long-term)

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

**C] COMPETENCY IN PHYSIOTHERAPEUTIC INTERVENTION:**

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

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

**Documentation:**

Presentation & Documentation of 8 cases for patient management using ICF Model as following: (Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome)

1. Medical Respiratory condition
2. Paediatric respiratory condition
3. Thoracic Surgical condition
4. Cardiac Medical condition
5. Cardiac Surgical condition
6. Peripheral vascular disorders
7. Burns of Head, Neck & Face (Acute phase only)
8. Abdominal surgical condition

## **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Identify, discuss & analyze cardio-vascular & pulmonary dysfunction, based on Patho-physiological principles, & arrive at the appropriate functional diagnosis,
- 2) Acquire the skill of evaluation & interpretation of functional capacity, using simple exercise tolerance tests, such as 6 minutes walk test, symptom limited test.
- 3) Be able to execute the effective Physio Therapeutic measures [with appropriate clinical reasoning] with special emphasis to Breathing retraining, nebulization, humidification, bronchial hygiene, General mobilization, & Exercise conditioning
- 4) Be able to execute the effective Physio therapeutic measures with appropriate clinical reasoning to improve general surgical & medical condition.

## **RECOMMENDED TEXT BOOKS**

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

## **RECOMMENDED REFERENCE BOOKS**

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

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		Marks
70 marks + I.A. – 30 Marks		100
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section -A-</b> M.C.Qs.	Q-1 – based on MUST KNOW area [1x20]	20
<b>Section-B-</b> S.A.Qs.	Q-1 - Answer any FIVE out of SIX [5x2=10] Q-2 - Answer any TWO out of THREE [2X5=10]	20
<b>Section-C-</b> L.A.Qs.	Answer any TWO out of THREE [2X15=30] Q-1 Q-2- Q-3-	30
<b>Total Marks</b>		<b>70</b>

<b>PRACTICAL</b>		Marks
70 MARKS + I.A. – 30 MARKS		<b>100</b>
<b>LONG CASE</b>	i. Subjective and Physical Examination -10 marks ii. Evaluation and Physical therapy diagnosis (ICF) -10 marks iii. Plan of care - Goal setting -15 marks [Student will be evaluated in cognitive, psychomotor and affective domains.]	35
<b>SHORT CASE</b>	Two Short cases on Demonstrations of physiotherapy intervention skills for effective patient management 2 x 10 marks	20
<b>SPOTS</b>	5 spots - (5 x2 Marks= 10 Marks) Chest/Cardiac X-ray, ABG, PFT, ECG, Adjunct/devices	10
<b>ASSIGNMENT</b>	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with I.C.F.	05
<b>Total Marks</b>		<b>70</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory & Practical
2. I.A. to be calculated out of 30 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# PRINCIPLES OF BIOENGINEERING

(Theory : 25 Hours + Practical / Laboratory : 05 Hours) **TOTAL : 30 Hours**

## COURSE DESCRIPTION:

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

## OBJECTIVES:

At the end of the course, the candidate shall

### Cognitive:

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

### Psychomotor:

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

## SYLLABUS

Sr. No.	Topics	Theory Hours
1.	<b>Introduction to bioengineering-</b> Classification of Aids & appliances (Splints/ Orthoses for spine, upper & lower limb; Prostheses for Lower limbs & Upper limbs)	1
2.	<b>Biomechanical principles in designing of appliances &amp; assessment; Procedures for static &amp; dynamic alignment of the Orthoses &amp; Prostheses:</b>	24
	a. Introduction to Orthotics, Solid Ankle foot Orthoses (AFO)	1
	b. Articulated AFO, Various Shoe modifications	1
	c. Knee Ankle Foot Orthoses (KAFO)	1
	d. Knee Orthoses (KO)	1
	e. Hip Knee Ankle Foot orthoses (HKAFO), Hip Orthoses (HO)	1
	f. Fracture Bracing and Flexible Lumbo-sacral Orthoses (LSO) and Thoraco-Lumbo-sacral Orthoses (TLSO)	1
	g. Rigid TLSOs and Cervical Orthoses (CO)	1
	h. Orthotic mgmt. of Scoliosis, Milwaukee and low profile scoliosis orthoses, Scheuermann's Kyphosis & Osteoporosis	1
	i. Orthoses for LBP, Introduction to Upper limb Orthotics and Shoulder orthoses (SO)	1

	j. Shoulder (SO), Elbow Orthoses (EO) & Wrist Hand Orthoses (WHO)	1
	k. Introduction to Gait in relation to the use of Orthoses / Prostheses	1
	l. Prosthetic management of Forefoot amputees	1
	m. Prosthetic management of Syme's and hind foot Amputees	1
	n. Below Knee Prosthesis & Prosthetic foot pieces	1
	o. Alignment of Below Knee Prosthesis and gait deviations	1
	p. Prosthetic Knees and Knee Disarticulation mgmt.	1
	q. Above Knee Prosthesis, alignment, gait deviations	1
	r. AK Checkouts, Prosthetic mgmt. of Hip Disarticulation, hemipelvectomy, Bilateral amputees and Congenital cases	1
	s. Introduction to Upper Limb Prosthetics, Prosthetic mgmt. of Partial Hand amputees	1
	t. Cosmetic Prostheses for all levels of Amputations	1
	u. Task Specific Prostheses, Prosthetic mgmt. of Wrist Disarticulation, Myoelectric Below Elbow prosthesis	1
	v. Body Powered Below Elbow Prostheses and its components	1
	w. Harnessing in BE	1
	x. Prosthetic mgmt. of Elbow Disarticulation and Above Elbow Amputation	1
<b>3.</b>	<b>Project:</b> Temporary splints: To fabricate ONE splint each [to use P.O.P, aluminum strips /sheets /wires rubber bands, Rexin, Orfit, etc]	
	Splinting- Practical Demonstration of the following a) Cock up (dorsal/volar ) b) Outrigger, c) Opponence splint d) Anterior and posterior guard splints for gait training, e) Foot drop splint f) Facial splint g) Mallet Finger Splint h) C bar for 1st web space of hand	<b>5</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Acquire knowledge about biomechanical principles, of application of variety of aids & appliances used for ambulation, protection & prevention.
- 2) Acquire knowledge about various material used for splints / Orthosis & prosthesis--selection criteria.

### RECOMMENDED REFERENCE BOOKS

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

### SCHEME OF COLLEGE EXAMINATION

<b>THEORY</b>		<b>Marks</b>
35 MARKS + I.A. – 15 MARKS		<b>50</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on <b>MUST KNOW</b> area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10]	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15]	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

# ADVANCE PROFESSIONAL PRACTICE AND ETHICS

(Theory : 30 Hours) **TOTAL : 30 Hours**

## COURSE DESCRIPTION:

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

## OBJECTIVES:

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

### Cognitive:

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

### Psychomotor:

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

### Affective:

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Visits/ Supervision Hours	Total Hours
1.	Collecting data on psychosocial factors in Medicine / Surgery / Reproductive Health / Paediatrics	04	05	15
2.	Inter professional communication	03		
3.	Ethics in clinical practice	03		
4.	Roles of Physiotherapist as patient manager, Consultant, Critical inquirer, Educator, Administrator	04	-	04
5.	Laws and regulations	02	-	02

6.	Professional development, competence and expertise	02	-	02
7.	Professional bodies	02	-	02
8.	Ethics in Research	02	-	02
9.	Ethics in Teaching	02	-	02
10	Role of W.C.P.T. & Council	01	-	01
	<b>Total</b>	<b>25</b>	<b>05</b>	<b>30</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Understand the moral values and meaning of ethics.
- 2) Develop psychomotor skills for physiotherapist-patient relationship
- 3) Develop bed side behavior, respect & maintain patients' confidentiality

### **RECOMMENDED TEXT BOOKS**

1. Ethical Issues (Vol. I & II) – Kavitha Raja, Fiddy Davis
2. Physical Therapy Ethics – Donald L. Gabard

## **SCHEME OF COLLEGE EXAMINATION**

<b>THEORY</b> 35 MARKS + I.A. – 15 MARKS		<b>Marks</b>
		<b>50</b>
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on <b>MUST KNOW</b> area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10]	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15]	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### **INTERNAL ASSESSMENT:**

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

# CHOICE BASED COURSE – PT IN SPORTS

(Theory : 70 Hours + Practical / Clinical : 60 Hours) **TOTAL : 130 Hours**

## OBJECTIVES:-

At the end of the course, student should be able to-

1. Identify, discuss & analyse, the Musculo skeletal dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations and arrive at appropriate functional diagnosis with clinical reasoning for fitness training & rehabilitation.
2. Understand the psychosocial factors, environmental factors & individual factors affecting the performance.
3. Use the anatomical rationale for the clinical tests used in differential diagnosis.
4. Be able to identify, discuss & analyse, the various cardio-respiratory function & co-relate the same with the provisional diagnosis, for fitness training & rehabilitation.
5. Lay down rehabilitation protocol for sports specific injuries focusing an early rehabilitation to injuries.
6. Identify the causes prone for injury & prevent them.
7. Guide participants for a confident sports activity & rehabilitation to attain maximal achievement.
8. Understand the role of Sports physiotherapist in the team.

## SYLLABUS

Sr. No.	Topics	Theory Hours	Clinical/ Lab Hours	Total Hours
1.	Training the aerobic and anaerobic energy system	3	2	5
2.	Physiological responses, changes & adaptations to various exercises - aerobic exercises & anaerobic exercises in Pulmonary, Cardiovascular, Neuromuscular system, Hormones	5	2	7
3.	Detraining effects of cardiovascular, musculoskeletal and nervous system	4	3	7
4.	Sports specific training and cross training.	4	3	7

5.	<p><b>Musculoskeletal injuries</b></p> <ul style="list-style-type: none"> <li>• Pre-participation examination</li> <li>• Causes &amp; Mechanism of Sports Injuries, prevention of sports injuries to various structures.</li> <li>• Common acute, chronic and overuse injuries in various sports at:</li> <li>• Shoulder girdle, Shoulder, Arm, Elbow, Forearm, Wrist &amp; hand</li> <li>• Pelvis, hip, thigh, knee, leg, ankle &amp; foot</li> <li>• Spine</li> <li>• Head</li> <li>• Thoracic cage and abdomen</li> <li>• Peripheral nerve injuries, injuries to muscles, ligament, tendon, bone, synovial joint structure(with physiological response to injury)</li> </ul>	10	10	<b>20</b>
6.	<p><b>Cardiopulmonary section</b></p> <ul style="list-style-type: none"> <li>• Sporting emergencies &amp; first aid</li> <li>• Cardio pulmonary Resuscitation; Shock management, Internal and External bleeding, Splinting, Stretcher use— Handling and transfer, Management of Cardiac arrest, Acute asthma, epilepsy, drowning, burn, Medical management of mass participation. Heat stroke and Heat illness.</li> </ul>	6	6	<b>12</b>
7.	<p><b>Various Body measurements:</b> Gross size and mass, length and height measurement, circumference of body parts, Skin fold thickness measurements</p>	5	3	<b>8</b>
8.	<p><b>Body composition</b></p> <ul style="list-style-type: none"> <li>• Different Body composition</li> <li>• Various methods to estimate body composition : water displacement method, under water weighing method, skinfold method, surface anthropometry, bioelectrical impedance analysis, ultrasound assessment of fat, arm X-ray assessment of fat, CT assessment of fat</li> </ul>	5	3	<b>8</b>
9.	Electrotherapy in sports injuries	6	4	<b>10</b>

<b>10.</b>	Taping	3	4	<b>7</b>
<b>11.</b>	On field assessment	4	5	<b>9</b>
<b>12.</b>	Evaluation of Physical Fitness:Assesement of strength,power, endurance (muscular & cardiac),VO2max, flexibility, reaction time and pulmonary function.	5	5	<b>10</b>
<b>13.</b>	Assessment of lower limb complex: Pelvis, hip, thigh, knee, leg, ankle and foot	5	5	<b>10</b>
<b>14.</b>	Assessment of upper limb complex: Shoulder girdle, shoulder, arm, elbow, forearm, wrist and hand	5	5	<b>10</b>
<b>Total</b>		<b>70</b>	<b>60</b>	<b>130</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Identify, discuss &analyse, the various cardio-respiratory function & co-relate the same with the provisional diagnosis, for fitness training & rehabilitation.
- 2) Lay down rehabilitation protocol for sports specific injuries focusing an early rehabilitation to injuries.
- 3) Identify the causes prone for injury & prevent them.
- 4) Understand the role of Sports physiotherapist in the team.

### **REFERENCE BOOKS**

1. Sport and physical therapy – Bernhardt Donna, Churchill Livingstone, London 1995.
2. Bird, S. R., Black, N. Sports Injuries: Causes, Diagnosis, Treatment and Prevention. Cheltenham: Stanley Thomes, 1997 ISBN: 0748731814
3. Brownstein, B. Functional movement in Orthopaedic and Sports Physical Therapy: Evaluation, Treatment and Outcomes. New York; London: Churchill Livingstone, 1997 ISBN: 0443075301
4. Cash, M. Sport and Remedial Massage Therapy. London: Edbury, 1996 ISBN: 0091809568
5. Johnson, R. J. and Lombardo, J (eds.) Current Review of Sports Medicine Philadelphia: Butterworth-Heinemann, 1998 (2nd edition) ISBN: 0750699655
6. Hollis, M. Massage for Therapists. Oxford: Blackwell Science, 1998 (2nd edition) ISBN: 0632047887
7. Hutson, M.A. Sports Injuries, Recognition and Management. Oxford: Oxford University Press, 2001 (3rd edition) ISBN: 0192632728

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY ONLY</b> 35 marks + <b>I.A.</b> – 15 Marks [There shall be no LAQ in this paper]		Marks
* The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section -A-Q-1</b>	MCQs – based on MUST KNOW area[1x10]	<b>10</b>
<b>Section-B-Q-2 &amp; Q-3</b>	SAQ-to answer any FIVE out of SIX [5x2]	<b>10</b>
	SAQ – to answer any THREE out of FOUR[3x5]	<b>15</b>
<b>Total Marks</b>		<b>35</b>

<b>PRACTICAL</b> 35 MARKS + IA – 15 MARKS		Marks 50
<b>LONG CASE</b>	Based on the History - 10 Marks	20
	Evaluation - 05 Marks	
	Treatment Plan on Patient - 05 Marks	
<b>SHORT CASE</b>	Two Short case based on	10
	<ul style="list-style-type: none"> <li>• Basic evaluation -05 Marks</li> <li>• Skill performance. -05 Marks</li> </ul>	
<b>ASSIGNMENT</b>	Practicals performed during the year	05
<b>TOTAL MARKS</b>		<b>35</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory & Practical.
2. I.A. to be calculated out of 15 marks (Theory & Practical).
3. Internal assessment as per University pattern.

# CHOICE BASED COURSE- PT IN HAND CONDITIONS

(Theory : 70 Hours + Practical / Clinical :60 Hours) **TOTAL : 130 Hours**

## OBJECTIVES:-

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

1. Be able to identify, discuss &analyse, the Hand dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations and arrive at appropriate functional diagnosis with clinical reasoning.
2. Use the anatomical rationale for the clinical tests used in differential diagnosis.
3. Learn the ability to perform an appropriate subjective and physical examination, with development of suitable analytical skills to evaluate data obtained.
4. Further develop clinical reasoning that incorporates theoretical concept with evidence-based practice in the field of Hand rehabilitation.
5. Recognize the implication of dysfunction on the Neuro- Musculoskeletal system on hand function and the student's clinical decision making for rehabilitation.
6. Asses and diagnose all possible findings on the patient to plan a Rehabilitation programme.
7. Lay down rehabilitation protocol for sports specific hand injuries focusing an early rehabilitation to injuries.
8. Identify the causes prone for injury & prevent them.
9. Document patients with scale, out come measures and asses the progression.
10. Use recent Technique/ approaches to treat & train patients with hand dysfunction in children, adults & geriatrics.

## SYLLABUS

<b>Sr. No.</b>	<b>Topics</b>	<b>Theory Hours</b>	<b>Clinical/ Lab Hours</b>	<b>Total Hours</b>
<b>1.</b>	General upper extremity examination	2	2	<b>4</b>
<b>2.</b>	Sensory examination of hand	3	3	<b>6</b>
<b>3.</b>	Motor Examination of hand	3	2	<b>5</b>
<b>4.</b>	Functional Evaluation of hand	3	2	<b>5</b>
<b>5.</b>	Outcome measures of hand	3	4	<b>7</b>
<b>6.</b>	PT Management of Flexor tendon injuries	4	4	<b>8</b>
<b>7.</b>	PT Management of Extensor tendon injuries	3	3	<b>6</b>
<b>8.</b>	PT Management of Burnt hand + deformities	3	3	<b>6</b>
<b>9.</b>	PT Management of Arthritic hand + deformities	5	5	<b>10</b>
<b>10.</b>	PT Management of Crush injuries	4	2	<b>6</b>
<b>15.</b>	PT Management of Peripheral Nerve Injuries-	6	4	<b>10</b>

	median, radial, ulnar, musculocutaneous, axillary			
<b>16.</b>	PT Management of Entrapment neuropathies- cubital tunnel,carpal tunnel, supinator tunnel, pronator teres syndrome	6	4	<b>10</b>
<b>17.</b>	PT Management of Brachial Plexus Palsies	3	2	<b>5</b>
<b>18.</b>	PT Management of Fractures of phalanges	4	2	<b>6</b>
<b>19.</b>	PT Management of Complex Regional Pain Syndrome	4	2	<b>6</b>
<b>20.</b>	PT Management of Upper limb Orthosis and training	8	6	<b>14</b>
<b>21.</b>	Preparation of splints using POP, Orthoplast, thermoplastic	3	6	<b>9</b>
<b>22.</b>	Taping for wrist and hand conditions	3	4	<b>7</b>
	<b>Total</b>	<b>70</b>	<b>60</b>	<b>130</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 5) Further develop clinical reasoning that incorporates theoretical concept with evidence-based practice in the field of Hand rehabilitation.
- 6) Recognize the implication of dysfunction on the Neuro- Musculoskeletal system on hand function and the student's clinical decision making for rehabilitation.
- 7) Lay down rehabilitation protocol for sports specific hand injuries focusing an early rehabilitation to injuries.
- 8) Use recent Technique/ approaches to treat & train patients with hand dysfunction in children, adults & geriatrics.

### **REFERENCE BOOKS**

1. Rehabilitation of Hand; J.M. Hunter [C.V.Mobsey]
2. The Hand; Fundamental of therapy (2nd edn); Judith Boscheinen Morrin & Victoria Davey [Butter worth Heinemann]
3. Examination of hand & wrist; Tubiana [Mobsey publications]
4. Fundamentals of hand rehabilitation; Salter [Mobsey publications]
5. Concepts of hand rehabilitation [Mobsey publications]

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY ONLY</b> 35 marks + I.A. – 15 Marks [There shall be no LAQ in this paper]  * The question paper will give appropriate weightage to all the topics in the syllabus.		Marks  <b>50</b>
<b>Section -A-Q-1</b>	MCQs – based on MUST KNOW area[1x10]	<b>10</b>
<b>Section-B-Q-2 &amp; Q-3</b>	SAQ-to answer any FIVE out of SIX [5x2]	<b>10</b>
	SAQ – to answer any THREE out of FOUR[3x5]	<b>15</b>
<b>Total Marks</b>		<b>35</b>

<b>PRACTICAL</b>  35 MARKS + IA – 15 MARKS		Marks  50
<b>LONG CASE</b>	Based on the History Evaluation - 05 Marks Treatment Plan on Patient	- 10 Marks  - 05 Marks
		20
<b>SHORT CASE</b>	Two Short case based on	
	<ul style="list-style-type: none"> <li>• Basic evaluation -05 Marks</li> <li>• Skill performance. -05 Marks</li> </ul>	10
<b>ASSIGNMENT</b>	Practicals performed during the year	05
<b>TOTAL MARKS</b>		<b>35</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory & Practical.
2. I.A. to be calculated out of 15 marks (Theory & Practical).
3. Internal assessment as per University pattern.

## SCHEME OF EXAMINATIONS AT A GLANCE

Subject Code	SUBJECTS	UNIVERSITY EXAMINATIONS					
		Theory			Clinical / Practical		
		University	I.A.	Total	University	I.A.	Total
BPT 701	Musculoskeletal Physiotherapy	70	30	100	70	30	100
BPT 702	Cardio-Vascular & Respiratory Physiotherapy	70	30	100	70	30	100
BPT 703	Principles of Bioengineering	35	15	50	-	-	-
BPT 704	Advance Professional Practice & Ethics	35	15	50	-	-	-
BPT 705 (PTS/PTH)	Choice Based Course- PT in Sports/ PT in Hand Conditions	35	15	50	35	15	50
	<b>Semester Total</b>	<b>245</b>	<b>105</b>	<b>350</b>	<b>175</b>	<b>75</b>	<b>250</b>

**BACHELOR OF PHYSIOTHERAPY**  
**(BPT)**

**SYLLABUS**

**EIGHTHSEMESTER**

# SYLLABUS

## Transcript Hours-590

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subjects</b>	<b>Theory Hours</b>	<b>Practical/ Clinical Hours</b>	<b>Total Hours</b>
01.	BPT 801	Neuro Physiotherapy	120	80	200
02.	BPT 802	Community Physiotherapy	120	80	200
03.	BPT 803	Research Methodology & Biostatistics	30	-	30
04.	BPT 804	Administration, Management & Marketing	30	-	30
05.	BPT 705	ICU Evaluation & Management	30	10	40
06.	HVE-01	Universal Human Values & Professional Ethics	30	-	30
07.	-	Supervised Clinical Practice	-	100	100
		<b>Grand Total</b>	<b>360</b>	<b>270</b>	<b>630</b>

# NEUROPHYSIOTHERAPY

(Theory : 120 Hours + Practical / Laboratory : 80 Hours) **TOTAL : 200 Hours**

## COURSE DESCRIPTION:

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

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

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

Sr. No.	TOPICS	Theory Hours	Practical Hours	Total Hours
1.	APPLICATION OF ICF MODEL	02	-	02
2.	THEORETICAL BASIS OF MOTOR CONTROL AND LEARNING	04	-	04
3.	ADAPTIVE SYSTEM : PLASTICITY AND RECOVERY GENERAL METHODS OF STRENGTH TRAINING, FITNESS AND PROMOTION OF SKILL ACQUISITION	10	-	10
4.	QUALITY OF LIFE SCALES AND INDEPENDENCE MEASURE	04	-	04
5.	PHYSIOTHERAPY MANAGEMENT			
	A. ADULT	70	50	120
	B. PAEDIATRIC	30	30	60
	<b>TOTAL</b>	<b>120</b>	<b>80</b>	<b>200</b>

**OBJECTIVES:**

At the end of the course, student will

**Cognitive:**

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

**Psychomotor:**

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

**Affective:**

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

## SYLLABUS

Sr. No.	TOPICS	Theory Hours	Practical Hours	Total Hours
1.	<p>Features of ICF model (bio, psycho and social) to plan efficient, effective and cost-contained short term and long term goals to enhance functioning in a patient with health condition of nervous system.</p> <p>a. Clinical utility of bi-directional relationships among the ICF model's domain</p> <p>b. Environment and Personal factors- Facilitators and Barriers that affect disablement and functioning</p> <p>c. Capacity and Performance related Activities and Participation to enhance Functioning</p> <p>d. Set patient specific goals and expected outcome with clinical reasoning</p> <p>e. Documentation of disability and functioning</p> <p>Red flags-recognizing signs and symptoms</p>	02	-	02
2.	Theoretical basis of motor control and learning to understand various neurophysiotherapeutic approaches.	04	-	04
3.	<p>a. Plasticity of the intact brain</p> <p>i. motor learning</p> <p>ii. training</p> <p>iii. plasticity</p> <p>Plasticity following brain lesion</p> <ul style="list-style-type: none"> <li>• nature of spontaneous recovery</li> <li>• effect of environment behavior and recovery</li> <li>• adaptation of motor performance</li> <li>• muscle adaptation</li> </ul> <p>b. Strength training and physical conditioning in neuro rehabilitation to optimize functional performance</p> <p>c. Skill acquisition in restoration of functional performance</p> <ul style="list-style-type: none"> <li>• information,instruction, demonstration</li> <li>• feedback</li> <li>• practice</li> </ul>	02	-	02
		04	-	04
		04	-	04
4.	Quality of Life scales & Independence Measures	04	-	04
	The following topics are applicable to all conditions related to Neuromuscular dysfunction throughout lifespan in acute care setting, hospital, chronic conditions at			

home and in community on the basis of:

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

**PHYSIOTHERAPY MANAGEMENT – ADULT**

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

a. Stroke – cerebral circulation, types of stroke and manifestations, assessment and management	12	04	16
b. Acquired brain injury; trauma and pathology (S.O.L.)	06	04	10
c. Spinal cord disorders – traumatic and non –	08	04	12

	traumatic, management including bladder training			
d.	Peripheral neuropathies – traumatic & non traumatic o upper limb & lower limb o brachial plexus o nerve root lesions o metabolic & endocrine	12	04	16
e.	Vestibular disorders – central and peripheral	04	04	08
f.	VII th cranial nerve	02	03	05
g.	Demyelinating diseases - Multiple Sclerosis & G.B. syndrome	04	04	08
h.	Cerebellar diseases and Ataxia	04	04	08
i.	Extrapyramidal diseases, with emphasis on Parkinson's disease	06	04	10
j.	Anterior Horn Cell diseases– heredity and acquired e.g. M.N.D., P.M.A., S.M.A., Poliomyelitis	04	04	08
k.	Myopathies	04	04	08
l.	Disorders of A.N.S. – Horner's syndrome, Hypo/Hypertension, Autonomic Dysreflexia	02	04	06
m.	Psychosomatic pain & paralysis	02	03	05
Treatment programme includes:				
1. Application of appropriate electro-therapeutic modes for relief of pain and functional re-education with clinical reasoning.				
2. Application of skills as Neurotherapeutic approaches (Brunnstrom, Roods, Bobath, N.D.T., M.R.P., mental imagery, Constraint induced movement therapy, learning transfers), co-ordination and balancing exercise by using techniques based on neurophysiological principles.				
3. Tools and adaptive equipments used for neuro-rehabilitation like Vestibular balls Tilt boards, Bolsters, Wedges, Graded Benches, Therapeutic mats etc.				
4. Application of transfer and functional re-education exercise, postural exercise and gait training.				
5. Bladder and bowel training				
6. Developing a philosophy for caring				
7. Prescription for appropriate orthotic devices and fabrication of temporary splints				
8. Lifting techniques, wheel chair modifications, adaptive devices				
9. Ergonomic advice for prevention/rehabilitation for the patients as well as for parents/care givers education about handling of patients.				
<b>PHYSIOTHERAPY MANAGEMENT – PAEDIATRIC</b>				
Knowledge of developmental neurology, plasticity in development, Etiology, Pathophysiology of common neuropaediatric conditions, impairment, clinical reasoning, goal setting & P.T. management. More emphasis should be given on physiotherapy management skills.				

1. Cerebral palsy - etiology and type - assessment - differential diagnosis - management	12	10	22
2. Down's syndrome	02	05	07
3. Neural tube defects : Spina Bifida and Hydrocephalus	04	05	09
4. Brachial plexus injuries	02	02	04
5. Infectious disorders	02	01	03
6. Post Poliomyelitis Residual Paralysis	02	01	03
7. D.M.D. & other Myopathies	02	03	05
8. S.M.A. / H.S.M.N.	02	01	03
9. Pediatric extra pyramidal disorders	02	02	04

## CLINICAL

<b>SUPERVISED CLINICAL PRACTICE:</b>
<p>During the supervised clinical practice, student should be able to successfully execute the competencies in assessment, physical diagnosis on ICF basis, plan of care and therapeutic interventions relating to neuromuscular dysfunctions. Student should become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric and geriatric). Student should learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies during the clinical practice and successfully perform on real patients during the final evaluation of the course.</p>
<b>CLINICAL COMPETENCIES:</b>
<b>A] COMPETENCY IN ASSESMENT AND CLINICAL REASONING :</b>
<p>Student should be able to apply the ICF framework in selecting measurement tools to ensure a holistic approach to evaluation of body structure and function, activities , participation; and select and administer assessment/evaluation tools and techniques suitable for the patient's problems and condition(s) based on the best available evidence and interpret the information obtained demonstrating evidence-based decision-making and safe handling technique such as:</p> <ol style="list-style-type: none"> <li>1. Risk factor screening (Red flags &amp; Yellow flags).</li> <li>2. Assessment of Neuromuscular dysfunction.</li> <li>3. Interpretation of Radiological, Electrophysiological, Hematological and Biochemical investigations.</li> <li>4. Identification and quantification of environmental and home barriers and facilitators</li> <li>5. Identification and analysis of body mechanics during self-care, home management, work, community, tasks, or leisure activities.</li> </ol>

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

**B] COMPETENCY IN DEVELOPING PLAN OF CARE:**

Student should be able to:

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

**C] COMPETENCY IN PHYSIOTHERAPEUTIC INTERVENTION:**

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

1. Diverse settings of care including critical, acute, long term, rehabilitation, and community care;
2. Lifespan issues ranging from the neonatal stage to those associated with aging
3. Life style modification for diseases and for prevention.
4. Skill of application of physical and electrical agents for relief of acute & chronic pain and swelling.
5. Facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skillful use of various therapeutic exercise techniques with appropriate therapeutic gymnasium equipment.

6. Skill of application of Neurotherapeutic modes of improving neuromuscular strength, endurance, movement control, coordination.
7. Functional training in self care, home, work (job, school and play), community and leisure activities

**CLINICAL SKILLS:**

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

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

Presentation & documentation of 8 cases for patient management using ICF model as following: (Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome)

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

**COURSE OUTCOMES:**

At the end of the course, a student would be able to :

1. Acquire the knowledge of normal neurodevelopment, with specific reference to locomotion
2. Assess, identify & analyze Neuro-motor & psychosomatic dysfunction in terms of alteration in the muscle tone, power, coordination, involuntary movements
3. Plan, prescribe & execute short term & long term treatment, with special reference to relief of Neuropathic & psycho-somatic pain, mat exercises, functional re-education, gait training, postural & functional training for A.D.L., ergonomic

**RECOMMENDED TEXT BOOKS:**

2. Cash's Text book for Physio Therapist in Neurological disorders-Jaypee bros.
3. Proprioceptive Neuro muscular Facilitation – Herman Kabat
4. Practical Physical Therapy – Margaret Hollis

5. Therapeutic exercise – O’Sullivan
6. “Right in the middle” – Patricia Davis
7. Stroke rehabilitation – Margaret Johnstone
8. Paediatric Physiotherapy – Roberta Shepherd.

**RECOMMENDED REFERENCE BOOKS:**

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

**SCHEME OF UNIVERSITY EXAMINATION**

<b>THEORY</b>		Marks
70 marks + I.A. – 30 Marks		
* The question paper will give appropriate weightage to all the topics in the syllabus.		100
<b>Section -A-</b> M.C.Qs.	Q-1 – based on MUST KNOW area[1x20]	20
<b>Section-B-</b> S.A.Qs.	Q-1 - Answer any FIVE out of SIX [5x2=10] Q-2 - Answer any TWO out of THREE [2X5=10]	20
<b>Section-C-</b> L.A.Qs.	Answer any TWO out of THREE [2X15=30] Q-1 Q-2- Q-3-	30
<b>Total Marks</b>		<b>70</b>

<b>PRACTICAL</b> 70 MARKS + I.A. – 30 MARKS		<b>Marks</b> <b>100</b>
LONG CASE	i. Subjective and Physical Examination -10 marks ii. Evaluation and Physical therapy diagnosis (ICF) -10 marks iii. Plan of care - Goal setting, Demonstration of any one important test and treatment intervention on patient -15 marks  [To be evaluated in cognitive, psychomotor and affective domains.]	35
SHORT CASE	Two Short cases on Demonstrations of physiotherapy intervention skills for effective patient management 2 x 10 marks	20
SPOTS	5 spots - (5 x2 Marks= 10 Marks) 3 minutes for each spot E.M.G./N.C. Studies / Orthoses/ Protheses & Neurological assessment, Scales	10
ASSIGNMENT	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with I.C.F.	05
<b>Total Marks</b>		<b>70</b>

**INTERNAL ASSESSMENT:**

1. Exams –Theory & Practical
2. I.A. to be calculated out of 30 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# COMMUNITY PHYSIOTHERAPY

(Theory : 120 Hours + Practical / Clinical : 80 Hours) **TOTAL : 200 Hours**

## COURSE DESCRIPTION:

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

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

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

Sr. No.	Topics	Theory Hours	Clinical Hours	Total Hours
1.	HEALTH PROMOTION	15	10	25
2.	WOMEN'S HEALTH	25	15	40
3.	GERIATRICS HEALTH	25	15	40
4.	REHABILITATION	20	15	35
5.	HEALTHCARE DELIVERY & DISASTER MANAGEMENT	10	-	10
6.	INDUSTRIAL HEALTH	25	15	40
7.	SYNOPSIS	-	10	10
	<b>TOTAL</b>	<b>120</b>	<b>80</b>	<b>200</b>

## OBJECTIVES:

At the end of the course the student shall:

Cognitive:

Be able to describe:

- i. The general concepts about health, disease and physical fitness.
- ii. Physiology of aging process and its influence on physical fitness.
- iii. National policies for the rehabilitation of disabled – role of PT.
- iv. The strategies to assess prevalence and incidence of various conditions responsible for increasing morbidity in the specific community – role of PT in reducing morbidity, expected clinical and functional recovery, reasons for non-compliance in specific community environment & solution for the same.
- v. The evaluation of disability and planning for prevention and rehabilitation.

- vi. Rehabilitation in urban and rural set up.
- vii. Able to be a part of decision making team regarding the policies for the welfare of special communities & on issues of disability

**Psychomotor:**

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

**Affective:**

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

## SYLLABUS

Sr. No.	Topics	Theory Hours	Field Hours	Total Hours
<b>1.</b>	<b>HEALTH PROMOTION</b>	15	10	<b>25</b>
	a. W.H.O. definition of health and disease.	03		
	b. Health Delivery System – 3 tier	02		
	c. Physical Fitness: definition and evaluation related to:	10		
	i. Effect in Growing Age	02		
	ii. Effect in Obesity	02		
	iii. Physical Fitness in women - Pregnancy, Menopause, Osteoporosis	03		
	iv. Physiology of Aging – Related to physiological changes in Aging	03		
	Preventive Measures in all the above groups of community with their related complications of physiological changes, growth, degenerative changes and lifestyle diseases.			
<b>2.</b>	<b>WOMEN'S HEALTH</b>	<b>25</b>	<b>15</b>	<b>40</b>
	a. Women in India	01		
	b. Social issue having impact on physical Function.	02		
	c. Legal rights and benefits related to health.	02		
	d. Anatomical & Physiological variations associated with pregnancy & menopause.	10		

	e. Antenatal, post natal care, advice on labour positions, pain relief.	05		
	f. Urogenital dysfunction, prolapse, incontinence, malignancy and their therapeutic interventions.	05		
<b>3.</b>	<b>GERIATRICS HEALTH</b>	<b>25</b>	<b>15</b>	<b>40</b>
	a. Senior citizens in India	2		
	b. NGO"s and Health related Legal rights and benefits for the elderly	2		
	c. Institutionalized & Community dwelling elders	2		
	d. Theories of Aging	5		
	e. Physiology of ageing: Musculoskeletal, neurological, Cardio respiratory, metabolic changes	12		
	f. Scheme of evaluation & role of PT in Geriatrics.	2		
<b>4.</b>	<b>REHABILITATION</b>	<b>20</b>	<b>15</b>	<b>35</b>
	a. Disability- evaluation, types, prevention.	2		
	b. Rehabilitation- definition, types {Institutional, Reach out and Community}	2		
	c. National policies for rehabilitation of	2		
	d. Rehab Team work: Medical practitioner, P.T. / O.T., A.S.T., P.&O., Clinical psychologist, and vocational counselors and social workers.	4		
	e. CBR – Role of Physiotherapy & Physiotherapist	2		
	f. CBR strategies in: i. Urban area e.g. UHC, community centre, clubs, mahila mandals, Social centers, Schools, industries, sports centers. ii. Rural area- by using PHC / rural hospital, district hospital infrastructure. Loco motor aids using local resources.	8		
<b>5.</b>	<b>HEALTHCARE DELIVERY &amp; DISASTER MANAGEMENT</b>	<b>10</b>	<b>-</b>	<b>10</b>
<b>6.</b>	<b>INDUSTRIAL HEALTH</b>	<b>25</b>	<b>15</b>	<b>40</b>
	a. Introduction to Industrial Health: Definition, Model of Industrial Therapy (Traditional Medical & Industrial Model)	5		
	b. Worker Care Spectrum: i. Ability Management – Job analysis:- Job description, Job demand Analysis, Task Analysis, Ergonomics Evaluation, Injury Prevention, Employee Fitness Program.	5		

	ii. Disability Management: - Acute care, Concept of Functional Capacity assessment, Work Conditioning, Work Hardening.	5		
	iii. Environmental stress in the industrial area – accidents due to a) Physical agents e.g. heat/cold, light, noise, vibration, UV radiation, ionizing radiation. b) Chemical agents- inhalation, local action and ingestion. c) Mechanical hazards-overuse/fatigue injuries due to ergonomic alternation and ergonomic evaluation of work place.	5		
	iv. Mechanical stresses: a) Sedentary table work-executive’s clerk. b) Inappropriate seating arrangement-vehicle drivers. c) Constant standing- watchman, defense forces, surgeons. d) Over execution in labourer’s-stress management. e) Psychological hazards e.g. monotonicity and dissatisfaction in job, anxiety of work completion with quality, Role of PT. in industrial set up and stress management relaxation modes.	5		
<b>7.</b>	<b>SYNOPSIS</b>	-	<b>10</b>	<b>10</b>
	Students have to select a study to be done under the guidance of a teacher of any subject related to physiotherapy. After the finalization of the topic, he/ she has to decide the methodology of the study to be done (which has to be undertaken during the internship) Student will present defend the synopsis of this study to be done during the University Practical examination of Community Physiotherapy.			

<b>CLINICAL</b>		<b>- 80hrs</b>
1.	UHC & PHC visits, Industrial Visit, Geriatric Home Visit	
2.	Institutional adoption of close by area/ vicinity.	
3.	Perform surveys in adopted localities for ANC, disability, exercises & health promotion, preventive aspects for smoking/ alcohol/ drugs in youth etc.	
4.	Students may make a case dependent evaluation proforma/ questionnaire.	

## **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Acquire skills for the evaluation of disability and planning for prevention and rehabilitation.
- 2) Deliver Community Based Rehabilitation in urban and rural set up.
- 3) Identify with clinical reasoning the prevailing contextual (e.g. environmental and psycho-social cultural}factors, causing high risk responsible for various dysfunctions and morbidity related to sedentary life style and specific community like women, children, aged as well as industrial workers and describe planning strategies of interventional policies to combat such problems.

## **RECOMMENDED TEXT BOOKS**

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

## **RECOMMENDED REFERENCE BOOKS**

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

## SCHEME OF UNIVERSITY EXAMINATION

<b>THEORY</b>		Marks
70 marks + I.A. – 30 Marks		100
* The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section -A- M.C.Qs.</b>	Q-1 – based on MUST KNOW area[1x20]	20
<b>Section-B- S.A.Qs.</b>	Q-1 - Answer any FIVE out of SIX [5x2=10] Q-2 - Answer any TWO out of THREE [2X5=10]	20
<b>Section-C- L.A.Qs.</b>	Answer any TWO out of THREE [2X15=30] Q-1 Q-2- Q-3-	30
<b>Total Marks</b>		<b>70</b>

<b>PRACTICAL</b>		Marks
70 MARKS + I.A. – 30 MARKS		<b>100</b>
LONG CASE	Rehabilitation/ Women’s Health / Geriatric/ Industrial Health / Health Promotion	40
PROJECT SYNOPSIS	(Synopsis can be on any topic to be done during Internship project/ monogram (Musculoskeletal, Neurosciences, Cardio Respiratory or Community). [Introduction, Aims & Objectives, Methods & Methodology & Review of Literature Expected]	25
ASSIGNMENT	1. 1 cases each of Rehabilitation, Health Promotion, Industrial Health, Women’s Health & Geriatrics (Total 5 cases only) 2. Documentation of visits (Minimum One) to either Industry, Geriatric Home, Community assessment	05
<b>Total Marks</b>		<b>70</b>

### INTERNAL ASSESSMENT:

1. Exams –Theory & Practical
2. I.A. to be calculated out of 30 marks (Theory & Practical)
3. Internal assessment as per University pattern.

# RESEARCH METHODOLOGY AND BIOSTATISTICS

(Theory : 30 Hours) **TOTAL : 30 Hours**

## COURSE DESCRIPTION:

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

## OBJECTIVES:

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

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

## SYLLABUS

Sr. No.	Topics	Theory Hours
<b>1.</b>	<b>RESEARCH IN PHYSIOTHERAPY</b>	<b>5</b>
	a. Introduction b. Research for Physiotherapist: Why? How? When? c. Research – Definition, concept, purpose, approaches d. Internet sites for Physiotherapists.	
<b>2.</b>	<b>RESEARCH FUNDAMENTALS</b>	<b>5</b>
	a. Define measurement b. Measurement framework c. Scales of measurement d. Pilot Study e. Types of variables f. Reliability & Validity g. Drawing Tables, Graphs, Master chart	
<b>3.</b>	<b>WRITING A RESEARCH PROPOSAL</b>	<b>3</b>
	a. Defining a problem	

	<ul style="list-style-type: none"> <li>b. Review of Literature</li> <li>c. Formulating a question, Operational Definition</li> <li>d. Inclusion &amp; Exclusion criteria</li> <li>e. Methodology- Forming groups Data collection &amp; method for analysis</li> <li>f. Informed Consent Steps of documentation – Title to Scope of study</li> </ul>	
<b>4.</b>	<b>RESEARCH ETHICS</b>	<b>2</b>
	<ul style="list-style-type: none"> <li>a. Importance of Ethics in Research</li> <li>b. Main ethical issues in human subjects“ research</li> <li>c. Main ethical principles that govern research with human subjects</li> <li>d. Components of an ethically valid informed consent for research.</li> </ul>	
<b>5.</b>	<b>OVERVIEW OF STUDY DESIGNS</b>	<b>3</b>
	<ul style="list-style-type: none"> <li>a. Observational- <ul style="list-style-type: none"> <li>i. Descriptive-Case study/ series, Cross sectional, Normative, Correlational</li> <li>ii. Analytical; case control, cohort</li> </ul> </li> <li>b. Experimental- True &amp; quasi experimental</li> </ul>	
<b>6.</b>	<b>SAMPLING</b>	<b>3</b>
	<ul style="list-style-type: none"> <li>a. Random and non-random sampling.</li> <li>b. Various methods of sampling – simple random, stratified, systematic, cluster and multistage. Sampling and non-sampling errors and methods of minimizing these errors.</li> </ul>	
<b>7.</b>	<b>BASIC PROBABILITY DISTRIBUTIONS AND SAMPLING DISTRIBUTIONS</b>	<b>2</b>
	<ul style="list-style-type: none"> <li>a. Concept of probability and probability distribution.</li> <li>b. Normal, Poisson and Binomial distributions, parameters and application.</li> <li>c. Concept of sampling distributions.</li> <li>d. Standard error and confidence intervals.</li> <li>e. Skewness and Kurtosis</li> </ul>	
<b>8.</b>	<b>TESTS OF SIGNIFICANCE</b>	<b>3</b>
	<ul style="list-style-type: none"> <li>a. Basics of testing of hypothesis – Null and alternate hypothesis, type I and type II errors, level of significance and power of the test, p value.</li> <li>b. Tests of significance (parametric) - t – test (paired and unpaired), Chi square test and test of proportion, one way analysis of variance.</li> <li>c. Repeated measures analysis of variance.</li> <li>d. Tests of significance (non-parametric)-Mann-Whitney u test, Wilcoxon test,</li> <li>e. Kruskal-Wallis analysis of variance. Friedman’s analysis of variance.</li> </ul>	

<b>9.</b>	<b>CORRELATION AND REGRESSION</b>	<b>1</b>
	Simple correlation – Pearson’s and Spearman’s; testing the significance of correlation coefficient, linear and multiple regressions.	
<b>10.</b>	<b>STATISTICAL DATA</b>	<b>2</b>
	Tabulation, Calculation of central tendency and dispersion, Using software packages, Analysis, Presentation of data in diagrammatic & Graphic form	
<b>11.</b>	<b>RESEARCH REPORT</b>	
	Overview, Types and Publication	

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Acquire skills for the evaluation of disability and planning for prevention and rehabilitation. Gain knowledge of the basic concepts of Biostatistics & its need for professional practice & research.
- 2) Describe an Over - view- a) Ethnography & Anthropology b) Design & Methodology of an Experiment or Survey c) Demography & vital statistics d) Sampling & interpretation of Data.

### **RECOMMENDED TEXT BOOK**

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

## **SCHEME OF COLLEGE EXAMINATION**

<b>THEORY</b>		<b>Marks</b>
35 MARKS + I.A. – 15 MARKS *The question paper will give appropriate weightage to all the topics in the syllabus.		<b>50</b>
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on <b>MUST KNOW</b> area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10]	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15]	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### **INTERNAL ASSESSMENT:**

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

## ADMINISTRATION, MANAGEMENT & MARKETING

(Theory : 30 Hours) **TOTAL : 30 Hours**

### COURSE DESCRIPTION:

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

### OBJECTIVES:

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

#### Cognitive:

The student will:

- a. Learn the management basics in fields of clinical practice, teaching, research and physiotherapy practice in the community.
- b. Acquire communication skills in relation with patients, peers, seniors and other professionals & the community.
- c. Acquire the knowledge of the basics in Managerial & Management skills, & use of Information technology in professional Practice

#### Psychomotor:

The student will be able to:

- a. Develop psychomotor skills for physiotherapy practice.
- b. Develop skill to evaluate and make decision for plan of management based on sociocultural values and referral practice.

#### Affective:

The student will be able to:

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

## SYLLABUS

Sr. No.	Topics	Theory Hours
1.	Management studies related to –local health care organization Management & structure, planning delivery with quality assurance &	08
2.	funding of service delivery information technology career development in Physiotherapy.Introduction to the history of Physiotherapy.	
3.	Administration-principles-based on the Goal & functions -at large	04

	hospital set up / domiciliary services/ private clinic/academics	
4.	Methods of maintaining records	03
5.	Budget-planning	04
6.	Performance analysis--physical structure / reporting system [man power / status /functions / quantity & quality of services/turn over- cost benefit revenue contribution	04
7.	Setting up Therapeutic gymnasium, Fitness clinics, Cardiac and Pulmonary Rehab centers etc.	04
8.	Time management	03
<b>TOTAL</b>		<b>30</b>

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 4) Learn the management basics in fields of clinical practice, teaching, research and physiotherapy practice in the community
- 5) Acquire the knowledge of the basics in Managerial & Management skills, & use of Information technology in professional Practice
- 6) Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals

### **RECOMMENDED REFERENCE BOOK**

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

### **SCHEME OF COLLEGE EXAMINATION**

<b>THEORY</b>		<b>Marks</b>
35 MARKS + I.A. – 15 MARKS		<b>50</b>
*The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on <b>MUST KNOW</b> area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10]	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15]	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### **INTERNAL ASSESSMENT:**

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

## **ICU EVALUATION & MANAGEMENT**

(Theory : 30 Hours + Practical / Laboratory :10 Hours) **TOTAL : 40 Hours**

**OBJECTIVES:**

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

**Cognitive:**

- a. Identify and analyze cardio-vascular & pulmonary dysfunction.

**Psychomotor:**

- a. Utilise skills such as executing exercise tests, PFT, Ankle brachial index, arterial & venous insufficiency tests
- b. Utilise psychomotor skills to implement appropriate bronchial hygiene therapy, CPR, Intensive (critical) care.

**Affective:**

- a. Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
- b. Develop bed side behavior, respect & maintain patients' confidentiality

**SYLLABUS**

<b>Sr. No.</b>	<b>Topics</b>	<b>Theory Hours</b>	<b>Clinical/ Lab Hours</b>	<b>Total Hours</b>
<b>1.</b>	<b>ICU EVALUATION &amp; MANAGEMENT</b>	<b>22</b>	<b>8</b>	<b>30</b>
	a. Basic evaluation b. Principles of ICU Monitoring c. Mechanical Ventilator modes d. Suctioning & Humidification e. Therapeutic intervention in ii. Tetanus, Head Injury, iii. Pulmonary Oedema, iv. Multiple Organ Failure, v. Neuromuscular Disease, vi. Smoke Inhalation, vii. Poisoning, viii. Aspiration near Drowning, ix. A.R.D.S. x. Shock xi. Guillan Barre Syndrome xii. Spinal Cord Injury & Other Acute respiratory Disorders			
<b>2.</b>	<b>BASIC LIFE SUPPORT (C.P.C.R.)</b>	<b>8</b>	<b>2</b>	<b>10</b>

	<b>TOTAL</b>	<b>30</b>	<b>10</b>	<b>40</b>
--	--------------	-----------	-----------	-----------

S.No.	PRACTICAL
1.	Familiarity and skill of use of various monitoring and treatment equipments in ICU.
2.	Use of physical and electrical agents for pain relief and wound care 10 Skill of administering basic life support

### **COURSE OUTCOMES:**

At the end of the course, a student would be able to :

- 1) Utilise psychomotor skills to implement appropriate bronchial hygiene therapy, CPR, Intensive (critical) care.
- 2) Utilise skills such as executing exercise tests, PFT, Ankle brachial index, arterial & venous insufficiency tests

### **RECOMMENDED TEXT BOOKS**

1. ICU Protocols: A Stepwise Approach
2. Critical Care Medicine: Principles of Diagnosis and Manangement of Adult
3. Oxford Hand Book Of Critical Care

### **SCHEME OF COLLEGE EXAMINATION**

<b>THEORY</b>		<b>Marks</b>
35 MARKS + I.A. – 15 MARKS		<b>50</b>
*The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on <b>MUST KNOW</b> area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX [5x2 = 10]	<b>10</b>
	Q-3 - Answer any FIVE out of SIX [5x3 = 15]	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

### **INTERNAL ASSESSMENT:**

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

# UNIVERSAL HUMAN VALUES AND PROFESSIONAL ETHICS

(Theory : 30 Hours) **TOTAL : 30 Hours**

## Course Objectives

1. To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings
2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way
3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature

Thus, this course is intended to provide a much needed orientational input in value education to the young enquiring minds.

## Course Methodology

1. The methodology of this course is explorational and thus universally adaptable. It involves a systematic and rational study of the human being vis-à-vis the rest of existence.
2. It is free from any dogma or value prescriptions.
3. It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as a proposal and the students are facilitated to verify it in their own right, based on their Natural Acceptance and subsequent Experiential Validation.
4. This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with, and then to continue within the student leading to continuous self-evolution.
5. This self-exploration also enables them to critically evaluate their pre-conditionings and present beliefs.

## Course Syllabus: Universal Human Values and Professional Ethics

The whole course is divided into 5 modules.

After every two lectures of one hour each, there is a 2 hour practice session.

The teachers are oriented to the inputs through an eight to ten day workshop (Teachers' Orientation Program).

The Teacher's Manual provides them the lecture outline. The outline has also been elaborated into presentations and provided in a DVD with this book to facilitate sharing.

The teacher is expected to present the issues to be discussed as propositions and encourage the students to have a dialogue. The process of dialogue is enriching for both, the teacher as well as the students.

The syllabus for the lectures is given below:

### **UNDERSTANDING HARMONY IN THE NATURE AND EXISTENCE – WHOLE EXISTENCE AS CO-EXISTENCE**

1. Understanding the harmony in the Nature
  2. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature
  3. Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space
  4. Holistic perception of harmony at all levels of existence
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

### **GUIDELINES AND CONTENT FOR PRACTICE SESSIONS**

#### **Understanding Harmony in the Nature and Existence - Whole existence as Co-existence**

**PS 10:** List down units (things) around you. Classify them in four orders. Observe and explain the mutual fulfillment of each unit with other orders.

**Expected outcome:** The students are able to differentiate between the characteristics and activities of different orders and study the mutual fulfillment among them. They are also able to see that human beings are not fulfilling to other orders today and need to take appropriate steps to ensure right participation (in terms of nurturing, protection and right utilization) in the nature.

#### **PS 11:**

1. Make a chart for the whole existence. List down different courses of studies and relate them to different units or levels in the existence.
2. Choose any one subject being taught today. Evaluate it and suggest suitable modifications to make it appropriate and holistic.

**Expected outcome:** The students feel confident that they can understand the whole existence; nothing is a mystery in this existence. They are also able to see the interconnectedness in the nature, and point out how different courses of study relate to the different units and levels. Also they are able to make out how these courses can be made appropriate and holistic.

### **IMPLICATIONS OF THE ABOVE HOLISTIC UNDERSTANDING OF HARMONY AT ALL LEVELS OF EXISTENCE**

**PS 12:** Choose any two current problems of different kind in the society and suggest how they can be solved on the basis of natural acceptance of human values. Suggest steps you will take in present conditions.

**Expected outcome:** The students are able to present sustainable solutions to the problems in society and nature. They are also able to see that these solutions are practicable and draw roadmaps to achieve them.

**PS 13:**

1. Suggest ways in which you can use your knowledge of Technology/Engineering/Management for universal human order, from your family to the world family.
2. Suggest one format of humanistic constitution at the level of nation from your side.

**Expected outcome:** The students are able to grasp the right utilization of their knowledge in their streams of Technology/Engineering/ Management to ensure mutually enriching and recyclable productions systems.

**PS 14:** The course is going to be over now. Evaluate your state before and after the course in terms of

- a. Thought    b. Behavior    c. Work                      d. Realization

Do you have any plan to participate in the transition of the society after graduating from the institute? Write a brief note on it.

**Expected outcome:** The students are able to sincerely evaluate the course and share with their friends. They are also able to suggest measures to make the course more effective and relevant. They are also able to make use of their understanding in the course for a happy and prosperous society.

### SCHEME OF COLLEGE EXAMINATION

<b>THEORY</b>		<b>Marks</b>
35 MARKS + I.A. – 15 MARKS		<b>50</b>
*The question paper will give appropriate weightage to all the topics in the syllabus.		
<b>Section A- M.C.Qs</b>	Q-1 MCQs – based on <b>MUST KNOW</b> area [1x10]	<b>10</b>
<b>Section B- S.A.Q.</b>	Q-2 - Answer any FIVE out of SIX            [5x2 = 10]	<b>10</b>
	Q-3 - Answer any FIVE out of SIX            [5x3 = 15]	<b>15</b>
<b>TOTAL MARKS</b>		<b>35</b>

**INTERNAL ASSESSMENT:**

1. Exams –Theory only.
2. I.A. to be calculated out of 15 marks (Theory)
3. Internal assessment as per University pattern.

## SCHEME OF EXAMINATIONS AT A GLANCE

Subject Code	SUBJECTS	UNIVERSITY EXAMINATIONS					
		Theory			Clinical / Practical		
		University	I.A.	Total	University	I.A.	Total
BPT 801	Neuro Physiotherapy	70	30	100	70	30	100
BPT 802	Community Physiotherapy	70	30	100	70	30	100
BPT 803	Research Methodology & Biostatistics	35	15	50	-	-	-
BPT 804	Administration, Management & Marketing	35	15	50	-	-	-
BPT 805	ICU Evaluation & Management	35	15	50	-	-	-
	<b>Semester Total</b>	<b>245</b>	<b>105</b>	<b>350</b>	<b>140</b>	<b>60</b>	<b>200</b>

### Qualifying Course:

Subject Code	SUBJECTS	UNIVERSITY EXAMINATIONS					
		Theory			Clinical / Practical		
		University	I.A.	Total	University	I.A.	Total
HVE-01	Universal Human Values & Professional Ethics	35	15	50	-	-	-