Study and Evaluation Scheme

Of

Bachelor of Physiotherapy

[Applicable w.e.f. Academic Session 2019-20]

[As per CBCS guidelines given by UGC]

TEERTHANKER MAHAVEER UNIVERSITY

N.H.-24, Delhi Road, Moradabad, Uttar Pradesh-244001

Website: www.tmu.ac.in

TEERTHANKER MAHAVEER UNIVERSITY
(Established under Govt. of U.P. Act No. 30, 2008)
Delhi Road, Bagarpur, Moradabad (U.P.)

Study & Evaluation Scheme	
SUMMARY	
Institute Name	*Department of Physiotherapy, TMU, Delhi Road, Moradabad*
Program	*Bachelor of Physiotherapy (BPT)*
Duration	*Four years Full Time and Six Months Internship (Annual System)*
Medium	*English*
Minimum Required Attendance	*75%*
Credits	
Maximum Credits	*146*
Minimum Credits Required for Degree	*143*

Assessment:

Evaluation	**Internal**					**External**			**Total**
Theory	30					70			100
Lab	50					50			100
	PDS		ATT	EXP/ SHC	VV	EXP/LC	SM	VV	
	EXP/C	SM							
Lab	15	10	10	05	10	30	10	10	100
SCT	20	-	10	10	10	30	10	10	100

(PDS- Performance during session; ATT- Attendance; EXP- Experiment; LC-Long Case; SM- Student Manual; VV- Viva Voce; SHC- Short Case; C- Case)

Evaluation : English Communication

Internal	**External**				
30	Comprehension written test (30)	Content (10)	Dressing & Grooming (10)	Confidence (10)	Question Responsiveness (10)

Evaluation: Seminar (Evaluation done on the basis of equal weightage to the parameters of objective, content, way of presentation, seminar report and viva voce)

GUIDE (20)	INTERNAL EXAMINER I (40)	INTERNAL EXAMINER II (40)

VAC	**Internal**	**External**	**Attendance**	**Total**
	40 (Based on 5 assessments of 8marks each)	50 (End term Oral Examination)	10	100

Internal Evaluation Theory

Class Test-1	**Class Test-2**	**Class Test-3**	**Attendance**	**Total**
Best two out of three				
10	10	10	10	30

Duration of Examination	**External**	**Internal**
	3 Hours	1.5 Hours

To qualify a course, a candidate requires scoring a minimum of 50% marks in that course in yearend examination including teacher's continuous evaluation. A candidate, who scores less than 50% marks in the yearend examination including teacher's continuous evaluation, shall be deemed to have failed in

that course(s). To be eligible for promotion to next year, in first three years, the candidate must not have failed in more than four courses and for appearing in final year yearend examination one has to clear all his/her backlogs from previous years. A candidate who is deemed failed in yearend examination, will cause him/her to revert back to corresponding junior batch and continue his/her studies with junior batch for rest of the program. A final year candidate who could not appear in the yearend examination due to previous backlogs, on clearing the backlogs shall appear for the yearend examination as an external candidate. A candidate who has been placed under re-appear category in any of the course(s) shall be allowed to appear in supplementary examination to be conducted within six months after declaration of the result. Candidates failing in this supplementary examination shall be given another chance to appear in examination at the end of the year with the next batch. A candidate can unearn credits only from DSEC/GEC courses in BPT IV year to earn minimum credits and has maximum n+2 years to complete the program and be eligible for the degree. A candidate has to pass mandatorily in Theory & Lab separately. If a candidate fails in Theory, he/she will have to reappear in Theory examination, but if one fails in Lab; he/she has to appear in both Theory and Lab of the respective course.

Question Paper Structure	
The question paper shall be divided in three sections and examiner shall set questions specific to respective section. The question paper should be designed to necessarily assess all the course outcomes. Section wise details are mentioned under:	
1	*Section A shall comprise of ten multiple choice questions (MCQ) of one mark each. All ten are compulsory.*
2	*Section B shall consist of short answer type questions. This section will contain nine questions and every question should assess the specific COs. Student must attempt any six questions, each question shall have equal weightage of five marks and total weightage of this section shall be 30 marks.*
3	*Section C shall consist of long answer type questions. This section will contain three questions and every question should assess the specific COs. Student must attempt any two questions, each question shall have equal weightage of fifteen marks and total weightage of this section shall be 30 marks.*
IMPORTANT NOTES:	
1	*The purpose of examination should be to assess the Course Learning Outcomes (CLO) that will ultimately lead to of attainment of Program Specific Outcomes (PSOs). A question paper must assess the following aspects of learning: Remember, Understand, Apply, Analyze, Evaluate & Create (reference to Bloom's Taxonomy).*

Program Structure-BPT

A. Introduction:

Rehabilitation is an integral part of patient return to community setup following a visit to the hospital or clinic. Physical rehabilitation aimed at the holistic treatment and management of the patient is crucial to patient re-integration into the society. BPT students are to be proficient and able members of the healthcare team that can perform in various hospital, field and clinical settings. The students must be able to interact and communicate with the patients, their caretakers and members of the healthcare team. The BPT curriculum is aimed at making physiotherapists that are efficient practitioners with proper skills for management of common conditions.

The institute emphasis on the following courses ***balanced with core and elective courses****:* The curriculum of BPT program is based on a practical, skill- based education with 36 credits of core courses, 33 credits of discipline specific courses, 30 credits of skill enhancement courses, 9 credits of ability enhancement courses, 6 credits of generic electives and 6 credits of discipline specific elective courses. Total 146 credits are allotted for the BPT degree.

Course handouts for students will be provided in every course. A course handout is a thorough teaching plan of a faculty taking up a course. It is a blueprint which will guide the students about the pedagogical tools being used at different stages of the syllabus coverage and more specifically the topic-wise complete plan of discourse, that is, how the faculty members treat each and every topic from the syllabus and what they want the student to do, as an extra effort, for creating an effective learning. It may be a case study, a role-play, a classroom exercise, an assignment- home or field, or anything else which is relevant and which can enhance their learning about that particular concept or topic. Due to limited availability of time, most relevant topics will have this kind of method in course handout.

BPT : Four-Year CBCS Program			
Basic Structure: Distribution of Courses			
S.No.	**Type of Course**	**Credit Hours**	**Total Credits**
1.	Core Course (CC)	23 Courses of Credit Hrs. 2-5 each	36
2.	Discipline Specific Course (DSC)	12 Courses of Credit Hrs. 1-3 each	33
3.	Ability-Enhancement Compulsory Course (AECC)	4 Courses of Credit Hrs 1-3 each	9
4.	Skill-Enhancement Course (SEC)	17 Courses of Credit Hrs 1-3 each	30
5.	Open/Generic Elective Course (GEC)	2 Courses of 3 Credit Hrs. each	6
6.	Research Project Report (RPR)	1 Course of Credit Hrs 2	2
7.	Internship Posting (IP)	1 Course of Credit Hr. 24	24
8.	Value Added Course (VAC)	2 Courses of 0 Credit Hrs. each	0
9.	Discipline Specific Open Elective Course (DSEC)	2 Courses of Credit Hrs. 3 each	6
Total Credits			**146**

B. Choice Based Credit System (CBCS)

Choice Based Credit System (CBCS) is a versatile and flexible option for each student to achieve his target number of credits as specified by the UGC and adopted by our University.

The following is the course module designed for the BPT program:

Core Course (CC): A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course. Core courses of BPT program will provide a holistic approach to physiotherapy education, giving students an overview of the field, a basis to build and specialize upon.

The core courses will provide more practical-based knowledge, and collaborative learning models. It will train the students to analyze, decide, and formulate the holistic rehabilitation program for an individual depending on the specific needs.

A wide range of core courses provides groundwork in the basic physiotherapy disciplines: Electrotherapy, Exercise therapy, Biomechanics etc.

We offer core courses in year I, II, III& IV during the BPT program. There will be 36 credits in all for core course offered.

Ability Enhancement Compulsory Course (AECC):As per the guidelines of Choice Based Credit System (CBCS) for all Universities, including the private Universities, the Ability Enhancement Compulsory Course (AECC) is a course designed to develop the ability of students in communication (especially English) and other related courses where they might find it difficult to communicate at a higher level in their prospective job at a later stage due to lack of practice and exposure in the language, etc. Students are motivated to learn the theories, fundamentals and tools of communication which can help them develop and sustain in the medical environment and culture. In all AECC will be of 8 credits.

Skill Enhancement Course (SEC): This course is designed to provide value-based and/or skill-based knowledge. In all SEC will carry 26 credits.

Discipline Specific Course (DSC): The discipline specific course is chosen to make students specialist or having specialized knowledge of a specific domains of Physiotherapy like Electrotherapy, Exercise therapy, PT in Orthopaedics etc. It will be covered in all the four years of the program. DSC will carry 33 credits.

Open/Generic Elective Course (GEC): Open/Generic Elective is an interdisciplinary additional subject that is compulsory in the third and fourth year of the program. The score of Generic Elective is counted in the overall aggregate marks under Choice Based Credit System (CBCS). Each Generic Elective paper will be of 3 Credits and students will have the choice of taking 2 GE's: 1 each in year III & IV. Each student has to take Open/Generic Electives from department other than the parent department. Core / Discipline Specific Electives will not be offered as Generic Electives.

Value Added Course (VAC): A value added course is a non-credit course which is basically meant to enhance general ability of students in areas like soft skills, quantitative aptitude and reasoning ability - required for the overall development of a student and at the same time crucial for industry/corporate demands and requirements. The student possessing these skills will definitely develop acumen to perform well during the recruitment process of any premier organization and will have the desired confidence to face the interview. Moreover, these skills are also essential in day-to-day life of the medical world. The aim is to nurture every student for making effective communication, developing aptitude and a general reasoning ability for a better performance, as desired in medical world. There shall be one course each in Year II & Year III and will carry no credit, however, it will be compulsory for every student to pass these

courses with minimum 45% marks to be eligible for the certificate. These marks will not be included in the calculation of CGPI. Students have to specifically be registered in the specific course of the respective years.

Discipline Specific Elective Course (DSEC): The discipline specific elective course is chosen to make students specialist or having specialized knowledge of a specific domain like Basic Life Support. It willbe covered in III & IV years of the program. The student will have to choose any one elective course from the MOOC Courses offered by any credible Medical portal or from SWAYAM platform. Each student will have to choose two discipline specific elective courses (DSECs); 1 in year III and 1 in year IV respectively. DSEC will carry 6 credits.

Research Project Report (RPR): In addition to learning Research theory there will be mandatory group research project with maximum of 10 students in each group, which will provide hands on experience in contrast to theory in health care settings. It will be assessed internally and the credits earned will be included for the calculations of the CGPA.

Internship Posting (IP): Each student will undergo for 6 months of internship at the end of the program. The credits earned will be included for the calculations of the CGPA. Award of the degree certificate will be provided after successful completion of the internship. Internship Posting comprises of 15 credit hrs.

C. Program Outcomes (POs):

On completion of the program, the students will be:

PROGRAM OUTCOMES	
PO1	Acquiring knowledge of fundamental principles, tools & techniques and their applications in the field of Physical therapy.
PO2	Developing in-depth critical and analytical thinking in order to identify, formulate and implement Physiotherapy care plan.
PO3	Utilizing soft skills, communication skills and concepts of ethics.
PO4	Demonstrating team spirit, empathetic social concern, leadership and environment sensitivity for local and national healthcare needs.
PO5	Creating ability to engage in evidence based innovation, decision-making, entrepreneurship skills and life-long learning.

D. Program Specific Outcomes (PSOs)

On completion of the program, the students will be:

PROGRAM SPECIFIC OUTCOMES

PSO1	Understanding the basic concepts of physical therapy related to medical sciences, biomechanics, therapeutic exercises, modalities, special techniques, first aid, patient psychology, nutritional science and social setup.
PSO2	Understanding the concept of research methodology and biostatistics and its application to enhance new knowledge in the field of physiotherapy and uphold Evidence Based Practice.
PSO3	Understanding the concept of health, epidemiology, healthcare programs, role of NGOs and community based rehabilitation.
PSO4	Applying the concepts to work efficiently and ethically in professional environment and be able to use computers for research and clinical work.
PSO5	Applying evidence based rehabilitation strategies used in the field of Orthopaedics, Neurological Sciences, Cardiorespiratory, Sports and others.
PSO6	Applying the skills to efficiently manage emergency health situations.
PSO7	Creating a plan to execute theoretical knowledge in clinical settings for autonomous physiotherapy practice.

E. Pedagogy & Unique practices adopted: "Pedagogy is the method and practice of teaching, especially for teaching an academic subject or theoretical concept". In addition to conventional time-tested lecture method, the institute will **emphasize on experiential learning.**

1. Induction and orientation program: A fifteen day program by professionals and experts is conducted for the first year students on a variety of topics like time management, presentation, professionalism, knowledge building and stress coping amongst others. The program is aimed at preparing students for the upcoming years, to practice theoretical concepts, logical thinking, reasoning and evaluation skills in clinical setups

2. Theory to practical application in Clinical Postings: Patient assessment, physical examination, provisional diagnosis and physiotherapeutic treatment are an integral part of physiotherapy practice. The technique to apply the theoretical knowledge onto patients in a hospital setting helps in developing critical and analytical thinking, practical and decision making skills. Students utilize the concepts, principles and techniques for patient evaluation and management in the pre-final and final year in real- life settings of hospital.

3. Demonstration Labs: Well-equipped demonstration labs help the students learn in a stress free environment, where-in demonstration on fellow models is carried out for familiarity with the theoretical concepts. Learning focused on practice and feasibility of modalities and exercises is encouraged. Practical sessions regarding the use of patient assessment, modalities, exercises and other treatment techniques creates a knowledge base for the students and provides them an overview of patient setup in hospitals.

4. Student seminars and case presentations: Enhancement of communication and practical skills, participation, group discussion and healthy discussion between professionals is promoted among students and with teachers. The case/ topic knowledge, presentation skills, audience interaction and ability to answer queries are the skills promoted by this practice.

5. Project work: Groups of students of the final year make research based projects, wherein they learn skills pertaining to team work, leadership, research methodology, recent advances of physical therapy and research critique. Evidence Based capability in knowledge acquiring and use are promoted. Analytical thinking and decision making skills are used for the project work and to arrive at a comprehensive research conclusion. Students submit an internship project at the end of the internship program based on their choice and hospital requirements.

6. Educational tours: Potential of future internship and work are explored by visits to prospective cities. Students can decide the institute of choice based on future plans, goals and feasibility.

7. Workshops, conferences and Guest lectures: Educational and motivational content and talks delivered by multiple experts from various fields and professions to inculcate concepts, skills, techniques and research advances among students. Students learn and practice the acquired knowledge and interact with professionals and specialists for overall education and learning experience.

8. Extra-curricular and co-curricular activities: Regularly scheduled cultural, sports and academic activities promote student mental health, relieve stress and provide a platform for display of extra-curricular and co-curricular skills and creativity. Competitions aimed at promoting team work, leadership qualities and innovation help in the holistic development of young adults into professionals.

9. Student Development Programs (SDP): Harnessing and developing the right talent for the right industry an overall development of a student is required. Apart from the curriculum teaching various student development programs (training programs) relating to soft skills, interview skills, SAP, Advanced excel training etc. that may be required as per the need of the student and industry trends, are conducted across the whole program. Participation in such programs is solicited through volunteering and consensus.

10. Industry Focused programs: Establishing collaborations with various industry partners to deliver the program on sharing basis. The specific courses are to be delivered by industry experts to provide practice based insight to the students.

11. Library and E-content: Students are encouraged to use the resources at library as well as that available in E- Library extensively. The students are motivated to use authentic web- based platforms to do study work.

12. Role Play & Simulation: Role-play and simulation are forms of experiential learning. Learners take on different roles, assuming a profile of a character or personality, and interact and participate in diverse and complex learning settings. Role-play and simulation function as learning tools for teams and groups or individuals as they "play" online or face-to-face. They alter the power ratios in teaching and learning relationships between students and educators, as students learn through their explorations and the viewpoints of the character or personality they are articulating in the environment. This student-centered space can enable learner-oriented assessment, where the design of the task is created for active student learning.

13. Video Based Learning (VBL) & Learning through Movies (LTM): These days technology has taken a front seat and classrooms are well equipped with equipment and gadgets. Video-based learning has become an indispensable part of learning. Making students learn few important theoretical concepts through VBL & LTM is a good idea and method. The learning becomes really interesting and easy as videos add life to concepts and make the learning engaging and effective. Therefore, our institute is promoting VBL & LTM, wherever possible.

14. Internship program: Apart from the four year program, the University also provides the students a choice to complete the six month internship from the University hospital and physiotherapy outpatient

department. Student exposure of patients from nearby urban as well as rural areas improves capability, learning, skills and management skills..

15. Special assistance program for slow learners & fast learners: The slow as well as the fast learners are identified on the basis of the individual performance in the class tests. Special classes or assignments are undertaken to cater to their respective needs. Fast learners are given special tasks to stimulate their abilities and make the maximum utilization as well as up gradation of their clinical skills**.**

16. Mentoring and Counseling: Every student shall be provided with a faculty mentor to help him/her in their personal and academic issues. The mentor maintains a mentorship handbook of all his/her mentees with complete personal and parent details. It is essential to meet at least once in a month. The mentor enters the discussions held, advice given and efforts & improvements made by the mentee. This handbook must be counter signed by the HOD once a month.

Bachelor of Physiotherapy

YEAR –I

S.No	Type	Course Code	Course	Periods			Credits	Evaluation Scheme		Total
				L	T	P		Internal	External	

1	CC-1	BPT102	Human Anatomy	3	-	-	3	30	70	100
2	CC-2	BPT103	Human Physiology	3	-	-	3	30	70	100
3	CC-3	BPT104	Biochemistry	2	-	-	2	30	70	100
4	DSC-1	BPT105	Fundamentals of Exercise Therapy	3	-	-	3	30	70	100
5	DSC-2	BPT106	Fundamentals of Electrotherapy	3	-	-	3	30	70	100
6	AECC-1	BPT139	English Communication	2	-	2	3	30	70	100
7.	AECC-2	BPT109	Environmental Studies	2	-	-	2	30	70	100
8.	AECC-3	BPT110	First Aid And Emergency Nursing	1	1	-	2	30	70	100
9.	SEC-1	BPT151	Human Anatomy (Lab)	-	-	4	2	50	50	100
10.	SEC-2	BPT152	Human Physiology (Lab)	-	-	2	1	50	50	100
11.	SEC-3	BPT153	Biochemistry (Lab)	-	-	2	1	50	50	100
12.	SEC-4	BPT154	Fundamentals of Exercise Therapy (Lab)	-	-	2	1	50	50	100
13.	SEC-5	BPT155	Fundamentals of Electrotherapy (Lab)	-	-	2	1	50	50	100
			TOTAL	**19**	**1**	**14**	**27**	**490**	**810**	**1300**

YEAR II

S. No.	Type	Course code	Subject	Periods			Credits	Evaluation Scheme		Total
				L	T	P	C	Internal	External	
1.	DSC-3	BPT201	Electrotherapy And Actinotherapy	3	-	-	3	30	70	100
2.	DSC-4	BPT202	Exercise Therapy	3	-	-	3	30	70	100
3.	DSC-5	BPT203	Biomechanics And Kinesiology	3	-	-	3	30	70	100
4.	CC-4	BPT204	Pathology And Microbiology	4	-	-	4	30	70	100
5.	CC-5	BPT205	Pharmacology	3	-	-	3	30	70	100
6.	CC-6	BPT206	Psychology And Sociology	3	-	-	3	30	70	100
7.	SEC-6	BPT210	Computer Applications	2	-	2	3	30	70	100
8.	SEC-7	BPT251	Electrotherapy And Actinotherapy (Lab)	-	-	4	2	50	50	100
9.	SEC-8	BPT252	Exercise Therapy (Lab)	-	-	4	2	50	50	100
10.	SEC-9	BPT253	Biomechanics And Kinesiology (Lab)	-	-	4	2	50	50	100
TOTAL				**21**	**0**	**14**	**28**	**360**	**640**	**1000**

1.	VAC-1	TMUGS202	Managing Self	2	1	-	0	50	50	100

YEAR III

S. No.	Type	Course code	Subject	Periods			Credits	Evaluation Scheme		Total
				L	T	P	C	Internal	External	
1.	CC-7	BPT301	Surgery	3	-	-	3	30	70	100
2.	CC-8	BPT302	Medicine	3	-	-	3	30	70	100
3.	DSC-6	BPT305	Physical Diagnosis And Manipulative Skills	3	-	-	3	30	70	100
4.	CC-9	BPT306	Clinical Orthopedics	3	-	-	3	30	70	100
5.	CC-10	BPT307	Clinical Neurology	3	-	-	3	30	70	100
6.	CC-11	BPT308	Research Methodology And Biostatistics	2	1	-	3	30	70	100
7.	CC-12	BPT309	Community Medicine	2	1	-	3	30	70	100
8.	AECC -4	BPT310	Basic Nutrition And Diet Therapy	2	-	-	2	30	70	100
9.	SEC-10	BPT355	Physical Diagnosis And Manipulative Skills (Lab)	-	-	4	2	50	50	100
10.	SEC-11	BPT357	Supervised Clinical Training	-	-	8	4	50	50	100
11.	GEC-1	-	Open Elective-1	3	-	-	3	30	70	100
12.	DSEC-1	-	Elective -1	2	-	2	3	50	50	100
TOTAL				**26**	**2**	**14**	**35**	**420**	**780**	**1200**

1.	VAC-2	TMUG S302	Managing Work & Others	2	1	-	0	50	50	100

YEAR IV

S. No.	Type	Course code	Subject	Periods			Credits	Evaluation Scheme		Total
				L	T	P	C	Internal	External	
1.	DSC-7	BPT401	Physiotherapy In Orthopaedic Conditions	3	-	-	3	30	70	100
2.	DSC-8	BPT402	Physiotherapy In Neurological Conditions	3	-	-	3	30	70	100
3.	DSC-9	BPT406	Physiotherapy In Cardiorespiratory And General Conditions	3	-	-	3	30	70	100
4.	DSC-10	BPT407	Physiotherapy In Sports	3	-	-	3	30	70	100
5.	DSC-11	BPT410	Community Based Rehabilitation	2	-	-	2	30	70	100
6.	DSC-12	BPT411	Medical Ethics And Evidence Based Practice	1	-	-	1	30	70	100
7.	SEC-12	BPT451	Physiotherapy In Orthopaedic Conditions(Lab)	-	-	2	1	50	50	100
8.	SEC-13	BPT452	Physiotherapy In Neurological Conditions(Lab)	-	-	2	1	50	50	100
9..	SEC-14	BPT458	Physiotherapy In Cardiorespiratory And General Conditions (Lab)	-	-	2	1	50	50	100
10.	SEC-15	BPT459	Physiotherapy In Sports (Lab)	-	-	2	1	50	50	100
11.	SEC-16	BPT466	Community Based Rehabilitation (Lab)	-	-	2	1	50	50	100
12.	SEC-17	BPT457	Supervised Clinical Training	-	-	8	4	50	50	100
13.	GEC-2	-	Open Elective-2	3	-	-	3	30	70	100
14.	RPR-1	BPT460	Research Project	-	-	4	2	100	-	100
15.	DSEC-2	BPT412	Elective-2	3	-	-	3	100	-	100
TOTAL				**21**	**0**	**22**	**32**	**710**	**790**	**1500**

1.	IP-1	BPT461	Internship	-	-	48	24	100	-	100

Discipline Specific Elective Courses (DSEC) Sr. No.	Code	Course	L	T	P	Credit
YEAR III						
1.	BPT358	Basic Life Support	2	-	2	3
YEAR IV						
1.	BPT412	Elective-2	3	-	-	3

*Any MOOC from SWAYAM Platform or any recognized medical portal can be taken as Elective-2 in BPT IV year.

Note :			
L- Lecture	T- Tutorial	P- Practical	C- Credits
1C = 1 Hour L or T 1C = 2 Hour P			

Course Code: BPT102	**Core Course-1** **B.P.T 1st YEAR** **HUMAN ANATOMY**	**L-3 T-0 P-0 C-3**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding the human anatomical structures.	
CO2.	Describing the functional and topographical anatomy of various organs and their respective systems.	
CO3.	Analyzing general human anatomy.	
CO4.	Identifying and differentiating applied anatomy of soft tissues, hard tissues, joints, organs and their respective systems.	
Course Content:		
Unit-1:	**General Anatomy:** Introduction to Anatomy, terms and terminology. Regions of Body, Cavities and systems. Surface anatomy – musculoskeletal, vascular, cardiopulmonary system. General Embryology. Applied anatomy.	**3 Hours**
	Musculoskeletal system: Connective tissue & its modification, tendons, membranes, special connective tissue. Bone structure, blood supply, growth, ossification, and classification. Muscle classification, structure and functional aspect. Joints – classification, structures of joints, movements, range, limiting factors, stability, blood supply, nerve supply, dislocations and applied anatomy.	**6 Hours**
Unit-2:	**Upper Extremity:** Bony architecture. Joints – structure, range of movement. Muscles – origin, insertion, actions, nerve supply. Major nerves – course, branches and implications of nerve injuries. Development of limb bones, muscles and anomalies. Radiographic identification of bone and joints. Applied anatomy	**6 Hours**
	Lower Extremity: Bony architecture. Joints – structure, range of movement. Muscles – origin, insertion, actions, nerve supply. Major nerves – course, branches and implications of nerve injuries. Development of limb bones, muscles and anomalies. Radiographic identification of bone and joints. Applied anatomy	**5 Hours**
	Spine and thorax: Back muscles - Superficial layer, Deep muscles of back, their origin, insertion, action and nerve supply. Vertebral column – Structure & Development, Structure & Joints of vertebra. Thoracic cage. Radiographic identification of bone and joints. Applied anatomy	**6 Hours**
	Head and neck: Cranium. Facial Muscles – origin, insertion, actions, nerve supply. Tempo-mandibular Joint: structure, types of movement	**5 Hours**

Unit-3:	**Nervous system:** Classification of nervous system. Nerve – structure, classification, microscopy with examples. Neurons, classification with examples. Simple reflex arc. .Parts of a typical spinal nerve/Dermatome. Central nervous system – disposition, parts and functions. Cerebrum, Cerebellum, Midbrain & brain stem. Blood supply & anatomy of brain. Spinal cord- anatomy, blood supply, nerve pathways: Pyramidal, extra pyramidal system. Thalamus, hypothalamus. Structure and features of meninges. Ventricles of brain, CSF circulation. Development of nervous system & defects. Cranial nerves – (course, distribution, functions and palsy). Sympathetic nervous system, its parts and components. Parasympathetic nervous system. Applied anatomy	**7 Hours**
	Sensory system, Structure and function of: Visual system, Auditory system, Gustatory system, Olfactory system, Somato sensory system	**3 Hours**
Unit-4:	**Cardiovascular system** Circulatory system – major arteries and veins of the body, structure of blood vessels, Heart structure, positions, chambers, valves, internal & external features, Blood supply to heart. Conductive system of heart	**7 Hours**
	Lymphatic system Circulation, structure & functions. Lymph nodes	**4 Hours**
	Respiratory system Structure of upper and lower respiratory tract. Thorax: Pleural cavities & pleura, Lungs and respiratory tree, Heart and great vessels, Diaphragm	**5 Hours**
Unit-5:	**Digestive system** Parts of digestive system. Abdominal cavity – divisions. Muscles of abdominal wall. Liver, Pancreas, Spleen, Alimentary canal, Gall bladder, Intestine (small & large)	**5 Hours**
	Endocrine system Pituitary gland, Thyroid, Parathyroid	**3 Hours**
	Urinary and Reproductive system Urinary system**,** Pelvic floor: musculature and innervations Kidney, Ureter, bladder, urethra Genital system – male and female Reproductive system of male Reproductive system of female	**5 Hours**
Text Books:	*1. B.D Chaurasia Human Anatomy–Regional And Applied; Volume I, Volume II And Volume III*	
Reference Books:	*1. Snell [Richard S], Clinical Anatomy For Medical Students: Little Brown And Company Boston. 1995.* *2. Moorie [Kieth L], Clinically Oriented Anatomy. Ed.3. Williams And Wilkins, Baltimore, 1992.* *3. Datta [A.K], Essentials Of Human Anatomy: Thorax And Abdomen Ed 2. Vol. I Current Book International, Culcutta 1994.* *4. Datta [A.K], Essentials Of Human Anatomy: Head And Neck Ed 2. Vol. II, Current Book International, Culcutta .* *5. Singh [Inderbir], Text Book Of Anatomy With Colour Atlas: Introduction, Osteology, Upper Extremity, Lower Extremity. Vol I. P Brothers, NewDelhi 1996.*	

	6. *Singh [Inderbir], Text Book Of Anatomy With Colour Atlas: Thorax And Abdomen. Vol II. JP Brothers, New Delhi 1996.* 7. *Singh [Inderbir], Text Book Of Anatomy With Colour Atlas: Head And Neck Central Nervous System. Vol III. JP Brothers, New Delhi 1996.* 8. *Singh [Inderbir],Human Osteology. JP Brothers, New Delhi 1990.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT103	Core Course-2 B.P.T 1st YEAR HUMAN PHYSIOLOGY	L-3 T-0 P-0 C-3
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding the general physiology of the body.	
CO2.	Explaining normal functioning and interaction of all the organ systems.	
CO3.	Identifying applied physiology of various body systems.	
CO4.	Analyzing the response of various body systems to physiological and pathological stress.	
Course Content:		
Unit-1:	**General Physiology:** Cell: morphology, Structure and function of cell organelles. Structure of cell membrane. Transport across cell membrane. Intercellular communication. Homeostasis.	5 Hours
	Blood: Introduction-composition & function of blood. W.B.C., R.B.C., Platelets formation & functions, Immunity. Plasma: composition, formation & functions, Plasma Proteins:-types & functions. Blood Groups- types, significance, determination. Hemoglobin. Haemostasis. Lymph-composition, formation, circulation &functions	6 Hours
Unit-2:	**Cardiovascular System:** Conducting system-components, impulse conduction, Heart valves. Cardiac cycle- definition, phases of cardiac cycle. Cardiac output-definition, normal value, determinants. Stroke volume and its regulation. Heart rate and its regulation. Arterial pulse, Blood pressure-definition, normal values, factors affecting blood pressure. Shock-definition, classification, causes and features. Basic idea of ECG. Cardiovascular changes during exercise.	10 Hours
Unit-3:	**Respiratory System:** Mechanics of respiration. Lung volumes and capacities. Pulmonary circulation, transport of respiratory gases. Factors affecting respiration Regulation of respiration-neural regulation, voluntary control and chemical regulation. Hypoxia, Hypercapnoea, Hypocapnoea. Artificial respiration. Disorders of respiration- dyspnoea, orthopnoea, hyperpnoea, hyperventilation, apnoea, tachypnoea. Respiratory changes during exercise	7 Hours
Unit-4:	**Nerve Muscle Physiology** Muscles- classification, structure, properties, Excitation contraction coupling. Motor unit, EMG, factors affecting muscle tension, Muscle tone, fatigue, exercise. Nerve –structure and function of neurons, classification, properties. Resting membrane potential & Action potential their ionic basis, All or None phenomenon. Neuromuscular transmission. Ionic basis of nerve conduction. Concept of nerve injury & Wallerian degeneration. Synapses. Electrical events in postsynaptic neurons. Inhibition & facilitation at synapses, Chemical transmission of synaptic activity. Principal neurotransmitters.	10 Hours

	Nervous System: Introduction, central and peripheral nervous system, functions of nervous system Reflexes- monosynaptic, polysynaptic, superficial, deep &withdrawal reflex. Sense organ, receptors, electrical & chemical events in receptors, Sensory pathways for touch, temperature, pain, proprioception & others.Control of tone & posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions. Motor mechanism: motor cortex, motor pathway: the descending tracts pyramidal& extra pyramidal tracts-origin, course, termination & functions. Upper motor neuron and lower motor neuron paralysis. Spinal cord lesions- complete transection & hemisection of the spinal cord. Autonomic nervous system: features and actions of parasympathetic & sympathetic nervous system. Hypothalamus. Higher functions of nervous system. Special senses- eye, ear, nose, mouth.	**10 Hours**
Unit-5:	**Renal System** Physiology of kidney and urine formation. Glomerular filtration rate, clearance, Tubular function. Water excretion, concentration of urine-regulation of Na+, Cl-, K+ excretion Physiology of urinary bladder	**5 Hours**
	Digestive System Digestion & absorption of nutrients, Gastrointestinal secretions & their regulation, Functions of Liver & Stomach	**5 Hours**
	Endocrinology Physiology of the endocrine glands – Pituitary, Pineal Body, Thyroid, Parathyroid, Adrenal, Gonads, Thymus, Pancreas. Hormones secreted by these glands, their classifications and functions.	**5 Hours**
	Male & Female Reproductive System Male - Functions of testes, pubertal changes in males, testosterone - action & regulations of secretion. Female - Functions of ovaries and uterus, pubertal changes, menstrual cycle, estrogens and progestron - action and regulation.	**7 Hours**
Text Books:	*1. Sembulingum, K., Essentials of Medical Physiology, 4th edition, JP Medical Pub*	
Reference Books:	*1. Ganong, Review of Medical Physiology , Pub. McGraw Hill, 23rd Edition.* *2. Samson Wright's Applied Physiology, Thirteenth Edition (Oxford Medicine Publication)* *3. Guyton & Halls, Medical Physiology, 12th edition, Saunders Elsevier.* *4. Chatterjee, Human Physiology, Central Book Agency.* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT104**	**Core Course-3** **B.P.T 1st YEAR** **BIO-CHEMISTRY**	**L-2** **T-0** **P-0** **C-2**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding the basic concepts and principles of Biochemistry.	
CO2.	Understanding macronutrients, micronutrients and role of enzymes and hormones.	
CO3.	Explaining the bio-molecular, chemical, anabolic and catabolic processes in terms of aerobic and anaerobic metabolism.	
CO4.	Applying the knowledge of biochemical processes for clinical diagnosis.	
Course Content:		
Unit-1:	**Biochemical organization of human cell.**	**2 Hours**
Unit-2:	**Carbohydrates:** Chemistry, Definition, classification with Digestion and Absorption, glycogenesis, glycolysis, TCA cycle. Hormonal regulation of blood glucose, diabetes mellitus, glycosuria, changes in carbohydrate, protein and lipid metabolism.	**4 Hours**
	Proteins: Definition, Importance, Functional, Classification Digestion & absorption, decarboxylation, deamination, transamination, tranmethylation, Urea cycle, clinical signification of serum urea, function of glycine, phenylalanine, tryptophan, methionine, tyrosine.	**4 Hours**
	Enzymes: Definition Modern Classification, Factors, affecting enzymes action diagnostic & therapeutics uses & enzymes, iso-enzymes, competitive Non competitive inhibition, Acid base balance.	**4 Hours**
Unit-3:	**Vitamins:** Definition, Classification, Fat & water soluble vitamins, functions Deficiency manifestations sources & RDA.	**4 Hours**
	Minerals: Ca, P, Fe, I, Zinc, Se, Fl, Mg: Functions, Source, Deficiency manifestations	**3 Hours**
	Lipid: Definition, classification with examples, biomedical importance, phospholipids & lipoproteins functions, Digestion & absorption of lipid B- oxidation of fatty acid with energetic, ketone bodies and their & metabolism, cholesterol, importance of cholesterol, obesity	**3 Hours**
Unit-4:	**Hormones:** Definition with mechanism of action, and its classification	**3 Hours**

	Nutrition: Composition of food, RDA, BMR, SDA, caloric requirement, balanced diet, kwashiorkor, marasmus, nitrogen balance, major dietary & their importance.	**3 Hours**
	Muscle Contraction: - Mechanism &Biochemical events, Connective Tissue- Biochemistry of connective tissue, collagen, Glyco-protein, proteoglycans	**3 Hours**
	Nucleic acid: - Function of DNA, RNA, genetic code.	**3 Hours**
Unit-5:	**Clinical Biochemistry**: Liver function test, renal function test, and lipid profile in serum	**3 Hours**
	Basic principles of Laboratory: Clinical significance of some important biochemical constituents in serum in various diseases. Introduction to Laboratory apparatus. Safety of measurements. Quality control: Accuracy, precision, Specificity, Limits of error, allowable in laboratory, Percentage Error. Basic principles and estimation of blood gases and PH. Basic principles and estimation of Electrolyte.	**4 Hours**
Text Books:	1. *Murray [Robert Kk], Harper's Bio Chemistry Ed 24, Prentice Hall. 1996, p925,* 2. *Ramakrishna [S], Prasanna [Kg], Rajan [R], Text Book of Medical Biochemistry, Edl, Orient Langman, Bombay 1980.* 3. *Vasudevan [Dm] And SreeKumari [S], Text Book of Bio Chemistry for Medical* 4. *Students, Ed 1, Jaypee Brothers, New Delhi, 1995, p637.* 5. *Das [Debajyothi], Biochemistry, Ed. 7, Academic Publishers Calcutta, 1992.* 6. *Prasad Rm, Rm's Physiotherapy Textbook Series, Text book of Biochemistry for Bachelor of Physiotherapy First Edition, RM Publications, Mangalore.*	
Reference Books:	1. *Lehininger [albert] et. Al., principles of biochemistry, ed. 3, lbs publishers, delhi, 1993, p1143* 2. *Orten [james m] and neuhaus [oho.w]. Human biochemistry, ed. 9, mosby, st.louis,1975 p994* 3. *Strayer [lubert], biochemistry, ed. 4, freeman &co., ny.1995, p1064.* 4. *Devlin [thomas m], biochemistry with clinical correalation, ed. 4, willey libs, ny 1997,P1186.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT105	**Discipline Specific Course-1** **B.P.T 1st YEAR** **FUNDAMENTALS OF EXERCISE THERAPY**	**L-3 T-0 P-0 C-3**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding the basic principles, concepts and terminologies of fundamental exercise therapy and yogic practice.	
CO2.	Explaining biomechanics of fundamental exercise therapy and yogic practice**.**	
CO3.	Describing the concepts of therapeutic gymnasium, hydrotherapy and goniometry.	
CO4.	Analyzing the use of various types of exercises in appropriate condition.	
Course Content:		
Unit-1:	**Terminologies and Basic Biomechanics:** Introduction to movements, Types of muscle contraction (isotonic -concentric, eccentric, isometric-static), Types of muscle work, Group action of muscle.	**2 Hours**
	Kinematics of movement: Joint movements, axis and plane. Direction of motion, Magnitude of motion, rate of motion.	**3 Hours**
	Kinetics of movement: Force- analysis of force (parallelogram law only), tension, gravity, center of gravity, line of gravity, base of support, Friction- types, Importance, effects and uses, Equilibrium, Fixation and stabilization, Potential energy, kinetic energy, work, power, speed, velocity, acceleration, mass, momentum, inertia, moment arm, torque	**5 Hours**
	Simple machines: Lever- Definition, types and uses, anatomical levers, functional levers in physiotherapy, pulley- types and uses, mechanical advantage, anatomical pulley- Angle of pull, pendulum, Elasticity, springs—properties of springs, springs in series and parallel, Hooke‘s law, Pendulum.	**5 Hours**
Unit-2:	**Therapeutic gymnasium**: Orientation to various equipments used in exercise therapy department with its principles, effect and uses – pulleys(system of pulleys, double pulley block), springs(properties of springs, springs in series and parallel), finger ladder, theraband, dumbbells, weights, weight cuff, sand bags, therapeutic balls, parallel bars, shoulder wheel, shoulder ladder, pronator - supinator instrument, static cycle, rowing machine, ankle exerciser, balancing boards, springs**.**	**5 Hours**
	Starting and derived positions: All fundamental and derived positions with effect, uses and muscle work.	**3 Hours**
	Classification of movements (active & passive) Active movements: Free exercise-Definition, classification, principles, technique, indication, contraindication, effects and uses. Active assisted exercise: definition, principles, technique, indication, contraindication, effect and uses.	**15 Hours**

	Assisted- resisted exercise: definition, principles, technique, indication, contraindication, effects and uses. Passive movements: Causes of immobility, Classification of Passive movements, and Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses, Techniques of giving passive movements.	
Unit-3:	**Suspension Therapy:** Definition, Principles of suspension & Types of suspension therapy: axial, vertical & pendular. Equipments& accessories, Indications & contraindications, Benefits of suspension therapy. Effects and uses & therapeutic application- Techniques of suspension therapy for upper limb & lower limb.	**5 Hours**
	Measurement of Joint range: ROM-Definition, Normal ROM for all peripheral joints & spine, Goniometer-parts, types, principles, uses, limitations of goniometry, Techniques for measurement of ROM for all peripheral joints, spine & TMJ. End feel & its types	**10 Hours**
Unit-4:	**Hydrostatics and Hydrodynamics:** History, Properties of water, Specific gravity, Hydrostatic pressure, Archimedes principle, Buoyancy-law of floatation, Effect of buoyancy on movements performed in water, Equilibrium of a floating body, Bernoulli's theorem, Physiological effects of exercise in water. Equipements used in hydrotherapy : Whirlpool bath and Hubbard tank.	**5 Hours**
Unit-5:	**Relaxation**: Definitions: Muscle Tone, Postural tone, Voluntary Movement. Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism. Indications of relaxation, Methods & techniques of relaxation-Principles &uses: General, Local, Jacobson's, Mitchell's, additional methods. Postures to promote relaxation	**4 Hours**
	Yoga: Principles of yoga, basic yogic postures and their physiological effects. Yoga as applied to physiotherapy	**8 Hours**
Text Books:	1. *Dena Gardiner K, Principles of Exercise Therapy, Macmillan.* 2. *Margaret Hollis Lab Exercise Therapy, Pub. Wiley.* 3. *Duffield, Hydrotherapy Baillière Tindall.* 4. *Cynthia Norkins, Measurement of Joint Motion F.A. Davis*	
Reference Books:	*1. Carolyn Kisner, Lynn Allen Colby, Therapeutic Exercise: Foundations and Techniques, Fa Davis.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT106	**Discipline Specific Course-2** **B.P.T 1st YEAR** **FUNDAMENTALS OF ELECTROTHERAPY**	**L-3 T-0 P-0 C-3**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding the fundamental concepts and applications of physics and basic electrical components.	
CO2.	Explaining the use of electrodiagnosis.	
CO3.	Describing principles, techniques, effects, indications, contraindications and dosage parameter for low frequency currents, medium frequency currents, heat and cold modalities.	
CO4.	Analyzing the use of current modalities, superficial heat therapy and cryotherapy in appropriate diseased conditions.	
Course Content:		
Unit-1:	**Physics and Basic Electrical Components:** Conductors & Insulators. Static Electricity- Electric Field, Potential difference & Capacitance. Current Electricity – E.M.F., Ohm's Law, Thermal Effects of Electrical Currents. Magnetism – Properties of Magnet, Electromagnetic Induction, Lenz's Law. Risk factors on prolonged exposure to E.M. field**.** Rheostat- Types, Potentiometer, Ammeter, Oscilloscope, Transformer -Types, Capacitor, Inductor, Semi-conductors, Thermionic Valves, Transistors, Pulse Generator. Mains Supply – Fuse, Plug, Switch, Wiring of the house, Dynamo. Shock – Types, Effects, Precaution & Treatment. E.M. spectrum - Laws of transmission reflection - refraction - absorption - attenuation. Classification of currents, types of currents, types of gels, their significance and use.	**10 Hours**
Unit-2: Low Frequency Currents	**Basic types, physiological & therapeutic effects of :** Direct Current and Alternating Current	**3 Hours**
	Types of Current used in Therapeutics Modified D.C : Faradic Current & Galvanic Current Modified A.C : Sinusoidal Current & Diadynamic Current.	**4 Hours**
	Faradic Current: Definition, Modifications, Techniques of Application. Individual Muscle and Group Muscle stimulation, Physiological & Therapeutic effects of Faradic Current, Precautions, Indications & Contra-Indications, Dangers, Dosimetry. Applications of faradic current- faradic foot bath, faradism under pressure.	**8 Hours**
	Galvanic Current: Definition, Modifications, Physiological & Therapeutic effects of Galvanic Current, Indications & Contra-Indications, Dangers, Effect of interrupted galvanic current on normally innervated, denervated and partially denervated muscles & its Dosimetry.	**6 Hours**

	Cathodal /Anodal galvanism.	**2 Hours**
	S. D. Curve, FG test, Reaction of degeneration, Chronaxie & Rheobase	**2 Hours**
	Principles of Application Electrode tissue interface, Tissue Impedance, Types of Electrode, Size & Placement of Electrode Waterbath, Unipolar, Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance	**4 Hours**
	TENS Pain Gate modulation theory. Definition, its principle, Types of TENS, Types of Electrodes & Placement of Electrodes, Physiological & Therapeutic effects, Indications & Contraindications & its Dosimetry	**5 Hours**
Unit-3: Medium Frequency Currents	**Interferential Therapy:** Define IFT, Principle of Production of IFT, Interference System, Dosage Parameters for IFT, Electrode placement in IFT, Physiological & Therapeutic effects, Indications, Contraindications & Dosimetry.	**5 Hours**
	Microcurrent, Russian & rebox current, its application and use.	**3 Hours**
Unit-4: Heating Modalities	**Paraffin Wax Therapy:** Principle of paraffin Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers, Dosimetry.	**5 Hours**
	Contrast Bath: Principle, Methods of application, Therapeutic uses, indications and contraindications and dosimetry.	**4 Hours**
	Moist Heat Therapy: Its principle and types: Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications**.**	**4 Hours**
Unit-5: Cryotherapy	Define- Cryotherapy, Principle - Latent heat of fusion. Therapeutic & physiological effects and uses, Techniques and applications, Indications, contraindications, precautions and Potential harmful effects of various cooling agents & its dosimetry.	**5 Hours**
Text Books:	1. *Clayton's Electro Therapy, CBS Publishers & Distributors* 2. *Low & Reed, Electro therapy Explained, Butterworth-Heinemann Limited.*	
Reference Books:	1. *Nelson & Currier, Clinical Electro Therapy Appleton & Lange.* 2. *Kahn, Electro Therapy , Churchill Livingstone.* 3. *Jagmohan Singh, Electrotherapy, Jaypee Brothers.* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT139**	**Ability Enhancement CompulsoryCourse-1** **B.P.T 1st YEAR** **ENGLISH COMMUNICATION**	**L-2** **T-0** **P-2** **C-3**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding of concepts and importance of English as a language.	
CO2.	Identifying use of basic communicative skills in real life situations.	
CO3.	Applying the basic skills of English for professional communication among peers and teachers.	
Course Content:		
Unit-1: Functional Grammar	a) Parts of speech, articles, tenses, verbs and modals b) Synonyms, antonyms, homophones, homonyms, one word substitution. c) Practice of daily use words, numerals and tongue twisters d) Vocabulary building, Construction of simple sentences: Basic sentence pattern, subject and Predicate *[Note: As part of classroom activity, language games, tongue & jaw exercises, simple passages from the newspapers for oral drills in the classroom and practice tests (written and oral)]*	**12 Hours**
Unit-2: Fundamentals of Communication	a) Communication Process b) Barriers to communication c) Verbal and non verbal communication d) Communication at work e) Effective Listening f) Grapevine g) Formal and informal Communication h) Interpersonal Communication i) Group Discussions and conducting meetings effectively j) Giving and receiving feedback (positive & negative)	**12 Hours**
Unit-3: Professional Skills	a) Email and report writing b) Joining letter, cover letter & resignation letter c) Inter- office memo, formal business letter, informal notes d) Minutes of meeting, reporting events, summary writing *[Note: As part of classroom activity, use of standard templates and scenario buildings, practice sessions in classroom and homework assignments.]*	**12 Hours**
Unit-4: Interview Skills	a) Personal Introduction b) Developing skill to (a) Debate (b)Discussion, Basics of GD & styles of GD c) Discussion in groups and group discussion on current issues. d) Body language e) Non-verbal cues & soft skills.	**10 Hours**

	f) Steps to prepare for an interview and mock interviews *[Note: As part of classroom activity, language games, extensive coverage of contemporary issues for GDs, facing mock interview sessions.]*	
Text Books:	*1. English Grammar Composition & Usage by J.C. Nesfield, Macmillan Publishers*	
Reference Books:	*2. The Business letters by Madan Sood, Goodwill Publishing House, New Delhi* *3. Communication Skills by Sanjay Kumar & PushpLata, Oxford University Press* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT109**	**Ability Enhancement CompulsoryCourse-2** **B.P.T 1st YEAR** **ENVIRONMENTAL STUDIES**	**L-2** **T-0** **P-0** **C-2**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding the concepts of ecology.	
CO2.	Explaining natural resources, environmental pollution, policies and practices.	
CO3.	Identifying the cause and effect relationship of environment and human community	
CO4.	Creating awareness for saving environment	
Course Content:		
Unit-1:	Definition and Scope of environmental studies, multidisciplinary nature of environmental studies, Concept of sustainability & sustainable development. Ecology and Environment: Concept of an Ecosystem-its structure and functions, Energy Flow in an Ecosystem, Food Chain, Food Web, Ecological Pyramid& Ecological succession, Study of following ecosystems: Forest Ecosystem, Grass land Ecosystem & Aquatic Ecosystem & Desert Ecosystem.	**9 Hours**
Unit-2:	Natural Resources: Renewable & Non-Renewable resources; Land resources and land use change; Land degradation, Soil erosion & desertification. Deforestation: Causes & impacts due to mining, Dam building on forest biodiversity & tribal population. Energy Resources: Renewable & Non-Renewable resources, Energy scenario & use of alternate energy sources, Case studies. Biodiversity: Hot Spots of Biodiversity in India and World, Conservation, Importance and Factors Responsible for Loss of Biodiversity, Bio geographical Classification of India	**10 Hours**
Unit-3:	Environmental Pollutions: Types, Causes, Effects & control; Air, Water, soil & noise pollution, Nuclear hazards & human health risks, Solid waste Management; Control measures of urban & industrial wastes, pollution case studies	**9 Hours**

Unit-4:	Environmental policies & practices: Climate change & Global Warming (Greenhouse Effect),Ozone Layer -Its Depletion and Control Measures, Photochemical Smog, Acid Rain Environmental laws: Environment protection Act; air prevention & control of pollution act, Water Prevention & Control of Pollution Act, Wild Life Protection Act, Forest Conservation Acts, International Acts; Montreal & Kyoto Protocols & Convention on biological diversity, Nature reserves, tribal population & Rights & human wild life conflicts in Indian context	**10 Hours**
Unit-5:	Human Communities & Environment: Human population growth; impacts on environment, human health & welfare, Resettlement & rehabilitation of projects affected person: A case study, Disaster Management; Earthquake, Floods & Droughts, Cyclones & Landslides, Environmental Movements; Chipko, Silent Valley, Vishnoi's of Rajasthan, Environmental Ethics; Role of Indian & other regions & culture in environmental conservation, Environmental communication & public awareness; Case studies	**8 Hours**
Text Books:	1. *"Environmental Chemistry", De, A. K., New Age Publishers Pvt. Ltd.* 2. *"Introduction to Environmental Engineering and Science", Masters, G. M., Prentice Hall India Pvt. Ltd.* 3. *"Fundamentals of Ecology",Odem, E. P., W. B. Sannders Co.*	
Reference Books:	1. *"Biodiversity and Conservation", Bryant, P. J., Hypertext Book* 2. *"Textbook of Environment Studies", Tewari, Khulbe&Tewari, I.K. Publication* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT110	**Ability Enhancement Compulsory Course-3** **B.P.T 1st YEAR** **FIRST AID AND EMERGENCY NURSING**	**L-1 T-1 P-0 C-2**
Course Outcomes :	**On completion of the course, the students will be :**	
CO1.	Understanding the basic principles and concepts of First Aid along with Emergency care in various situations.	
CO2.	Demonstrating the principles and concepts of body mechanics, nutrition, care of instruments in hospitals, environmental safety and bedside management.	
CO3.	Applying the concepts of first aid management in various emergency and casualty situations.	
Course Content:		
Unit-1:	1. Introduction to First Aid. 2. Bandages – Types, binders, splints &slings 3. Examination of Vital Sign	**5 Hours**
Unit-2:	1. First Aid in RTA, Cardiac arrest, Respiratory failure, Burns, Electric shock, Drowning, Spinal cord injuries, Hypovolemic Shock, Poisoning, Snake Bite 2. Promoting safety & consciousness. 3. Instruments used in First Aid (First Aid kit).	**5 Hours**
Unit-3:	1. Concept of emergency- Definition, Importance& Rules 2. Community emergencies: Fire explosions, floods, earthquakes, famine. 3. Community resources: Police assistance; Voluntary agencies; Local, National and International agencies; Ambulance service- their relation to emergencies 4. Casualty management.	**6 Hours**
Unit-4:	1. Introduction: What is nursing, nursing principles, interpersonal relationships. 2. Mobility & Immobility – Principles of body mechanics, Maintenance of normal body alignments & mobility, factors affecting body alignment & mobility, Hazards associated with immobility, alteration in body alignment & mobility, Range of Motion, Exercise, Positions, moving 3. Nursing Position: Environment safety, bed making, prone, lateral, dorsal, dorsal recumbent, Fowler's position comfort measures, aids and rest and sleep.	**4 Hours**
Unit-5:	1. Bed Side Management: Giving and taking bed pan, urinal, observation of stools, urine, sputum, use of catheters, enema giving. 2. Methods Of Giving Nourishment: Oral, Enteral, Nasogastric / Orogastic, gastrotomy, parental 3. Care Of Rubber Goods: simple aseptic technique, sterilization and disinfection.	**3 Hours**
Text Books:	*1. First aid and Emergency Nursing, N.N. Yalayyaswamy, CBS, CBS Publishers & Distributors.*	
Reference Books:	*1. First Aid and Emergency Nursing, I Clement, Jaypee Publishers.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT151	**Skill Enhancement Course-1** **B.P.T 1st YEAR** **HUMAN ANATOMY (LAB)**	**L-0 T-0 P-4 C-2**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Describing all anatomical structures from a regional perspective.	
CO2.	Identifying muscles, bones, bony prominences joints, along with surface landmarks.	
CO3.	Demonstrating movements of joints.	
CO4.	Applying the knowledge of palpation of nerves and arteries.	
Course Content:		**90 Hours**
	1. Identification and description of all anatomical structures with help of models, charts, CD ROMs etc.	
	2. Surface marking of lung pleura fissures and lobes of lungs heart abdominal viscera and important nerves and blood vessels.	
	3. Demonstration of movements of important joints.	
	4. Identification of body prominences on inspection and palpation in the body especially of extremities.	
	5. Points of palpation of Nerves & Arteries.	
Text Books:	1. *Romanes [G J], Cunningham Manual Of Lab Anatomy: Upper And Lower Limb Ed 15Vol 1 Oxford Medical Publication, Oxford 1996, P263.* 2. *Romanes [G J], Cunningham Manual Of Lab Anatomy : Thorax And Abdomen Ed 15 Vol II Oxford Medical Publication, Oxford 1996, P298.* 3. *Romanes [G J], Cunningham Manual Of Lab Anatomy : Head And Neck And Brain Ed 15 Vol II Oxford Medical Publication, Oxford 1996, P346.*	
Reference Books:	1. *Snell [Richard S], Clinical Anatomy For Medical Students: Little Brown And Company Boston. 1995.* 2. *Moorie [Kieth L], Clinically Oriented Anatomy. Ed.3. Williams And Wilkins, Baltimore, 1992.* 3. *Datta [A.K], Essentials Of Human Anatomy: Thorax And Abdomen Ed 2. Vol. I Current Book International, Culcutta 1994.* 4. *Datta [A.K], Essentials Of Human Anatomy: Head And Neck Ed 2. Vol. II, Current Book International, Culcutta .* 5. *Singh [Inderbir], Text Book Of Anatomy With Colour Atlas: Introduction, Osteology, Upper Extremity, Lower Extremity. Vol I. P Brothers, New Delhi 1996.* 6. *Singh [Inderbir], Text Book Of Anatomy With Colour Atlas: Thorax And Abdomen. Vol II. JP Brothers, New Delhi 1996.* 7. *Singh [Inderbir], Text Book Of Anatomy With Colour Atlas: Head And Neck Central Nervous System. Vol III. JP Brothers, New Delhi 1996.* 8. *Singh [Inderbir],Human Osteology. JP Brothers, New Delhi 1990.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT152	Skill Enhancement Course-2 B.P.T 1st YEAR HUMAN PHYSIOLOGY (LAB)	L-0 T-0 P-2 C-1
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding physiological tests and the concepts related to cardiac, pulmonary and neurological systems.	
CO2.	Summarizing the concept of homeostasis, physical fitness and normal Electrocardiogram (ECG).	
CO3.	Applying the principles of homeostasis and hematology to measure blood pressure, spirometry, lung volumes, Hemoglobin, color index and for identification of blood cells.	
CO4.	Developing the concepts of neurophysiology for superficial and deep reflex testing and Electroencephalogram (EEG).	
Course Content:		**46 Hours**
	1. Haematology – (demonstration only). Identification of blood cells, WBC, RBC, Hb % and color index.	
	2. Physical fitness	
	3. Breath holding	
	4. Mercury column test	
	5. Cardiac efficiency test- Hal lad step test- master step test.	
	6. Blood pressure – effects of change in posture & exercise.	
	7. Stethography.	
	8. Voluntary hyperventilation.	
	9. Spirometry	
	10. Lung volumes.	
	11. Perimetry	
	12. Clinical examination (Respiratory, cardio-vascular system / higher functions / memory / time / orientation / motor & sensory system)	
	13. Superficial and deep reflexes	
	14. Tests for the function of cerebellum and cerebrum	
	15. Normal ECG and EEG	

Text Books:	*1. Sembulingum, K., Essentials of Medical Physiology, 4th edition, Jaypee Medical Pub*	
Reference Books:	*1. Ganong, Review of Medical Physiology , Pub. McGraw Hill, 23rd Edition.* *2. Samson Wright's Applied Physiology, Thirteenth Edition (Oxford Medicine Publication .* *3. Guyton & Halls, Medical Physiology, 12th edition, Saunders Elsevier.* *4. Chatterjee, Human Physiology, Central Book Agency* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT153**	**Skill Enhancement Course-3** **B.P.T 1st YEAR** **BIOCHEMISTRY (LAB)**	**L-0** **T-0** **P-2** **C-1**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Demonstrating the concept of health and disease and applying biochemical tests to check for carbohydrates and proteins in samples.	
CO2.	Applying the concepts, theories and principles of human biochemistry tests.	
CO3.	Analyzing the knowledge of biochemical processes to investigate urine, glucose, urea, bilirubin and cholesterol based samples.	
Course Content:		**46 Hours**
	1. Qualitative estimation.	
	2. Test for carbohydrate.	
	3. Test for protein.	
	4. Different constituents of normal and abnormal urine.	
	5. Qualitative estimation of : 1. Glucose ,Urea, Bilirubin, Cholesterol, Total protein A/G ratio 2. Demonstration of SGOT, SGPT, GTT.	
Text Books:	*1. Murray [Robert Kk], Harper's Bio Chemistry Ed 24, Prentice Hall. 1996, p925,* *2. Ramakrishna [S], Prasanna [Kg], Rajan [R], Text Book of Medical Biochemistry, Edl, orient Langman, Bombay 1980, .* *3. Vasudevan [Dm] And SreeKumari [S], Text Book of Bio Chemistry for Medical* *4. Students, Ed 1, Jaypee Brothers, New Delhi, 1995, p637.* *5. Das [Debajyothi], Biochemistry, Ed. 7, Academic Publishers Calcutta, 1992, P648,* *6. Prasad Rm, Rm's Physiotherapy Textbook Series, Text book of Biochemistry for Bachelor of Physiotherapy First Edition, RM Publications, Mangalore.*	
Reference Books:	*1. Lehininger [albert] et. Al., principles of biochemistry, ed. 3, lbs publishers, delhi, 1993, p1143* *2. Orten [james m] and neuhaus [oho.w]. Human biochemistry, ed. 9, mosby, st.louis,1975 p994* *3. Strayer [lubert], biochemistry, ed. 4, wh, freeman & co., ny.1995, p1064.* *4. Devlin [thomas m], biochemistry with clinical correalation, ed. 4, willey libs, ny 1997,P1186.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT154	**Skill Enhancement Course-4** **B.P.T 1st YEAR** **FUNDAMENTALS OF EXERCISE THERAPY (LAB)**	**L-0 T-0 P-2 C-1**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding and applying the basic concepts for the assessment of sensations, reflexes, blood pressure, pulse rate, chest expansion and respiratory rate.	
CO2.	Utilizing the basic principles and concepts of Exercise therapy, joint movements, free exercises, relaxation techniques, yoga, starting and derived positions.	
CO3.	Developing the basic concepts of using suspension therapy, goniometry, the various equipment used in a clinical therapeutic gymnasium setting.	
Course Content:		**46 Hours**
	1. Starting & derived positions	
	2. Therapeutic Gymnasium, suspension therapy, use of accessories such as pulleys springs, shoulder wheel, crutches, finger ladder, therapeutic balls, parallel bars etc applied Biomechanical principles.	
	3. Goniometry	
	4. Assessment of Sensations / Reflex testing.	
	5. Preventive measures and therapeutic benefits of yoga and physiotherapy.	
	6. Assessment of Blood pressure / pulse rate / chest expansion & Respiratory rate	
	7. Therapeutic exercises: spinal extension exercise, spinal flexion exercises, Abdominal exercise, stretching & balancing exercise. Quick relaxation, Deep Relaxation.	
	8. Free exercises, Active & passive movements of all joints.	
	9. Yoga- Surya Namaskar, Relaxation technique- yognidra, shavsan	
	10. Demonstration of Asanas and its therapeutic use in the physiotherapy in brief: Padahastasana Padmagusthanasana, Padmasana, Bhujangasana, Paschimottanasana, Savasana, Dhanurasana, Yogamudrasana, Uttanpadasana, Vajrasana, Setubandhasana, Gomukhasana, Pavanmuktaasana	
Text Books:	*1. Dena Gardiner K, Principles of Exercise Therapy, Macmillan.* *2. Margaret Hollis Lab Exercise Therapy, Pub. Wiley.* *3. Duffield, Hydrotherapy Baillière Tindall.* *4. Cynthia Norkins, Measurement of Joint Motion F.A. Davis.*	
Reference Books:	*1. Carolyn Kisner, Lynn Allen Colby, Therapeutic Exercise: Foundations and Techniques, FA Davis* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT155**	**Skill Enhancement Course-5** **B.P.T 1st YEAR** **FUNDAMENTALS OF ELECTROTHERAPY (LAB)**	**L-0** **T-0** **P-2** **C-1**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Identifying various modalities.	
CO2.	Applying heat and cold therapy, low frequency and medium frequency currents and TENS.	
CO3.	Practicing with faradic and galvanic currents to elicit muscle stimulation.	
CO4:	Analyzing the electrodiagnostic procedures.	
Course Content:		**46 Hours**
	1. Panel diagrams - Identification of components - Testing the mains supply &Machines	
	2. Skills of application of electric agents and superficial heating modalities.	
Text Books:	*1. Clayton's Electro Therapy, CBS Publishers & Distributors* *2. Low & Reed, Electro therapy Explained, Butterworth-Heinemann Limited.*	
Reference Books:	*1. Nelson & Currier, Clinical Electro Therapy Appleton & Lange.* *2. Kahn, Electro Therapy, Churchill Livingstone.* *3. Jagmohan Singh, Electrotherapy, Jaypee.* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT201**	**Discipline Specific Course-3** **BPT 2ND YEAR** **ELECTROTHERAPY AND ACTINOTHERAPY**	**L-3** **T-0** **P-0** **C-3**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Recalling and describing the concepts, working principles, physiological and therapeutic effects, methods of application, indications, and contraindications of electrotherapeutic and pharmaco-therapeutic modalities.	
CO2.	Understanding the concepts of electro-diagnostic procedures	
CO3.	Applying the concepts of basic electrical components, low and medium frequency currents, superficial heating modalities and nerve muscle physiology.	
CO4.	Utilizing the theoretical knowledge in wound care and generating treatment plans with specific dosage and analyzing the modality of choice.	
Course Content:		
Unit-1:	**Overview of basic electrical components, low frequency currents, medium frequency currents, heating modalities and nerve muscle physiology.**	**4 Hours**
Unit-2: Low Frequency Currents	1. **HVPGS:** Parameters &its uses	**3 Hours**
	2. **Electro-Diagnosis:** S. D. Curve, Reaction of degeneration, Chronaxie & Rheobase. Outline of EMG & Nerve conduction velocity. Biofeedback	**8 Hours**
	3. **Iontophoresis:** Definition and principles & factors Indications, effects, techniques, contraindications, precautions and Potential harmful effects. Techniques of Application of Iontophoresis, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhydrosis, wound healing.	**5 Hours**
	4. **Types of Electrical Stimulators** NMES- Construction component. Neuro-muscular diagnostic stimulator-construction, Components and working Principles	**5 Hours**
Unit-3: Thermal Therapy Modalities	**Infrared Therapy:** Types of generators**,** Therapeutic effects and uses, Techniques of application, dosimetry, Indications, contraindications precautions and Potential harmful effects.	**6 Hours**
Unit-4: High Frequency Currents	**1. Ultrasound:** Define Ultrasound, Frequency, Production of US, Continuous & Pulsed mode, Intensity, Thermal effects, Non- thermal effects, Principles & Application of US: Direct contact, Water bag, Water bath, Solid sterile gel pack method for wound. Uses of US, Indications, Contraindications, Dangers of Ultrasound & its Dosimetry. Application of U.S: Phonophorosis.	**6 Hours**

	2. Short Wave Diathermy: Define short wave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications, Contraindications, Dangers & Dosimetry	**8 Hours**
	3. Microwave Diathermy: Production, principle, circuit diagram, Characteristics and therapeutic effects, Application techniques, indications, contraindications, precautions and potential harmful effects, Dosimetry	**4 Hours**
Unit-5:	**1. Laser:** Introduction, principle of production, types of lasers, Physiological & therapeutic effects and potential harmful effects. Indication, contraindications, precautions, method of application, dosimetry	**8 Hours**
	2. Ultraviolet therapy: Production and types of generators. Physiological and therapeutic effects, Indications and contraindications and Potential harmful effects. Methods of application, Comparison between UVR & IR Therapy	**6 Hours**
	3. **Care of wound:** Application of Electrical Agents like Therapeutic currents, Ultrasound, U.V.R. & laser, etc	**2 Hours**
	4. **Combination Therapy:** Application and benefits	**2 Hours**
	5. Traction instruments: Rationale, technique, parts, indications, contraindications, precautions of electric traction equipments, dosimetry.	**3 Hours**
Text Books:	*1. Clayton's Electro Therapy, CBS Publishers &Distributors* *2. Low & Reed, Electro therapy Explained , Butterworth-Heinemann Limited,2000*	
Reference Books:	***1.*** *Nelson & Currier, Clinical Electro Therapy Appleton &Lange.* ***2.*** *Kahn, Electro Therapy , Churchill Livingstone,2000* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT202**	**Discipline Specific Course-4** **BPT 2ND YEAR** **EXERCISE THERAPY**	**L-3** **T-0** **P-0** **C-3**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding the concepts, principles and techniques of exercise therapy in-depth.	
CO2.	Explaining the basic concepts, indications, contraindications and precautions of various types and modes of exercises, home program and ergonomics	
CO3.	Summarizing limb-muscle girth measurement, balance, coordination, posture, muscle re- education and walking aids.	
CO4.	Applying the concepts of muscle testing, various exercises, walking aids measurements and goniometry.	
Course Content:		
Unit-1:	**Methods of Testing** **1.** Manual Muscle Testing: Concept, introduction, significance, Principles & Aims, Indications & Limitations, Grade systems; Techniques of MMT for group & individual muscles: Techniques of MMT for upper limb /lower limb/spine	**5 Hours**
	2. Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf.	**2 Hours**
	3. Measurement of Limb Length: true limb length, apparent limb length, segmental limb length	**2 Hours**
	4. Review of goniometry of upper limb, lower limb and trunk	**2 Hours**
Unit-2:	**1.Resistedexercise:** Definition, classification, principles, technique, indication, contraindication, effects and uses. Difference of manual and mechanical resistance, Specific regimes- Delormes, Oxford, Macqeen, circuit weight training, Types of isometrics.	**4 Hours**
	2.Muscle Stretching: Stretching – Definition of terms related to stretching; Tissue response towards immobilization and elongation, Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures, Precautions indications and contraindications of stretching, Techniques of stretching for group & individual muscles.	**3 Hours**
	3. **Joint Mobility**: Joint ranges (outer, middle, inner ranges), stiffness, range and limitations**.** **Peripheral Joint Mobilization:** Biomechanical basis for mobilization, Effects of joint mobilization, Indications and contraindications, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.	**5 Hours**

Unit-3:	**1.Massage:** Definition & principle of Massage, Techniques, Indications and Contraindications, Physiological Effects of Massage on Various Body Systems, Types of massage	**6 Hours**
	2.Re-educationof muscles: Concept, technique, spatial and temporal summation., Various reduction techniques and facilitating methods, Progressive strengthening of various muscle groups in Grade-I-Grade IV, Muscle strengthening technique	**4 Hours**
	3. Proprioceptive Neuromuscular Facilitation: Definitions & goals Basic neurophysiologic principles of PNF: Muscular activity, Diagonal patterns of movement: upper limb, lower limb, Procedure: components of PNF, Techniques of facilitation, Mobility: Contract relax, Hold relax, Rhythmic initiation, Strengthening: Slow reversals, repeated contractions, timing for emphasis, Stability: Alternating isometric, rhythmic stabilization, Skill: timing for emphasis, resisted progression, Endurance: slow reversals, agonist reversal. Indications &contraindications.	**6 Hours**
	4. Functional Re-education: Functional motor skills, e Motor skills to function independently in ADLs Mobility, Bed / Wheel chair mobility, ambulation Application of mat exercises Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lower limb and Upper limb activities.	**5 Hours**
	5. Individual and Group Exercises: Advantages and Disadvantages, Organization of Group exercises- Indication, contraindication, types	**1 Hour**
	6. Principles of Home program & Ergonomic advise	**1 Hour**
Unit-4:	1. **Balance & Co-ordination: its re-education** **Balance:** Definition, Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output Components of balance (sensory, musculoskeletal and biomechanical) Causes of impaired balance, Examination & evaluation of impaired balance, Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types Balance retraining **Co-ordination Exercise:** Definitions: Co-ordination, Inco-ordination, Causes for Inco- ordination, & Test for co-ordination: equilibrium test, non-equilibrium test Principles of co-ordination exercise Frenkel‘s Exercise: uses of Frenkel‘s exercise, technique of Frenkel‘s exercise, progression, home exercise.	**6 Hours**
	2. Walking Aids and crutch walking: Types, Measurements, Prescription, Training & Evaluation: Crutches, Canes, frame. **Crutch Walking:** Description of crutch - components, classification, Good crutch, measurements, Crutch use- Preparation, Training, counseling., Crutch gaits- types, & significance, Crutch complications- Palsy, dependency etc.	**5 Hours**

	3. Posture: Definition, Ideal & impaired postures, biomechanical mechanism of posture, types of faulty Posture, Principles of re-education: corrective methods and techniques, Patient education.	**5 Hours**
Unit-5:	**1. Hydrotherapy &Aquatic exercises:** Indication, contraindication, benefits, dangers and precautions, Hydrotherapy regimes of exercises, Hydrotherapy exercise for all age groups, Types of pools and baths	**2 Hours**
	2. Aerobic Exercise: Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.	**3 Hours**
	3. Techniques to improve Pulmonary function: Breathing exercises-Goals, Types– Inspiratory, Expiratory, Segmental. Forced expiratory Techniques-Huffing/ Coughing, Incentive Spirometry, Peak flow meter. Postural drainage.	**3 Hours**
Text Books:	1. *Kisner and Colby. F.A. Davis, Therapeutic Exercises Foundations andTechniques* 2. *Williams and Wilkins, Therapeutic Exercise,Basmajian.* 3. *Hollis, Lab Exercise Therapy, Blackwell ScientificPublications.* 4. *Gardiner, Principle of Exercise Therapy, C.B.S.Delhi.* 5. *Norkins& White F.A. Davis, Measurement of Joint Motion: A Guide toGoniometry* 6. *Wood - W.B. Saunders, Beard's Massage.*	
Reference Books:	1. *Butterworth Heinmann, Hydrotherapy, Principles and Practices, Campion.* 2. *Kendal, Muscle testing and functions, Williams & Wilkins.* 3. *Daniels and Worthingham's - Muscle testing - Hislop& Montgomery - W.B.Saunder.* 4. *Edmond Mosby Manipulation and Mobilizations extremities and spinaltechniques.* 5. *Bates and Hanson, Aquatic Exercise Therapy, W.B.Saunders.* 6. *Wadsworth Lippincott Manual examination and treatment of spine andextremities.* 7. *Margarett Hollis, Massage for therapist: MargarettHollis* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT203**	**Discipline Specific Course-5** **BPT 2ND YEAR** **BIOMECHANICS AND KINESIOLOGY**	**L-3** **T-0** **P-0** **C-3**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Recalling the knowledge of human anatomy and fundamentals of exercise therapy.	
CO2.	Understanding the concepts and principles of biomechanics	
CO3.	Analyzing the application of concepts and principles of biomechanics in musculoskeletal function and dysfunction.	
CO4.	Applying concepts of anatomy and mechanics to the joint motion, gait and posture.	
Course Content:		
Unit-1:	**1.Mechanics** - Definition of mechanics and Biomechanics	**1 Hour**
	2. Motion: Definition, types of motion, plane and axis of motion, factor determining the kind and modification of motion	**2 Hours**
	3.Force - Definition, diagrammatic representation of force, point of application, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pull of muscle	**3 Hours**
Unit-2:	1. **Friction :** Definition, effects and uses	**1 Hour**
	2. **Gravity** - Definition, line of gravity, Centre of gravity**,** center of mass	**1 Hour**
	3. **Equilibrium** - Supporting base, types, and equilibrium in static and dynamic state	**1 Hour**
Unit-3:	1. **Levers** - Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever inhuman body	**2 Hours**
	2. Pulleys - system of pulleys, types and application in physiotherapy	**2 Hours**
	3. Elasticity - Definition, stress, strain, Hooke's Law, elastic materials in use.	**2 Hours**
	4. Springs - properties of springs, springs in series and parallel.	**2 Hours**
Unit-4:	**1. Muscle structure and function** • Mobility and stability functions of muscles. • Elements of muscle structure. • Structure and function of sarcomere. • Sliding filament theory of muscle function • Effects of immobilization, and aging on muscle tissue	**5 Hours**

	2. Joint structures and functions: a. Classification of joint, Joint design, Structure of Connective Tissue, Properties of Connective Tissue, joint function, changes with disease, injury, immobilization, exercise, overuse b. Structure and functions of **vertebral column–** Cervical Region, Thoracic Region, Lumbar Region, Sacral Region	**6 Hours** **8 Hours**
	c. Structure and functions of **Upper extremity joints-** Shoulder complex, Elbow complex, Wrist and Hand complex	**10 Hours**
	10 Structure and functions of **Lower extremity joints-** Hip joint, Knee joint, Ankle joint, Foot complex	**10 Hours**
	10 Structure and functions of **Temporo mandibular joint**	**2Hours**
	11 Biomechanics of ribs**.**	**2Hours**
Unit-5:	**Posture and Gait:** Definition of posture**,** Static and dynamic posture, postural control, kinetics and kinematics of posture, ideal posture, effects of posture on age, pregnancy, occupation and recreation; general features of gait, gait initiation, kinematics and kinetics of gait, gait in running and stair climbing effects of age, gender, muscle weakness, paralysis in gait; ADL activities like sitting – to standing and lifting.	**10 Hours**
Text Books:	*1. Joint Structure and Function – A comprehensive Analysis, JP Bros Medical Publishers, New Delhi.* *2. Brunnstrom, Clinical Kinesiology, JP Bros Medical Publishers, Bangalore, 5th Ed 1996, 1stIndian Ed 1998.* *3. Clinical Kinesiology for Physical Therapist Assistants, JP Bros Medical Publishers, Bangalore, 1st Indian Ed 1997* *4. Measurement of Joint Motion – A Guide to Goniometry – Norkins & White - F.A. Davis.* *5. Basic Biomechanics Explained - Low & Reed – Butterworth Heinmann.* *6. Kinesiology: Applied to Pathological Motion – Soderberg Lippincott* *7. Therapeutic Exercise by Carolyn Kisner, F. A. Davis.*	
Reference Books:	*1. Therapeutic exercise by Basmijjan & Wolf.* *2. Muscle testing and functions - Kendall - Williams &Wilkins.* *3. Clinical evaluation - Lacote (for Isolated assessment of abdominal muscles), Churchill Livingstone.* *4. Muscle stretching & Auto stretching - Olaf Evjenth, Alpta RehabForlag.* *5. Orthopedic Evaluation- Magee (only for assessment of posture), Saunders Elsevier.* *6. Physiology of joints: Kapanji; vol 1,2 &3* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT204	**Core Course-4** **BPT 2ND YEAR** **PATHOLOGY AND MICROBIOLOGY**	**L-4** **T-0** **P-0** **C-4**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding the basic concepts of abnormal physiological and pathological disease processes of various body systems.	
CO2.	Describing the concepts of infection prevention, sterilization and disinfectants and mechanisms of disturbances, manifestations of tissue response to injury and homeostasis.	
CO3.	Explaining various microbes, their classification, routes of infection, basic immunological responses, common diagnostic tests and interpretation of tests.	
CO4.	Applying the knowledge of disease processes when assessing and treating a patient.	
Course Content:		
Pathology Unit-1:	1. **General Pathology:** a) Cell injury-causes, mechanism & toxic injuries with special reference to Physical, Chemical, & ionizing radiation b) Reversible injury (degeneration)- types-morphology,- swelling, hyaline, fatty changes, c) Intra-cellular accumulation-hyaline mucin d) Irreversible cell injury-types of necrosis- apoptosis - calcification-dystrophic &metastasis e) Extra-cellular accumulation-amyloidosis, calcification-Pathogenesis-morphology	**5 Hours**
	2. **Inflammation & Repair** **a)** Acute inflammation - features, causes, vascular & cellular events, **b)** Morphologic variations **c)** Inflammatory cells &mediators, **d)** Chronic inflammation:- causes, types, non-specific & granulomatous – with examples **e)** Wound healing by primary & secondary union factors promoting & delaying healing process. **f)** Healing at various sites- including-bones, nerve &muscle **g)** Regeneration &repair	**8 Hours**
	3. **Immuno – pathology (basic concepts)** a) Immune system:- organization-cells- antibodies- regulation of immune responses b) Hyper-sensitivity c) Secondary immuno-deficiency including HIV d) Organ transplantation	**5Hours**

	4. Circulatory disturbances a) Edema - pathogenesis - types - transudates/exudates, b) Chronic venous congestion- lung, liver, spleen c) Thrombosis – formation, fate, effects, d) Embolism – types, clinical effects. e) Infarction – types, common sites f) Gangrenes – types, aetiopathogenesis g) Shock - Pathogenesis, types, morphological changes	**8 Hours**
	5. Deficiency disorders - Vitamins A, B,C,D	**2 Hours**
	6. Growth Disturbance a) Atrophy-malformation, agenesis, dysplasia, b) Neoplasia classification, histogenesis, biologic behaviour, difference between benign & malignant tumour c) Malignant neoplasms- grades, stages, local & distal spread, d) Carcinogenesis – environmental carcinogens e) Chemical, Occupational, heredity, viral f) Precancerous lesions & ca in situ g) Tumor & host interactions - systemic effects-metastatic or direct spread of tumors affecting bones, spinal cord, leading to paraplegia, etc.	**5 Hours**
Unit-2: Specific Pathology	**1. CVS** Atherosclerosis - Ischemic heart diseases - myocardial infarction Pathogenesis / Pathology Hypertension, Cardiac Failure. Peripheral vascular diseases	**5 Hours**
	2.Respiratory COPD; Pneumonia (lobar, bronco, viral); T. B. Primary, secondary - morphologic types, Pleurisies &its complications. Lung collapse – atelectasis	**5 Hours**
	3.NeuroPathology Reaction of nervous tissue to injury - infection & ischemia; Pyogenic meningitis, TBM, Viral, Cerebrovascular diseases - atherosclerosis - Thrombosis, embolism, aneurysm, hypoxia, infarction & hemorrhage. Effects of Hypotension on CNS. Coma Poliomyelitis, Leprosy, Demyelinating diseases, Parkinsonism', Cerebral palsy, metachromatic leucodystrophy, Dementia, Hemiplegia, paraplegia, Pathogenesis & pathology of Wilson's disease, Peripheral nerve injury	**8 Hours**
Unit-3:	**1. Muscle diseases**- Muscular dystrophy, hypertrophy, Pseudo-hypertrophy, atrophy, Polio- myelitis, Myositis ossificance, necrosis. Regeneration, Myotonia	**5 Hours**
	2. Neuro - muscular junction - Myasthenia gravis, Myasthenic syndrome.	**5 Hours**
	3. Bone &Joints – Fracture healing, Osteomyelitis, rickets**,** Osteomalacia, Bone tumors, Osteoporosis Spondylosis, P.I.D, Scoliosis, Haemarthrosis, Gout, T.B., Arthritis - degenerative , inflammatory, RA, Ankylosing spondylitis, Tenosynovitis.	**8 Hours**
	4.Urinary - commonly encountered in paralytic bladder, common urinary tract infections (brief), urinary calculi	**2 Hours**

	5. **G.I. System**- Gastric/ duodenal ulcer, enteric fever, TB, enteritis, Gastritis (related to consumption of NSAID)	**2 Hours**
	6. Endocrine –Hyperthyroidism**,** Diabetes	**2 Hours**
	7.Skin-Melanin pigment disorders- Vitiligo, Taenia versicolor, Psoriasis, Bacterial/fungal infections**,** cutaneous TB, Scleroderma, SLE, Leprosy, Alopacia.	**2 Hours**
	8. Clinical pathology -(including Demonstrations) Anemia (deficiency), T.L.C./ DL.C./ Eosinophilia, E.S.R., C.P.K, Muscle / skin / nerve biopsy	**2 Hours**
Text Books:	*1. Harsh Mohan, Text Book of Pathology JP Medical Pub*	
Reference Books:	*1. Cotran, Kumar, Hobbins, Pathologic Basis of Disease* *2. Bhende, General Pathology, Popular Prakashan.* *** Latest editions of all the suggested books are recommended.**	
Microbiology Unit-4:	**1.General Microbiology**- Introduction & scope	**2 Hours**
	2. Classification of Micro-organisms & morphology of Bacteria	**2 Hours**
	3. Sterilization & disinfection [basic concepts] hospital acquired infection, universal safety precautions, waste disposal	**6 Hours**
	4. Immunology Antigen antibody - reaction & application for diagnosis; Immune response - normal/abnormal; Innate immunity & acquired immunity [vaccination]; Hyper - sensitivity & auto-immunity	**6 Hours**
	5.Laboratory Diagnosis of Infections	**4 Hours**
Unit-5:	**1. Bacteriology** Infection caused by gram +ve cocci; Gas gangrene, clostridium, Diptheria, Infection caused by gram –ve cocci, Septicemia-cholera, Shock, Typhoid, diarrhea, Mycobacterial infection tuberculosis: Leprosy-Atypical Mycobacterium, syphilis - morphology & pathogenesis[VDRL]	**8 Hours**
	2. Viruses Introduction & general properties, HIV, Hepatitis (A,B,E), Polio, measles, congenital viral infections, Rubella, CMV Herpes	**8 Hours**
	3. **Applied Microbiology** as relevant to diseases involving Bones, Joints - Nerves - Muscles-Skin - brain-cardiopulmonary system & burns.	**6 Hours**
Text Books:	*1. Text Book of Microbiology - by R. Ananthnarayan& C.K. Jayram Panikar, Orient Longman.*	
Reference Books:	*1. Textbook of Microbiology- by Arora D.R.* *2. Textbook of Microbiology and Immunology by Parija Subhash Chandra* *3. Concise Microbiology by Baveja C.P.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT205	**Core Course-5** **BPT 2ND YEAR** **PHARMACOLOGY**	**L-3** **T-0** **P-0** **C-3**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding the basic principles of general pharmacology	
CO2.	Describing the basic pharmacology of commonly used drugs.	
CO3.	Analyzing the importance of drugs in the overall treatment including Physiotherapy.	
Course Content:		
Unit-1:	**General Pharmacology** Drug Pharmaco-kinetics, Pharmacodynamics, factors modifying drug effects, Sources & routes of drugs administration. Adverse effects.	**6Hours**
Unit-2:	**1.Drug activity on CNS** Introduction, General anaesthetic, Local anaesthetic; Alcohols, Sedatives & Hypnotics; Anti- Convulsants; Analgesics & Antipyretics-specially Gout & R.A.; Drug therapy in Parkinsonism	**6Hours**
	2. Drugs acting on Peripheral Nervous System Adrenergic Cholinergic	**5 Hours**
Unit-3:	**1. Skeletal muscle relaxants**	**5 Hours**
	2. Drugs acting on CVS Anti-Hypertensive drugs. Shock & Homeostasis, Angina, Congestive Heart Failure	**5 Hours**
	3. Drugs acting on Respiratory System- For Upper Respiratory Tract infections-sinusitis, cough, laryngitis, Pharyngitis, For Bronchial asthma, For COPD- effects of prolonged drug administration.	**3 Hours**
Unit-4:	**1.** Insulin & oral anti-diabetic drugs	**5 Hours**
	2. Antibiotics: classification, pharmacokinetics, uses, side effects & adverse effects	**6 Hours**
	3. Analgesics &antipyretics	**4 Hours**
	4. Chemotherapy General principles, Sulfa drugs in urinary tract infection Tetra/chloro penicillin, Cephalosporin, Aminoglycosides, Macrolides, Anti Tuberculosis, Anti-leprosy	**7 Hours**
Unit-5:	**1. Endocrine:** Introduction Thyroid & Antithyroid, Estrogen + Progesterone, Steroids + Anabolic Steroids	**6Hours**
	2. Haematinics, Vitamin B; Iron	**3 Hours**
	3. Vaccines & Sera	**3 Hours**

	4. Vitamin D, Calcium, Phosphorus, Magnesium	**3Hours**
	5. Anti-emetics	**3Hours**
Text Books:	*1. Dr. K.D. Tripathi, Jaypee ,Essential of Medical Pharmacology , Brothers Medical Publishers*	
Reference Books:	1. *Gaddum, Pharmacology, Gaddums'Pharmacology* 2. *Dr. R.S. Satoskar & Dr. S.D. Bhandarkar, Pharmacology & Pharmacotherapeutics Revised 19 th Edition 2005 by Popular Prakashan.* 3. *Krantx, &Carr, Pharmacology principle of Medical practice, Williams &Wilkins.* 4. *Goodman Pharmacological basis of Therapeutics, L. S. Gilman A* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT206**	**Core Course-6** **BPT 2ND YEAR** **PSYCHOLOGY AND SOCIOLOGY**	**L-3** **T-0** **P-0** **C-3**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding the principles, theories and concepts of Human Psychology	
CO2.	Demonstrating the concepts of sociology, socialization and social groups in terms of healthcare and rehabilitation.	
CO3.	Summarizing the concepts of abnormalities and diseases of human psychology	
CO4.	Outlining the role of family, community, culture, caste system and social change for healthcare and rehabilitation	
Course Content:		
Psychology **Unit-1:**	1. **Learning** - Role of learning in human life-Conditioning	**3 Hours**
	2. **Emotions**- Nature & relationship with autonomic nervous system- Theories of emotions**:** James Lange theory, Schechter Singer theory, Cannon Bard theory	**3 Hours**
	3. **Memory** - Types –Forgetting causes	**3 Hours**
Unit-2:	**1.Attention & perception** Nature of attention [in brief] Nature of perception, Principles of grouping	**4 Hours**
	2. Conflict &Frustration- Types -Common Defense mechanism 'stress-common reactions to frustrations	**4 Hours**
	3. Abnormal Psychology Introduction Difference between normal & abnormal psychology, Causes of abnormal psychology. Anxiety disorders - Phobias, Obsessive compulsive disorder, Hysterical convulsion disorder Affective disorders - Depression, Mania, Bipolar disorders. Psychotic disorders - Types of Schizophrenia	**6 Hours**
Text Books:	1. *Morgan C.T. & King R.A. Introduction to Psychology– 7 edn. [Tata McGraw-Hill publication]* 2. *Mangal, S.K (2002). Advanced Educational Psychology. New Delhi: Prentice Hall*	
Reference Books:	1. *Munn N.L. Introduction to Psychology [Premium Oxford, I.B.P. publishing co.] Clinical Psychology – By Akolkar* 2. *Feldman. R.H(1996). Understanding Psychology. New Delhi: Tata McGraw hill.* 3. *Atkinson(1996). Dictionary of Psychology.* *** Latest editions of all the suggested books are recommended.**	
Sociology Unit-3:	1. **Introduction** - Definition & Relevance with Physiotherapy	**2 Hours**
	2. Sociology &Health- Social factors affecting Health Status, Social Consciousness & Perception of Illness, Decision making in taking treatment	**4 Hours**

	3. Socialization- Definition, Influence, of Social Factors on personality, Socialization in the Hospital & Rehabilitation of the patients	**4 Hours**
	4. Social groups- Concepts, Influence of formal & informal groups of Health & Diseases, Role of Primary & Secondary groups in the Hospital & Rehabilitation Setting	**4 Hours**
Unit-4:	**1. Family-**Influence on human personality, Individual Health, Family & Nutrition, Effects of Sickness on Family Psychosomatic Diseases & Family	**4 Hours**
	2.Community Role of Rural & Urban communities in Public Health, Role of community in determining Beliefs, Practices & Home Remedies in Treatment.	**4 Hours**
	3. Culture-Components Impact on Human Behavior Cultural Meaning of Sickness Response to Sickness & Choice of Treatment, [Role of Culture as Social Consciousness in molding the Perception of Reality] ICU induced Symptoms & Diseases, Sub-Culture of Medical Workers	**4 Hours**
Unit-5:	**1. Caste systems- Features of Modern Caste Systems & its Trends**	**4 Hours**
	2. Social change factors- Human Adaptation, Stress, Deviance, Health Program, Role of Social Planning in the improvement of Health & in Rehabilitation	**4 Hours**
	3. Social Control Definition, Role of norms, Folkways, Customs, Morals, Religion, Law & other means of social controls in the regulation of Human Behavior, Social Deviance & Disease.	**5 Hours**
	4. Social problems of the Disabled- Consequences of the following social problems in relation to sickness disability, remedies to prevent these problems: Population Explosion, Poverty & Unemployment, Beggary. Juvenile Delinquency, Prostitution, Problems of Women in Employmen	**5 Hours**
	5. Social Security & Social Legislation in relation to the Disabled	**2 Hours**
	6. Role of a Social Worker	**1 Hour**
Text Books:	*1. Sachdeva, & Bhusan- An Introduction to Sociology, Kitab Mahal Ltd, Allahabad.*	
Reference Books:	*1. Madan, Indian Social Problems, Vol- I, Allied publications, Madras* *2. Indrani T K, Text Books of Sociology for Graduates Nurses and Physiotherapy Students, JP Brothers, NewDelhi,10* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT210	**Skill Enhancement Course-6 BPT 2ND YEAR COMPUTER APPLICATION**	**L-2 T-0 P-2 C-3**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Understanding the necessity of computer in our daily life.	
CO2.	Explaining basic components of computer, operating systems, peripheral devices, network types and topologies.	
CO3.	Demonstrating the concepts for Microsoft office, problem solving, word-processing, spreadsheet, presentation, software techniques.	
CO4.	Applying the learned concepts in daily life and field of physiotherapy.	
Course Content:		
Unit-1:	**COMPUTER FUNDAMENTALS** 1. Definition, characteristics, history, computer terminology 2. Computer organization, input & output devices, storage devices (including latest devices) 3. Classifications of computers (including current computer systems), binary conversions and ASCII code 4. Application of computers in physiotherapy 5. Computer virus 6. Configuration of Personal computer, Hardware, Types of software, firmware	**8 Hours**
Unit-2:	**OPERATING SYSTEMS** 1.Definition, functions of an operating system, types of operating systems and their characteristics, Installation and system utility 2. Windows: Desktop, start-menu, control panel, accessories, my computer, my documents, recycle bin, printer and mouse settings, maximizing, minimizing, restoring and closing of windows, windows explorer.	**8 Hours**
Unit-3:	**MS WORD** 1.Word Essentials, the word workplace, Parts of MS Word screen, Typing and Editing, Finding and Replacing, Autocorrect and Auto text, Reusing Text and Graphics, use of spell-check & grammar, thesaurus and scientific Symbols, viewing of document by various ways Editing Tools, Formatting Text Formatting Text Character, Formatting Paragraphs, Formatting and Sorting Lists, Page Design and Layout 2. Page Setup: Margins, Page Numbers, and Other Items, Newspaper -style Columns, Working with Tables Creating and formatting of tables and sorting, merging etc. of data in tables 3. Inserting, deleting and sizing of rows and columns in tables, Opening, Saving and Protecting Documents, Locating and Managing Documents Printing, Assembling Documents with Mail Merge.	**8 Hours**

Unit-4:	**MS EXCEL** **1.** Introduction to EXCEL worksheet, calculations in EXCEL, Hierarchy of operation. **2.** Library functions such as logarithm, square root, sum, average, drawing graphs in EXCEL line graph, histogram, pie-chart-Editing chart features such as annotation labeling of axis, changing legends etc.	**6 Hours**
	3. MS POWERPOINT- Creating and Viewing a Presentation, adding animations and Managing Slide Shows etc.	**6 Hours**
	4. INTRODUCTION TO MS ACCESS AND OUTLOOK	**3 Hours**
	5. INTRODUCTION TO SOFTWARES FOR VIEWING PDF DOCUMENTS	**3 Hours**
Unit-5:	**NETWORKING, INTERNET AND INTRANET** Introduction to network and networking devices, Computer networks, networking technology, components of network. Internet – Basic terms, software and hardware requirement for internet, process of internetworking, internet tools. Email- components and working, study of patent websites.	**6 Hours**
Text Books:	1. *Windows Vista: Step by Step, Joan Preppernau and Joyce Cox, Prentice Hall of India, New Delhi, 2007.* 2. *WORD 2000, Guy Hart Davis, BPB Publications, New Delhi*	
Reference Books:	1. *Together with Computer Applications, Aditi Arora, Rachna Sagar Publications.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT251	**Skill Enhancement Course-7** **BPT 2ND YEAR** **ELECTROTHERAPY AND ACTINOTHERAPY (LAB)**	**L-0** **T-0** **P-4** **C-2**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Applying the principles of apparatus testing with preparation of treatment tray.	
CO2.	Utilizing the wind-up procedure after electrotherapy treatment.	
CO3.	Developing the techniques for patient evaluation and application of various electro-modalities.	
Course Content:		**92 Hours**
	1. Demonstrate the technique for patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy.	
	2. Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.	
	3. Demonstrate placement of electrodes for various electrotherapy modalities	
	4. Electrical stimulation for the muscles supplied by the peripheral nerves	
	5. Faradism under Pressure for UL and LL, faradic footbath.	
	6. Plotting of SD curve with Chronaxie and Rheobase	
	7. Demonstrate FG test	
	8. Application of Ultrasound for different regions-various methods of application	
	9. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy	
	10. Demonstrate the technique of UVR exposure for various conditions – calculation of test dose	
	11. Demonstrate treatment method using IFT for various regions	
	12. Calculation of dosage and technique of application of LASER	
	13. Technique of treatment and application of Hydro collator packs, cryotherapy, contrast bath, wax therapy	
	14. Demonstrate the treatment method using whirlpool bath	
	15. Application of TENS.	
	16. Winding up procedure after any electrotherapy treatment method.	
Text Books:	*1. Clayton's Electro Therapy, CBS Publishers &Distributors* *2. Low & Read, Electro therapy Explained , Butterworth-Heinemann Limited,2000*	
Reference Books:	*1. Nelson & Currier, Clinical Electro Therapy Appleton &Lange.* *2. Kahn, Electro Therapy , Churchill Livingstone,2000* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT252**	**Skill Enhancement Course-8** **BPT 2ND YEAR** **EXERCISE THERAPY (LAB)**	**L-0** **T-0** **P-4** **C-2**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Demonstrating the basics of exercise therapy along with goniometry, Manual Muscle Testing, movements and Proprioceptive Neuromuscular Facilitation.	
CO2.	Practicing various types and modes of exercises, functional re-education, stretching and joint mobilization.	
CO3.	Applying the knowledge of limb and girth measurement, gait assessment and posture evaluation.	
Course Content:		**92 Hours**
	1. Demonstrate muscle strength using the principles and technique of MMT	
	2. Demonstrate the techniques for muscle strengthening based on MMT grading	
	3. Demonstrate the PNF techniques	
	4. Demonstrate exercises for training co-ordination – Frenkel's exercise	
	5. Demonstrate techniques for functional re-education	
	6. Demonstrate mobilization of individual joint regions	
	7. Demonstrate the techniques for muscle stretching	
	8. Assess and evaluate posture and gait	
	9. Demonstrate to apply the technique of passive movements	
	10. Demonstrate various techniques of Active movements	
	11. Demonstrate techniques of strengthening muscles using resisted exercises	
	12. Demonstrate techniques for measuring limb length and body circumference.	
	13. Goniometry for various joints of body.	
Text Books:	***1.*** *Kisner and Colby. F.A. Davis, Therapeutic Exercises Foundations and Techniques* ***2.*** *Hollis, Lab Exercise Therapy, Blackwell Scientific Publications.* ***3.*** *Gardiner, Principle of Exercise Therapy, C.B.S. Delhi.* ***4.*** *Norkins & White F.A. Davis, Measurement of Joint Motion: A Guide to Goniometry* ***5.*** *Wood - W.B. Saunders, Beard's Massage.*	
Reference Books:	***1.*** *Kendal, Muscle testing and functions, Williams & Wilkins.* ***2.*** *Daniels and Worthingham's - Muscle testing – Hislop & Montgomery - W.B. Saunder.* ***3.*** *Wadsworth Lippincott Manual examination and treatment of spine and extremities.* ***4.*** *Margarett Hollis, Massage for therapists* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT253**	**Skill Enhancement Course-9** **BPT 2ND YEAR** **BIOMECHANICS AND KINESIOLOGY (LAB)**	**L-0** **T-0** **P-4** **C-2**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Identifying gait parameters, abnormal gait and abnormal posture	
CO2.	Demonstrating movement analysis and muscle insufficiencies,	
CO3.	Applying the concepts of axes and planes to anatomical structures.	
Course Content:		**46 Hours**
	1. To identify axis and planes through which the movements occur at different joints in body.	
	2. Demonstrate examples of active and passive insufficiency of muscles	
	3. Identify normal and abnormal posture	
	4. Normal gait with it parameters and identify abnormal gait	
	5. Movement analysis	
Text Books:	1. *Joint Structure and Function – A comprehensive Analysis, JP Bros Medical Publishers, New Delhi.* 2. *Brunnstrom, Clinical Kinesiology, JP Bros Medical Publishers, Bangalore, 5th Ed 1996, 1stIndian Ed 1998.* 3. *Clinical Kinesiology for Physical Therapist Assistants, JP Bros Medical Publishers, Bangalore, 1st Indian Ed1997* 4. *Measurement of Joint Motion – A Guide to Goniometry – Norkins & White - F.A. Davis.* 5. *Basic Biomechanics Explained - Low & Reed – Butterworth Heinmann.* 6. *Kinesiology: Applied to Pathological Motion – Soderberg Lippincott* 7. *Therapeutic Exercise by Carolyn Kisner, F. A. Davis.*	
Reference Books:	1. *Therapeutic exercise by Basmijjan & Wolf.* 2. *Muscle testing and functions - Kendall - Williams &Wilkins.* 3. *Clinical evaluation - Lacote (for Isolated assessment of abdominal muscles), Churchill Livingstone.* 4. *Muscle stretching & Auto stretching - Olaf Evjenth, Alpta Rehab Forlag.* 5. *Orthopedic Evaluation- Magee (only for assessment of posture), Saunders Elsevier.* 6. *Physiology of joints: Kapanji; vol 1,2 &3* *** Latest editions of all the suggested books are recommended.**	

Course Code: TMUGS202	Value Added Course-1 BPT 2ND YEAR **MANAGING SELF**	L-2 T-1 P-0 C-0
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Utilizing effective verbal and non-verbal communication techniques in formal and informal settings	
CO2.	Understanding and analyzing self and devising a strategy for self growth and development.	
CO3.	Adapting a positive mindset conducive for growth through optimism and constructive thinking.	
CO4.	Utilizing time in the most effective manner and avoiding procrastination.	
CO5.	Making appropriate and responsible decisions through various techniques like SWOT, Simulation and Decision Tree.	
CO6.	Formulating strategies of avoiding time wasters and preparing to-do list to manage priorities and achieve SMART goals.	
Course Content:		
Unit-1:	**Personal Development:** Personal growth and improvement in personality Perception Positive attitude Values and Morals High self motivation and confidence Grooming	**10 Hours**
Unit-2:	**Professional Development:** Goal setting and action planning Effective and assertive communication Decision making. Time Management Presentation Skills Happiness, risk taking and facing unknown	**8 Hours**
Unit-3:	**Career Development:** Resume building Occupational Research Group Discussion (GD) and Personal Interviews (PI)	**12 Hours**
References:	1. Robbins, Stephen P., Judge, Timothy A., Vohra, Neharika, Organizational Behaviour (2018), 18th ed., Pearson Education 2. Tracy, Brian, Time Management (2018), Manjul Publishing House 3. Hill, Napolean, Think and grow rich (2014), Amazing Read 4. Scott, S.J., SMART goals made simple (2014), Create space Independent Pub 5. https://www.hloom.com/resumes/creative-templates/ 6. https://www.mbauniverse.com/group-discussion/topic.php 7. Rathgeber, Holger, Kotter, John, Our Iceberg is melting (2017), Macmillan 8. Burne, Eric, Games People Play (2010), Penguin UK 9. https://www.indeed.com/career-advice/interviewing/job-interview-tips-how-to-make-a-great-impression *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT301	**Core Course-7** **BPT 3rd YEAR** **SURGERY**	**L-3 T-0 P-0 C-3**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Understanding the principles, concepts and indications, surgical approach and management of general, neurological, thoracic, cardiac, abdominal, ENT, gynaecological and plastic surgeries.	
CO2.	Outlining the etiology, clinical features, signs and symptoms, complications, management and surgical treatment of diseases of the arteries and veins.	
CO3.	Applying the knowledge of various disease/surgical conditions during assessment of patient.	
CO4.	Applying the knowledge of various disease/surgical conditions during assessment of patient.	
Course Content:	Summarizing the concepts of puberty, pelvic floor muscles, menstrual cycle, menopause, pregnancy, labour, post- natal phase, family planning and various associated dysfunctions and diseases.	
Unit-1:	**General Surgery:** Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management; Nutrition in the surgical patient. Hemorrhage, Shock. Reasons for Surgery**:** Types of anaesthesia and Incisions; Clips Ligatures and Sutures; Overview of Drainage systems and tubes used in Surgery. Inflammation – acute & chronic-signs, symptoms, complications &management Wounds / ulcers – classification, healing process, management Mastectomy – types, complications &management Amputation – surgical procedures and considerations of amputation.	**10 Hours**
Unit-2:	**Neuro -Surgery:** Head Injury – surgical management Surgical management of Intra cranial & spinal tumors Surgeries of Head & neck in neurosurgical conditions & post-operative care Congenital & childhood disorders of nervous system like Hydrocephalus, spina bifida etc. clinical features, surgical management & post-operative care	**8 Hours**
Unit-3:	**Thoracic surgeries:** Use of mechanical breathing Ventilators in brief. Pulmonary function tests, Investigations of lung disease, Causes, clinical presentation, Diagnosis and treatment of Chest injuries. Definition, Indications, Physiological changes, surgical procedure and Complication of Lung surgeries: Thoracotomy, Pnumonectomy, Lobectomy, segmentectomy, Thoracoplasty, pleurectomy, Pleurodesis and Decortication of the Lung.	**6 Hours**
	Cardiac surgeries: Investigation of patient undergoing cardiac surgery. Indications, Physiological changes, procedure and Complications of heart surgeries: Extra cardiac Operations, Closed Heart surgery, Open Heart Surgery, great vessels surgery, surgery for congenital heart disease. Transplant surgery: Heart, Lung. Cardiac arrest and its management. Introduction of Cardio-Pulmonary Bypass Machine in brief.	**10 Hours**

	Diseases of the Arteries and Veins: Definition, Etiology, Clinical features, signs and symptoms, complications, management and surgical treatment of following diseases : Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease, Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins.	**3 Hours**
Unit-4:	**Abdominal surgeries:** Definition, Indication, Incision, Physiological changes and Complications following Common operations , Abdominal incision , Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy, oesophegeal disorder, Neprectomy, Prostectomy.	**3 Hours**
	E.N.T. Surgery: Sinusitis, Rhinitis, Acute and Chronic Otitis; Upper respiratory tract surgery & post-operative care. Tracheostomy - indications. Surgical approach & management; Surgical procedures in VIIth nerve palsy.	**2 Hours**
	Plastic Surgery: Burns: Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management Skin grafts & flaps - Types, indications with special emphasis to burns, wounds, ulcers Tendon transfers, with special emphasis to hand, foot & facial paralysis, Keloid & Hypertrophied scar management	**4 Hours**
Unit-5: OBS & Gynaec:	**Puberty:** Dynamics.	**1 Hour**
	Pelvic floor muscles	**1 Hour**
	Menstrual Cycle: Physiology, Hormonal regulation, abnormalities, disorders and common problems of menstruation.	**2 Hours**
	Pre, Peri & Post Menopause: Physiology, Consequence, complications & management of Menopause.	**2 Hours**
	Pregnancy: Diagnosis, fertilization, development of the fetus,. Normal, abnormal and multiple gestation , Physiological changes , common complication- PIH, eclampcia, diabetes , hepatitis, german measles , TORCH infection , abortion, antenatal care.	**5 Hours**
	Labour: Normal events of 1st, 2nd and 3rd stages of labour. Complication during labour & management. Assisted delivery: Episiotomy, Forceps delivery, caesarian section	**2 Hours**
	Postnatalphase: Puerperium, Common complications & Management, Lactation, Complications of repeated child bearing with small gaps.	**3 Hours**
	Family planning : Method of Contraception, Medical Termination of pregnancy (MTP)	**2 Hours**
	Dysfunctions &Disease: Prolapse & displacement - Uterine prolapse, Cystocoele, Rectocoele, Enterocoele, Incontinence - types, causes, assessment, management. Infections of female genital tract including sexually transmitted Diseases & PID. Neoplasm of Female reproductive organs & its management.	**3 Hours**
	Gynaecological Surgeries: Definition, Indications and Management of the following surgical procedures – Hysterectomy, Hysterosalpingography, Dilatation and Curettage, Laproscopy, Colposopy	**3 Hours**

Text Books:	1. *Dutta, Text book of Gynecology, New Central Book Agency* 2. *Dutta Text book of Obstetrics, New Central Book Agency* 3. *Manipal Manual of Surgery by Shenoy K. Rajgopal* 4. *A Concise Textbook of Surgery by Das S.* 5. *Cash Textbook Of Heart & Vascular Disorders For Physiotherapists BY P.A. Downie*	
Reference Books:	1. *Bailey & Love's, Short Practice of Under Graduate Surgery, CRC Press, Taylorand FrancisGroup26th edition* 2. *Madhuri – Textbook of physiotherapy for Cardiorespiratory cardiac surgery and Thoracic surgery conditions* 3. *Hough – Physiotherapy in Respiratory Care* 4. *P.A Downie – Cash's Textbook of heart, chest& vascular disease for physiotherapist* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT302	**Core Course-8** **BPT 3rd YEAR** **MEDICINE**	**L-3** **T-0** **P-0** **C-3**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Understanding the concepts, general preventive measures, common signs and symptoms of infectious, circulatory and communicable diseases.	
CO2.	Outlining the concepts, clinical conditions, management and treatment of Cardiovascular, Respiratory, Digestive, Endocrine, Nutritional, Urogenital, Geriatric, Pediatrics and Skin diseases.	
CO3.	Applying the knowledge of various disease conditions during assessment of patient.	
CO4.	Summarizing the definition, defence mechanism, symptomatology, types, causes and various therapies of Psychiatry and drug abuse.	
Course Content:		
Unit-1:	**Introduction:** Brief outline of subject of medicine, a medical patient, common signs & symptoms of disease	**1 Hour**
	Infections: Effects of Infection on the body , Pathology – source and spread of infection , vaccinations , generalized infections , rashes and infection , food poisoning and gastroenteritis , sexually transmitted diseases – Syphilis, Gonorrhea, HIV infections and AIDS.	**2 Hours**
	Diseases of Circulatory System: Thrombosis, Embolism, Gangrene. Hemorrhage, Heart Malformation, various diseases of arteries, diseases of blood forming organs, Anaemia, Leukaemia, Leucocytosis, Peripheral Vascular diseases, diseases of the lymphatic system.	**4 Hours**
	Diseases of the blood: Examinations of blood disorders. cause, clinical manifestations, types and management of Anemia, Hemophilia, Leukaemia, Hemorrhages.	**4 Hours**
Unit-2:	**Introduction to modes of transfer of communicable diseases & general preventive measures.** **Bacterial Diseases:** Tuberculosis, Rheumatic fever, Tetanus, Typhoid fever, Diphtheria, Pneumonia, Bacillary Dysentery **Viral Diseases:** Herpes – simplex and zoster, Varicella, Measles, Mumps, Hepatitis B & C, AIDS & influenza. **Parasitic diseases:** Malaria	**6 Hours**

	Cardiovascular Diseases: Examination of the Cardiovascular System. Clinical manifestations of Cardiovascular disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases and disorders of the heart : Pericarditis, Myocarditis, Endocarditis, Rheumatic Fever, valve disorders, Myocardial infarction, Angina , Congestive cardiac failure, Cardiomyopathy, Ischemic Heart Disease, Coronary Valve disease, Congenital disorders of the Heart, Cardiac Arrest, Hypertension, Hypotension.	**8 Hours**
	Respiratory Diseases: Examination of the Respiratory System. Clinical manifestations of Lung disease. Chronic Obstructive Lung Disease and Restrictive Lung Disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following lung diseases : Chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic Fibrosis, Lung abscess & Empyma , Upper Respiratory Tract Infections, ARDS, Pneumonia, Tuberculosis, Diseases of the pleura, diaphragm and chest wall, Respiratory failure.	**6 Hours**
Unit-3:	**Diseases of the digestive system:** Clinical manifestations of gastrointestinal disease – Aetiology, clinical features, diagnosis, complications and treatment of the following conditions : Reflux Oesophagitis, GI bleeding, Peptic Ulcer disease, Pancreatitis, Ulcerative Colitis, Peritonitis, Infections of Alimentary Tract, Diarrhoea ; Clinical manifestations of liver diseases - Aetiology, clinical features, diagnosis, complications and treatment of the following conditions : Jaundice Cirrhosis of liver, Abscess of liver, Ascitis , Viral Hepatitis, Wilson‘s Disease, Gall stones, Cholycystitis.	**5 Hours**
	Endocrine diseases: Common presenting symptoms of Endocrine disease – common classical disease presentations. Diabetes Mellitus: Etiology, pathogenesis, clinical features, Complications and its management. Hypothyroidism. Hyperthyroidism. Thyrotoxicosis.	**4 Hours**
	Nutritional disorders: Causes, Clinical features, Complications and treatment of: Vitamins and its deficiencies, disorders including rickets and osteomalacia, anemia.	**5 Hours**
	Urogenital disease: Polyuria, Hematuria, Uremia, Anuria, Nephritis, Urinary infections, Urinary calculi. Upper and lower urinary tract infection and acute renal failure.	**4 Hours**
	Diseases of Skin: Conditions – Leprosy, Acne, Boil, Carbuncles, Impetigo, Infections of skin, Herpes, Urticaria, Psoriasis, Skin disorders associated with circulatory disturbances, Defects in Pigmentation, Psoriasis, Alopecia	**5 Hours**
Unit-4:	**Psychiarty:** **Introduction**: Definition, defence mechanism, symptomatology, types & causes of mental Disorders, psychosomatic disorders. **Disorders:** Psychosis – Schizophrenia (including paranoid), maniac depressive psychosis, involvement psychosis. Psychoneurosis – Anxiety, hysteria, anxiety states, neurasthesis, reactive depression, obsessive compulsive neurosis. Organic reaction to – toxins, trauma & infection. Senile dementia. Mental retardation – Definition, causes manifestation and management. **Therapies:**	**6 Hours**

	Psychotherapy – Group therapy, Psychodrama, behaviour modification, family therapy, play therapy, psychoanalysis, hypnosis. Drug therapy; Electro convulsive therapy	
	Geriatric Conditions: Aging Process, Osteoporosis, General Health Care, Wellness Clinic, Hypertension	**4 Hours**
Unit-5:	**Pediatrics:** Normal intra-uterine development of foetus. Normal development & growth. Immunization, Handling of the child, Significance of breast-feeding. Common causes for Developmental disorders: Sepsis, Prematurity, Asphyxia & Brain damage-Cerebral Palsy-types & Medical Management. Spinal Cord Disorders: Poliomyelitis, Spina Bifida, Meningocele, Myelomeningocele. Mental Retardation. Disorders associated with malnutrition. Juvenile RA & other immunological conditions of Musculoskeletal system.	**5 Hours**
	Drug Abuse & Intoxication.	**1 Hour**
Text Books:	1. *Edward, Davidson's Principles and Practices of Medicine, Churchill Livingstone.* 2. *Swash, Hutchinson's Clinical Methods ,Bailliere Tindall.* 3. *Krishna Rao A Short Text Book of Medicine, Jaypee Brothers.* 4. *Ahuja Niraj A Short Text Book of Psychiatry – Jaypee Brothers.* 5. *O.P. Ghai, Essentials of Paediatrics, Inter Print publications* 6. *Davidson, Principles & Practice of Medicine, Elsevier/Churchill Livingstone* 7. *Mukherjee, Growth and Development, Jaypee.*	
Reference Books:	1. *Edward, Davidson's Principles and Practices of Medicine, Churchill Livingstone.* 2. *Swash, Hutchinson's Clinical Methods ,Bailliere Tindall.* 3. *Krishna Rao A Short Text Book of Medicine, Jaypee Brothers.* 4. *Ahuja Niraj A Short Text Book of Psychiatry – Jaypee Brothers.* 5. *O.P. Ghai, Essentials of Paediatrics, Inter Print publications* 6. *Davidson, Principles & Practice of Medicine, Elsevier/Churchill Livingstone* 7. *Mukherjee, Growth and Development, Jaypee.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT305	**Discipline Specific Course-6** **BPT 3rd YEAR** **PHYSICAL DIAGNOSIS AND MANIPULATIVE SKILLS**	**L-3 T-0 P-0 C-3**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Understanding and applying the concepts of subjective and objective assessment of Nervous, Musculoskeletal, Cardiovascular and Pulmonary systems.	
CO2.	Outlining the concepts of Quality of Life.	
CO3.	Analyzing the assessment of pain and obesity.	
CO4.	Concluding with right provisional diagnosis and correct interpretations of clinical tests, special tests and outcome measures.	
Course Content:		
Unit-1:	**Subjective And Objective Assessment Of Nervous System:** Higher Mental Functions, Cranial Nerves, Perception, Cognition, Sensory Assessment, Motor Assessment: Joint mobility, Tone, muscle strength, LLD, girth measurement, Reflexes (Primitive, Superficial & Deep), Voluntary Control, Coordination & Balance Assessment, Involuntary Movements, Posture Evaluation. Pathological Gaits And Gait Analysis (Qualitative & Quantitative)	**21 Hours**
Unit-2:	**Assessment of Cardio Vascular &Pulmonary Dysfunction:** Vital parameters, Chest expansion, Symmetry of chest movement, Breath Sounds & heart sound, Exercise Tolerance - Six Minute Walk test, Theoretical bases of Bruce's protocol, PFT, X-ray Chest, Ankle Brachial Index, Tests for Peripheral Arterial & Venous circulation, ECG &Echo. ABG analysis, Stress Testing & its protocols (arm crank ergometry, treadmill and cycle ergometry)	**20 Hours**
Unit-3:	**Assessment of Musculoskeletal System** : Overview of SOAP Format & ICF Format, Detailed subjective & objective musculoskeletal assessment, Special tests for spine, upper limb and lower limb. Electrodiagnostic tests: EMG/ NCV	**20 Hours**
Unit-4:	**Assessment of pain:** Types, nature, Intensity & quality Scales: VAS, Mc Gill's modified questionnaire, Numerical Rating Scale	**6 Hours**
Unit-5:	**Assessment of Obesity:** Patho physiology, Assessment - BMI, Waist - Hip Ratio	**2 Hours**
	Introduction to Quality of Life	**1 Hour**
Text Books:	1. *Susan B O's Sullivan, Physical Rehabilitation, Assessment and treatment, F A Davis Company* 2. *Magee, Orthopaedic Physical examination, Saunders Elsevier* 3. *Low & Reed, Electro therapy Explained , Butterworth-Heinemann Limited,2000* 4. *Nelson & Currier, Clinical Electro Therapy Appleton &Lange.* 5. *Mishra, Clinical Electromyography ,Elsevier* 6. *Kaltenborn, Mobilisation ,Pub Olaf Norlis Bokhandel*	
Reference Books:	1. *J. A. R. Lenman, Clinical Electromyography, Anthony Elliot Ritchie, Churchill Livingstone* 2. *Donnatelli, Orthopaedic Physical therapy, Churchill Livingstone Elsevier.* 3. *Franck I. Katch, Victor L. Katch, Exercise physiology : energy, nutrition, and human Performance* 4. *Patricia Downie, Cash textbook of Physiotherapy in neurological conditions, JP Publications* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT306	**Core Course-9** **BPT 3rd YEAR** **CLINICAL ORTHOPAEDICS**	**L-3** **T-0** **P-0** **C-3**
Course Outcomes :	**On completion of the course, the students will be:**	
CO1.	Understanding the principles and concepts of orthopedics, inclusive of, clinical and surgical orthopaedic conditions.	
CO2.	Applying the principles of clinical management of fractures, regional and general conditions and various orthopedic surgeries.	
CO3.	Analyzing the clinical conditions and surgeries to develop the concepts of examination of orthopedic patient.	
CO4.	Summarizing the knowledge of various orthopaedic disease conditions &amputations; their identification and management.	
Course Content:		
Unit-1:	**Introduction to Orthopaedics**: Introduction to orthopaedics and its terminology. Clinical examination in an Orthopaedic patient. Common investigative procedures. Radiological and Imaging techniques in Orthopeadics.	**2 Hours**
	Fractures and Dislocations: Fracture - definition, types, signs and symptoms. Fracture healing. Complications of fractures. Conservative and surgical approaches. Principles of management – reduction (open/closed, immobilization etc). Subluxation / dislocations – definition, signs and symptoms, management (conservative and operative).	**2 Hours**
	Upper Limb: Injuries around shoulder complex Injuries around elbow Injuries of forearm Injuries to the wrist. Hand Injuries	**6 Hours**
	Lower Limb: Pelvic fracture Injuries around hip Fracture femur Injuries around the knee Injuries to leg, ankle & foot	**6 Hours**
	Injuries to axial skeleton Classification system (Three column concept, major and minor fracture, stable and unstable fracture).Fracture of cervical spine: various mechanisms of injury, clinical features, complications of spinal injuries and principles of management. Clay shoveller‘s fracture. Hangman‘s fracture. Fracture ofatlas. Jefferson fracture (fracture of the ring of c1). Fracture of the dens. Fracture of thoracic and lumbar regions - mechanism of injury, clinical features, management. Fracture of coccyx. Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.	**4 Hours**

	Dislocations: Outline the mechanism, clinical features, principles of management and complications of recurrent dislocation of upper limb and lower limb.	**2 Hours**
Unit-2:	**Metabolic Bone Diseases:** Osteoporosis. Rickets. Osteomalacia	**3 Hours**
	InfIammatory and Degenerative Conditions: Causes, clinical features, complications, deformities, radiological features and management of the following: Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis. Charcot's Disease. Gouty arthritis. Psoriatic arthritis. Poliomyelitis	**4 Hours**
	Cervical and Lumbar Pathology: Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following : Prolapsed interverbral disc (PIVD), Spinal Canal Stenosis. Spondylosis (cervical and lumbar) Spondylolysis. Spondylolisthesis. Lumbago/Lumbosacral strain. Sacralisation, Lumbarisation, Coccydynia, .Hemivertebra, Approach to patient with low backache	**4 Hours**
Unit-3:	**Bone & Joint Infections**: Outline the etiology, clinical features, management and complications of septic arthritis , osteomyelitis, Tuberculosis (including spinal T.B.)	**8 Hours**
	Bone Tumors: Classify and Outline the Clinical Features, management and complications of the following benign / malignant bone and joint tumors, osteomas, osteosarcomas, osteoclastomas, Ewing's sarcoma, multiple myeloma.	**2 Hours**
	Deformities: Clinical features, complications, medical and surgical management of the following Congenital Deformities - CTEV. CDH. Torticollis. Scoliosis. Flat foot. Vertical talus. Limb deficiencies- Osteogenesis imperfect (fragile ossium). Cervical rib. Acquired Deformities - Acquired Torticollis, Scoliosis, Kyphosis, Lordosis, Genu varum, Genu valgum, Genu recurvatum, Coxa vara, Pes cavus, Hallux rigidus, Hallux valgus, Hammer toe, Metatarsalgia.	**3 Hours**
	Hand Injuries: Outline of clinical features, complications and management of: Flexor and extensor tendon injuries. Crush injury of Hand. Burn injuries of hand.	**2 Hours**
Unit-4:	**Amputations:** Definition, principles, levels of amputation of both lower and upper limbs, indications, complications	**2 Hours**
	Orthopedics Surgery: Principles of Operative Treatment: List indications, contraindication and briefly outline principles of: Athrodesis, Arthroplasty (TKR & THR), Osteotomy, Bone grafting, Tendon Transfers and Arthroscopy.	**4 Hours**
Unit-5:	**Soft Tissue Injuries :** Define: sprains, strains, contusion, tendinitis,rupture, tenosynovitis, tendinosis, bursitis. Mechanism of injury of each, clinical features, management of the following regional conditions	**4 Hours**
	Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis & tendon rupture. Bicipital Tendinitis & rupture. Subacromial Bursitis, Pectorals tendon rupture.	**3 Hours**
	Elbow: Olecranon Bursitis (student's elbow), tennis elbow, golfers elbow. Strains-biceps & triceps.	**2 Hours**

	Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture.	**2 Hours**
	Pelvis and Hip : IT Band Syndrome, Piriformis Syndrome, Strains- quadriceps, hamstrings.	**3 Hours**
	Knee: Osteochondritis Dissecans, Prepatellar and Suprapatellar Bursitis, Chondromalacia Patella, Plica Syndrome, Fat Pad Syndrome (Hoffa's syndrome), Meniscal injuries of knee, Cruciate injuries of knee. Medial and lateral collateral injuries of knee.	**3 Hours**
	Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Strains: Calf muscles.	**3 Hours**
Text Books:	1. *Wilson Watson – Zones, Fractures and Joint Injuries, Churchill Livingstone.* 2. *Mcrae Clinical Orthopaedic Examination , Churchill Livingstone.* 3. *Apley Physical Examination in Orthopaedics, Butterworth Heinmann.* 4. *Essentials OF Orthopaedics Applied Physiotherapy by Joshi Jayant* 5. *Essentials of Orthopaedics For Physiotherapists by Ebnezar John* 6. *Essentials of Orthopaedics by Maheshwari J.*	
Reference Books:	1. *Orthopedic Principles and their Applications- Turek Vol 1,2, Lippincott, Williams and Wilkins* 2. *Pandey &Pandey , Clinical Orthopaedics Diagnosis, Jaypee Brothers.* 3. *Orthopaedic physical therapy by Brtzman Brent* 4. *Cash's Textbook of Orthopaedics and Rheumatology for Physiotherapists by Downie A. Patricia* 5. *Orthopaedic Physical Assessment by Magee J. David* 6. Orthopaedic Physical Therapy by Donatelli A Robert *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT307	**Core Course-10** **BPT 3rd YEAR** **CLINICAL NEUROLOGY**	**L-3** **T-0** **P-0** **C-3**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Recalling basics of Neuroanatomy and Neurophysiology.	
CO2.	Understanding the etiology, pathology, clinical features and treatment methods for various diseases affecting the nervous system.	
CO3.	Applying the principles of clinical neurology in clinical evaluation, investigations, differential diagnosis and management of neurological conditions.	
CO4.	Summarizing the knowledge of various neurological disease conditions; their identification and management.	
Course Content:		
Unit-1:	Basic Neuro Anatomy and Neurophysiology including Development of nervous system	**2 Hours**
	General Assessment and evaluative procedures for the neurological patient.	**2 Hours**
	Review of the principles of the management of a neurological patient.	**3 Hours**
	Application of Neuro Physiology in clinical evaluation, investigations, differential diagnosis of Neurological conditions.	**2 Hours**
	ANS (brief description). Clinical features of ANS disorders, autonomic dysreflexia, ANS system and pain.	**2 Hours**
Unit-2:	Definitions, Etiology, Pathology, Clinical Presentations, Diagnostic approaches including radio diagnosis, Differential Diagnosis, Complication and Medico – Surgical Management of **Pediatric Neurological Disorders:** Cerebral Palsy, Mental Retardation**,** Autism Spectrum Disorders**,** Down syndrome, Spina Bifida, Hydrocephalus, Infantile Hemiplegia, Epilepsy, Poliomyelitis**,** Muscular Dystrophies, Myopathies	**10 Hours**
	Infections and Inflammation of the Nervous System Meningitis, Encephalitis, Neuro Syphilis, Tetanus, Infective and Post Infective Neuropathies, Infective Myelopathies, Spinal Arachnoiditis, Tabes Dorsalis, Transverse Myelitis, Polyneuropathies	**10 Hours**

Unit-3:	**Degenerative and Demyelination Disorders of CNS**: Basal ganglia & extra pyramidal disorders: Parkinsonism, chorea, Athetosis, Hemiballismus, Huntington Disease, Dystonia, Rett's Syndrome etc. Cerebellar: Friedrich's and Cerebellar ataxia. Cerebrum: Alzheimer Disease, Dementia, Multiple sclerosis. Spinal Cord: Non compressive Myelopathy, Peripheral Nerve: Brachial plexus injury, median nerve injury, radial nerve injury, sciatic nerve injury, common peroneal injury, Metabolic Neuropathies: Diabetic neuropathy, Motor Neuron Diseases, NMJ disorders	**10 Hours**
Unit-4:	**Trauma of Nervous System:** Head injury, Spinal cord injury	**5 Hours**
	Compression of Nervous System: Brain tumour, Spinal cord tumour, Tumours on peripheral nervous system, Craniovertebral junction anomilies, Syringomyelia, Intervertebral disc prolapsed, Entrapment neuropathies: suprascapular nerve injuries, carpal tunnel syndrome, cubital tunnel syndrome, crutch palsy, tarsal tunnel syndrome.	**10 Hours**
	Vascular Insult to Nervous System: CVA, VBI	**6 Hours**
Unit-5:	**Nervous system due to Toxic, Metabolic injuries and Nutritional disorders** Metabolic encephalopathies, Vitamin B12 Deficiency, Alcohol related disorders, Nutritional Polyneuropathies, Neurolathyrism	**8 Hours**
Text Books:	*1. Davidson's Principles and Practices of Medicine - Edward – Churchill Livingstone.* *2. Neurology and Neurosurgery Illustrated by Lindsay W. Kenneth* *3. Cash's Textbook of Neurology for Physiotherapists, by Downie A. Patricia* *4. Clinical Neuroanatomy by Snell S. Richard*	
Reference Books:	*1. Brain's Diseases of the Nervous System - Nalton –ELBS.* *2. Guided to clinical Neurology – Mohn & Gaectier – Churchill Livingstone.* *3. Principles of Neurology - Victor – McGraw Hill International edition.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT308	Core Course-11 BPT 3rd YEAR RESEARCH METHODOLOGY AND BIO- STASTISTICS	L-2 T-1 P-0 C-3
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Understanding the principles and concepts of Research methodology.	
CO2.	Describing the appropriate statistical methods required for a particular research design	
CO3.	Outlining the methods of Parametric and Nonparametric Tests, Descriptive statistics and Inferential Statistics.	
CO4.	Choosing the appropriate research design and developing appropriate research hypothesis for a research project.	
CO5.	Developing an appropriate framework for research studies	
Course Content:		
Unit-1:	**Research Methodology:** Introduction to Research methodology: Meaning of research, objectives of research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research.	**6 Hours**
	Review of Literature and its importance-Different methods to review the literature	**4 Hours**
	Research problem: Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem	**8 Hours**
Unit-2:	**Research Methodology** Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design	**8 Hours**
	Measurement & scaling techniques: Measurement scales-nominal, ordinal, ratio and interval scales, Meaning of scaling, its classification, important scaling techniques.	**6 Hours**
Unit-3:	**Research Methodology** Methods of data collection: Primary and secondary source of information, collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules.	**6 Hours**
	Parametric and Nonparametric Tests.	**8 Hours**
	Sampling: Definition, Types- simple, random, stratified, cluster and double sampling. Need for sampling - Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling design errors	**6 Hours**
Unit-4:	**Descriptive statistics:** **Introduction**: Meaning, definition, characteristics of statistics. Importance of the study of statistics, Branches of statistics, Statistics and health science	**5 Hours**
	Tabulation of Data: Basic principles of graphical representation, Types of diagrams, histograms, frequency polygons, smooth frequency polygon, and cumulative frequency curve.	**6 Hours**

	Measures of Central Tendency: Need for measures of central Tendency, Definition and calculation of **Mean** – ungrouped and grouped, interpretation and calculation of Median- ungrouped and grouped, Meaning and calculation of Mode, Guidelines for the use of various measures of central tendency.	**8 Hours**
	Measures of Dispersion: Range, mean deviation, standard deviation & variance. Coefficient of variation, Divergence from normality –skewness, kurtosis.	**4 Hours**
	Probability and standard distributions: Meaning of probability of standard distribution, the binominal distribution, the normal distribution.	**5 Hours**
	Correlation & regression: Karl Pearson's correlation coefficient for two variables, Properties of correlation coefficient, linear regression, regression coefficient, lines & regression equation.	**5 Hours**
Unit-5:	**Inferential Statistics:** Testing of Hypotheses Procedure, Null and Alternative hypothesis, Level of significance, Degrees of freedom.	**5 Hours**
	Chi-square test &student t-test.	**5 Hours**
	Analysis of variance & covariance**:** Analysis of variance (ANOVA), Basic principle of ANOVA, ANOVA technique.	**5 Hours**
Text Books:	*1. Hicks: Research methodology, Churchill Livingstone* *2. Research Methodology by Mustafa (Dr.)A.* *3. Research Methodology: Methods and Techniques by Kothari C.R.* *4. Research Methodology for Health Professionals by Goyal R.C.*	
Reference Books:	*1. B.K. Mahajan, Methods in Biostatistics, Jaypee.* *2. P.N. Arora: Biostatistics & Research methodology* *3. Dr J. A. Khan: Biostatistics & Research methodology, APH Publishing.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT309	**Core Course-12** **BPT 3rd YEAR** **COMMUNITY MEDICINE**	**L-2 T-1 P-0 C-3**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Understanding the concepts of determinants of health, well-being, disease prevention and control.	
CO2.	Summarizing the concepts of epidemiology, different levels of public health administration and health programs in India.	
CO3.	Explaining the concepts of demography, family planning, maternity, child health care, nutrition, occupational & mental health and approaches of health education.	
CO4.	Describing the role of various voluntary organizations, NGOs in community health	
Course Content:		
Unit-1:	**HEALTH AND DISEASE:** Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine, The role of socio-economic and cultural environment in health and disease.	**6 Hours**
Unit-2:	**PRINCIPLES OF EPIDEMIOLOGYANDMETHODS:** Components and Aims, Basic measurements, Methods, Uses of Epidemiology; Infectious disease epidemiology, Dynamics and modes of disease transmission; Host defenses and Immunizing agents, Hazards of Immunization; Disease prevention and control, Disinfection; Screening for Disease: Concept of screening, Aims and Objectives, Uses and types of screening.	**6 Hours**
	EPIDEMIOLOGY OF COMMUNICABLE & NON COMMUNICABLE DISEASES: Respiratory infections, Intestinal infections, Arthropod- borne infections, Zoonoses, Surface infections; Hospital acquired infections; Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, Obesity, Blindness, Accidents and Injuries.	**6 Hours**
Unit-3:	**PUBLIC HEALTH ADMINISTRATION:** Health Care Delivery system at Central and state levels, Role of social, economic and cultural factors in the implementation of the national programs.	**8 Hours**
	HEALTH PROGRAMS IN INDIA: Vector borne disease control program, National leprosy eradication program, National tuberculosis program, National AIDS control program, National program for control of blindness, Iodine deficiency disorders (IDD) program, Universal Immunization program, Reproductive and child health program, National cancer control program, National mental health program. National diabetes control program, National family welfare program, National sanitation and water supply program, Minimum needs program .	**8 Hours**
Unit-4:	**DEMOGRAPHY AND FAMILY PLANNING:** Demographic cycle, Fertility, Family planning-objectives of national family planning program and family planning methods, A general idea of advantages and disadvantages of the methods	**6 Hours**
	MATERNAL & CHILD HEALTHCARE	**6 Hours**

	NUTRITION AND HEALTH Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programs.	**5 Hours**
Unit-5:	**OCCUPATIONAL HEALTH**: Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts.	**5 Hours**
	MENTAL HEALTH: Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health.	**5 Hours**
	HEALTH EDUCATION: Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education.	**4 Hours**
	Voluntary Organizations /NGO's: Charitable Organizations, Voluntary health agencies–National level and International NGO's, Multilateral and Bilateral agencies. International health organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockfeller, Ford foundation, CARE, RED CROSS	**5 Hours**
Text Books:	*1. Park, Preventive & Social Medicine, Banarsidas Bhanot*	
Reference Books:	*1. Community Based Rehabilitation of Persons With Disability by PruthvishS.* *2. Physiotherapy in Community Health & Rehablitation by Naqvi,Waqar* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT310	Ability Enhancement Compulsory Course-4 BPT 3rd YEAR BASIC NUTRITION AND DIET THERAPY	L-2 T-0 P-0 C-2
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Understanding the concepts and principles of nutritional assessment, diagnosis and care, therapeutic modification of diet and routine hospital diets.	
CO2.	Explaining the etiology, symptoms and metabolic changes and diet management in various diseases	
CO3.	Outlining the principles for calculating ideal body weight and risk factors of nutritional therapy for underweight and overweight individuals.	
CO4.	Applying the concepts of diet management in various diseases.	
Course Content:		
Unit-1:	**Nutritional care process:** Overview of assessment, diagnosis, intervention, monitoring, evaluation and documentation; Patient care and counseling and screening.	2 Hours
	Therapeutic modification of diet: Consistency, nutrients, texture; Modes of feeding- oral, enteral and parenteral; Routine hospital diets- liquid diet, normal/generic diet, soft diets.	2 Hours
Unit-2:	**Nutritional management of infections and fevers:** Metabolic changes during infection, etiology, metabolic alterations and diet management in acute and chronic fever.	2 Hours
	Etiology, symptoms, metabolic changes and diet management in disorders of gastrointestinal tract: Oesophagitis, peptic ulcer, duodenal ulcer, gastric ulcer, gastritis and gastric carcinoma, diarrohea, constipation, irregular bowel syndrome, maldigestion and malabsorbtion, diverticulitis, diverticulosis, chronic irritable bowel syndrome, chron's disease, ulcerative colitis.	2 Hours
Unit-3:	**Nutrition in Weight related disorders:** Risk factors and principle of nutritional therapy in underweight and overweight, weight imbalance, guidelines for calculating IBW. Obesity- etiology, energy balance, metabolic aberrations, clinical manifestations, consequences and management. Under weight- etiology, metabolic aberrations, clinical manifestations and dietary management	2 Hours
	Nutrition in Diabetes Mellitus: Etiology, clinical symptoms, medical nutrition therapy, diet and feeding practices, complications during diabetes, types of insulin and their action, different artificial sweetners.	2 Hours
Unit-4:	**Nutrition in cardiovascular disorders (atherosclerosis, coronary heart disease and hypertension):** Etiology, clinical symptoms, medical nutrition therapy, diet and feeding practices	2 Hours
	Nutrition in Liver diseases and Gall Bladder (infective hepatitis, cirrhosis of liver, hepatic encephalopathy, jaundice, cholelithiasis, cholecystitis, pancreatitis) Etiology, Clinical Symptoms, medical nutrition therapy, Diet and feeding pattern.	2 Hours

Unit-5:	**Nutrition in renal disorders (glomerulonephritis, nephrotic syndrome, acute and chronic renalfailure):** Etiology, clinical symptoms, medical nutrition therapy, diet and feeding practices.	**2 Hours**
	Nutrition in infection, burn, cancer and AIDS: Etiology, clinical symptoms, medical nutrition therapy, diet and feeding practices.	**2 Hours**
Text Books:	*1. ICMR.1994. Recommended Dietary Allowances for Indians. Indian council of Medical Research.* *2. Khanna, Kumud; Gupta, S.; Passi, S.J.; Seth, R.; Mahna, R. and Puri, S. 1997. Textbook of Nutrition and Dietetics. Elite Publishing House Pvt. Ltd.355p*	
Reference Books:	*1. Robinson, C.H. and Lawler, M.R.1982. Normal and Therapeutic Nutrition. Oxford &IBH.* *2. William SR (1997). Nutrition and Diet Therapy. St. Louis: Times Mirror/ Mosby Publishing.* *3. Bendich A and Derelbaum RJ (EDS) 2001. Primary and Secondary Preventive Nutrition. Totowa NJ : Human Press.* *4. Mahan K and Escott- Stumps S. 2000. Krauses, Food Nutrition and Diet Therapy.USA: Saunders.* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT355	**Skill Enhancement Course-10** **BPT 3rd YEAR** **PHYSICAL DIAGNOSIS AND MANIPULATIVE SKILLS (LAB)**	**L-0 T-0 P-4 C-2**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Applying the concepts, methods of assessment of musculoskeletal, nervous, cardiovascular and respiratory system through case presentations.	
CO2.	Interpreting the diagnostic procedures, Electromyography, Nerve Conduction Velocity Studies, X-ray, Electrocardiogram for interpretation of reports.	
CO3.	Analyzing the special tests and their interpretations.	
CO4.	Selecting the appropriate test, tool and technique essential for effective rehabilitation.	
Course Content:		**92 Hours**
	1. Methods of evaluation, assessment of musculoskeletal system, cardiorespiratory system and nervous system	
	2. Interpretation of reports - EMG, NCV Studies, X-ray of Chest. Extremities & Spine &ECG	
	3. Special tests.	
	4. Case presentation with Functional diagnosis. Two cases Each in a. Musculoskeletal b. Neurological c. Cardiovascular &Pulmonary	
Text Books:	*1. Susan B O's Sullivan, Physical Rehabilitation, Assessment and treatment, F a Davis Company* *2. Magee, Orthopaedic Physical examination, Saunders Elsevier* *3. Low & Read, Electro therapy Explained , Butterworth-Heinemann Limited,2000* *4. Nelson & Currier, Clinical Electro Therapy Appleton &Lange.* *5. Mishra, Clinical Electromyography ,Elsevier* *6. Kaltenborn, Mobilisation ,Pub Olaf Norlis Bokhandel*	
Reference Books:	*1. J. A. R. Lenman, Clinical Electromyography , , Anthony Elliot Ritchie, Churchill Livingstone* *2. Donnatelli, Orthopaedic Physical therapy, Churchill Livingstone Elsevier* *3. Franck I. Katch, Victor L. Katch, Exercise physiology : energy, nutrition, and human performance* *4. Patricia Downie, Cash textbook of Physiotherapy in neurological conditions, JP Publications.* *** Latest editions of all the suggested books are recommended.**	

Course Code: **TMUGS302**	**Value Added Course-2** **BPT 3rd YEAR** **MANAGING WORK AND OTHERS**	**L-2** **T-1** **P-0** **C-0**
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Communicating effectively in a variety of public and interpersonal settings.	
CO2.	Applying concepts of change management for growth and development by understanding inertia of change and mastering the Laws of Change.	
CO3.	Analyzing scenarios, synthesizing alternatives and thinking critically to negotiate, resolve conflicts and develop cordial interpersonal relationships.	
CO4.	Functioning in a team and enabling other people to act while encouraging growth and creating mutual respect and trust.	
CO5.	Handling difficult situations with grace, style, and professionalism.	
Course Content:		
Unit-1:	**Intrapersonal Skills:** Creativity and Innovation Understanding Self and Others (Johari Window) Stress Management Managing change for competitive success Handling feedback and criticism	**8 Hours**
Unit-2:	**Interpersonal Skills:** Conflict Management Development of cordial interpersonal relationships at all levels Negotiation Importance of working in teams in modern organisations Manners, Etiquettes and Netiquettes	**12 Hours**
Unit-3:	**Interview Techniques:** Job seeking Group Discussion Personal Interview	**10 Hours**

References:	1. Robbins, Stephen P., Judge, Timothy A., Vohra, Neharika, Organizational Behaviour (2018), 18th ed., Pearson Education 2. Burne, Eric, Games People Play (2010), Penguin UK 3. Carnegie, Dale, How to win friends and influence people (2004), RHUK 4. Rathgeber, Holger, Kotter, John, Our Iceberg is melting (2017), Macmillan 5. Steinburg, Scott, Nettiquette Essentials (2013), Lulu.com 6. https://www.hloom.com/resumes/creative-templates/ 7. https://www.mbauniverse.com/group-discussion/topic.php 8. https://www.indeed.com/career-advice/interviewing/job-interview-tips-how-to-make-a-great-impression *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT357	**Skill Enhancement Course-11** **BPT 3rd YEAR** **SUPERVISED CLINICAL TRAINING**	**L-0 T-0 P-8 C-4**
Course Outcomes :	**On completion of the course, the students will be:**	
CO1.	Applying the principles of basic anatomical, physiological and biomechanical concepts to clinical settings for assessment and diagnosis of a condition.	
CO2.	Analyzing the special tests for various tissues and systems of the body.	
CO3.	Identifying the signs & symptoms in different diseases and dysfunctions and elicited responses to various stimuli.	
CO4.	Creating an appropriate assessment of patient for deciding the appropriate management.	
Course Content:		**90 Hours**
	With an objective of exposing students to real life situations, handling patients, refine their skills and promote practical implication of their theoretical learning. Through these postings he/she will learn the assessment, diagnosis, goal formulation, treatment plan formulation, and execution of therapeutic skills of physiotherapy and shall be able to deliver quality service to the patients visiting respective departments. The students shall be divided into groups for being posted in following wards under the supervision of one faculty per ward, for duration of minimum one month per ward: 1. Physiotherapy OPD 2. Medicine ward 3. ICU (ICCU, Medicine ICU, surgical ICU, CCU) 4. Pediatrics ward 5. Obstetrics & Gynaecology ward 6. Orthopaedic Ward 7. Surgical/burn Ward 8. Neuro Medicine And Neuro SurgeryWard Students shall be subjected to maintain a Register / Log book-in which the prescribed Case Histories & written assignments are documented & to obtain the signature from the respective section In- charge at the end of the assignment	

Format for Case Presentation Evaluation of Supervised Clinical Training (BPT)

Name of candidate:

Year:

Topic of Presentation:

Date:

	Parameters	**Maximum marks**	**Internal Examiner 1**	**Internal Examiner 2**
1.	Knowledge of the Topic/case	5		
2.	Content of the presentation	5		
3.	Confidence & Attitude	5		
4.	Quiz	5		
Total		20		

***If a student has given more than one presentation, then the average of marks obtained would be considered. Performance during the session (20 marks) would be based on the case presentations given by the student.**

Course Code: BPT358	Discipline Specific Elective Course-1 BPT 3rd YEAR BASIC LIFE SUPPORT	L-2 T-0 P-2 C-3
Course Outcomes:	**On completion of the course, the students will be :**	
CO1.	Demonstrating basic first aid skills needed to control bleeding and immobilize injuries.	
CO2.	Demonstrating the skill needed to assess the ill or injured person.	
CO3.	Demonstrating skills to assess and manage foreign body airway obstruction in infants, children and adults.	
CO4.	Demonstrating skills to provide one- and two- person cardiopulmonary resuscitation to infants, children and adults.	
CO5.	Demonstrating proper use of pocket mask, bag-valve mask and ventilation to an artificial airway during resuscitation attempts.	
Course Content:		
Unit-1:	A.First Aid Basics 1. Rescuer Duties 2. Victim and Rescuer Safety 3. Phoning for Help 4. Finding the Problem 5. After the emergency B.Medical Emergencies 1. Breathing Problems 2. Choking in an Adult 3. Allergic Reactions 4. Heart Attack 5. Fainting 6. Diabetes and Low Blood Sugar 7. Stroke 8. Shock	**5 Hours**
Unit-2:	A. Injury Emergencies 1. Bleeding You Can See 2. Wounds 3. Bleeding You Can't See 4. Head, Neck, and Spine Injuries 5. Broken Bones and Sprains 6. Burns and Electrical Injuries B.Environmental Emergencies 1. Bites and Stings 2. Heat-Related Emergencies 3. Cold-Related Emergencies 4. Poison Emergencies	**5 Hours**
Unit-3:	A.General Concepts 1. Introduction 2. The Chain of Survival	**6 Hours**

	3. 2010 AHA Guidelines for CPR and ECC Science Update B. BLS/CPR for Adults 1. BLS/CPR Basics for Adults 2. 2-Rescuer Adult BLS/Team CPR Sequence C. Automated External Defibrillator for Adults and Children 8 years of Age and Older 1. AED for Adults and Children 8 years of age and older 2. 2-Rescuer BLS Sequence with an AED D. BLS/CPR for Children from 1 Year of Age to Puberty E. BLS/CPR for Infants 1. BLS/CPR Basics for Infants 2. 1-Rescuer Infant CPR 3. 2-Rescuer Infant	
Unit-4:	1. AED for Infants and for Children from 1 to 8 Years of Age 2. CPR with an Advance Airway 3. Mouth-to-Mouth Breaths 4. Rescue Breathing 5. Relief of Choking a. Relief of Choking in Victims 1 Year of Age or Older b. Relief of Choking in Infants	**5 Hours**
References:	1. BLS for Healthcare Providers. American Heart Association, 2010. ISBN: 978-1-61669-039-7 2. Heartsaver: First Aid. American Heart Association, 2010. ISBN: 978-1-61669-018-2 *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT 401	Discipline Specific Course-7 BPT 4TH YEAR PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS	L-3 T-0 P-0 C-3
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Recalling the principles of clinical management of fractures, regional and general conditions and various orthopaedic surgeries.	
CO2.	Understanding the concepts and application of manual therapy and rehabilitation protocols.	
CO3.	Analyzing the progress, prognosis and follow up in recovery phase of patients.	
CO4.	Practicing clinical assessment of patient and prescribing Evidence Based physiotherapy management of common orthopaedic conditions.	
Course Content:		
Unit-1:	**1. Overview of PT assessment for Orthopeadic conditions:** ICF, SOAP format.	**2 Hours**
	2. Principles of PT assessment and management of: Upper limb fractures and dislocations. Lower limb fractures and dislocations including pelvis. Spinal fractures.	**6 Hours**
Unit-2:	**Clinical aspects, pathophysiology, PT assessment and management (including after surgical corrections) for the following conditions:-** **1. Degenerative and inflammatory conditions:** Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritic shoulder.	**8 Hours**
	2. Infective conditions: Osteomyelitis – acute and chronic, Septic arthritis, Pyogenic arthritis, TB spine and major joints - knee and hip.	**3 Hours**
	3. Deformities: Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. Acquired: scoliosis, kyphosis, abnormal lordosis, coxa vara, coxa valga, genu varum, genu valgum and recurvatum.	**4 Hours**
	4. Spinal conditions: Cervical spondylosis, Lumbar spondylosis, Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina bifida occulta	**8 Hours**
Unit-3:	**1. Poliomyelitis:** Clinical aspects & Pathophysiology ,PT assessment and management (after surgical correction) **2. Leprosy:** Clinical aspects & Pathophysiology . Pt assessment and management , Pre and post surgical procedures **3. Amputations:** Overview of amputation and PT assessment, aims, management pre and post operatively. PT management with emphasis on stump care and bandaging. Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management.	**6 Hours**

	4. Osteoporosis: Causes, predisposing factors, investigations and management.	**8 Hours**
Unit-4:	**1. Pre and post operative PT in Orthopaedics surgeries:** Pre and post operative PT assessment, goals, precautions and PT management of following surgeries such as: Arthrodesis, Osteotomy, Arthroplasty-partial and total- Excision arthroplasty, with implant, interpositional arthroplasty and total replacement; Tendon transplant; Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Reattachment of limbs, External fixators, Synovectomy.	**8 Hours**
	2. Only overview and basic principles of following techniques (and not their method of application): Mulligan, Maitland, Mckenzie, Myofascial release, MET, Cyriax, Combined Movement Therapy.	**4 Hours**
Unit-5:	**Regional Conditions : Assessment & PT Management of thefollowing–** **1. Shoulder joint:** Shoulder instabilities, TOS, RSD, Impingement syndrome – conservative and Post-operative PT management. Post-operative PT management of. AC joint injuries, Rotator cuff tears-conservative and surgical repair. **2. Elbow and forearm:** Excision of radial head - Post operative PT management. **3. Wrist and Hand:** Repair of ruptured extensor tendons. Carpal tunnel syndrome. Flexor and extensor tendon lacerations - Post operative PT management. **4. Hip:** PT management of Tendonitis and bursitis. **5. Knee:** Lateral retinacular release, chondroplasty- Post operative management. Realignment of extensor mechanism. ACL and PCL reconstruction surgeries – Post operative rehabilitation. Meniscectomy and meniscal repair - Post operative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome - conservative management. Patellar tendon ruptures and Patellectomy- rehabilitation. **6. Ankle and foot:** Ankle instability. Ligamentous tears- Post operative management.	**12 Hours**
Text Books:	*2. Tidy's physiotherapy, Churchill Livingstone.* *3. Textbook of orthopedics- Cash, JP Publications.* *4. Clinical orthopedic rehabilitation- Brotzman, Elsevier.* *5. Orthopedic physiotherapy - Jayant Joshi, Elsevier.* *6. Rehabilitation Assessment and Treament – O,,Sullivan Schmitz* *7. Sports physiotherapy- Maria Zuluaga, Churchill Livingstone*	
Reference Books:	*1. Therapeutic Exercise - Carrie Hall & Brody, Wolters Kluwer/Lippincott Williams & Wilkins Health* *2. Rehab Medicine-Part I/II – Delisa, Lippincott Williams & Wilkins* *3. Atlas of Orthotics – AAOS, Mosby Elsevier.* *4. Orthotics and Prosthetic in Rehab – Lusardi, Elsevier Saunders* *5. Hand Rehab - James Hunter, Mosby* *6. Orthopedic Principles and their Applications- Turek Vol 1,2, Lippincott, Williams and Wilkins.* *** Latest editions of all the suggested books are recommended**.	

Course Code: BPT 402	**Discipline Specific Course -8** **BPT 4TH YEAR** **PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS**	**L-3** **T-0** **P-0** **C-3**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Recalling the etiology, pathology and clinical features for various diseases affecting the nervous system.	
CO2.	Understanding the principles of motor control, motor learning, neuroplasticity and neurophysiological approaches, techniques and treatment methods.	
CO3.	Analyzing the assessment tools and techniques for evaluation and physiotherapy management of neurological conditions, surgeries and neurological gaits by applying the basic concepts of neuroanatomy and neurophysiology.	
CO4.	Practicing the use of Evidence Based treatment.	
Course Content:		
Unit-1:	1. **Review of basic Neuro- Anatomy and Physiology**	**2 Hours**
	2. **Neurological Assessment**: Detailed neurological examination focusing on following points: a) Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Reasoning, and Judgment. b) Motor Examination – Muscle power, Muscle tone- Spasticity, Flaccidity, c) Reflexes – Developmental reflexes, deep tendon reflexes, superficial reflexes. d) Sensory examination – Superficial, Deep and Cortical sensations, e) Special tests – Romberg's, Kernig's sign, Brudenzki sign, Tinels's sign, Slump test, Lehermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc, Balance examination, coordination examination, f) Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis) g) Functional Analysis h) Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading.	**8 Hours**
Unit-2:	1. **Introduction to Motor Control & Motor Learning, Introduction to Neural Plasticity**	**3 Hours**
	2. **Neuro physiological Techniques** An overview on neurophysiological techniques: NDT, PNF, Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy, Motor relearning program, Contemporary task oriented approach, Muscle re-education approach and Constraint induced movement therapy. Virtual Reality, Mental Imagery, Robotics, Body Weight Supported Treadmill Training Techniques, Bio-feedback.	**10 Hours**

Unit-3:	**1. Evaluation and PT Management of Paediatric Disorders:** Paediatric neurological Examination, Developmental milestones, developmental reflexes, Neuro-developmental screening tests. High Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Spina bifida, and syringomyelia.	**10 Hours**
	2. Evaluation and PT Management of Brain Disorders: Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, MND and Multiple sclerosis, Ataxia, Parkinson's disease.	**10 Hours**
Unit-4:	**1. Evaluation and PT Management of Spinal Cord and Muscle Disorders:** Muscular dystrophy (DMD), Myasthenia Gravis, Eaton-Lambert Syndrome, Spinal tumors, Spinal cord injury, Transverse myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post-Polio Syndrome. Facial palsy.	**9 Hours**
	2. Evaluation and PT Management of Peripheral Nerve Injuries, peripheral neuropathies and Disorders: Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic &intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, and Pudental nerve palsy.	**6 Hours**
Unit-5:	1. **Evaluation and PT Management of disturbance of speech and aphasia.**	**2 Hours**
	2. **Assessment and PT management o f Neurological gaits**: Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait.	**10 Hours**
Text Books:	*1) Cash's Text book for Physiotherapist in Neurological disorders-Jaypee bros.* *2) Proprioceptive Neuro muscular Faciliation – by HermanKabat* *3) Susan B O's Sullivan, Physical Rehabilitation, Assessment and treatment, F a DavisCompany* *4) "Right in the middle" – by Patricia Davis, SpringerVerlag.*	
Reference Books:	*1. Therapeutic exercise – by Basmajiian Williams & Wilkins – 5th edn.* *2. Physical Rehabilitation – by Krusen,Saunders* *3. Brain's disorders of Nervous system* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT 406**	**Discipline Specific Course-9** **BPT 4TH YEAR** **PHYSIOTHERAPY IN CARDIO-RESPIRATORY AND GENERAL CONDITIONS**	**L-3** **T-0** **P-0** **C-3**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Recalling cardiorespiratory anatomy and physiology.	
CO2.	Understanding cardiorespiratory rehabilitation, investigations, drug therapy, ICU management, special techniques and tools for cardiorespiratory disorders.	
CO3.	Employing the knowledge of various cardiovascular, respiratory conditions, neonatal, pediatric and dermatological conditions, wound ulcers, obstetrics and general surgical conditions.	
CO4.	Analyzing the various treatment plans with assessment for a patient in hospital setting, for discharge and an outpatient department.	
Course Content:		
Unit-1:	1. **Review of:** Cardio respiratory anatomy and physiology, mechanism of normal respiration. Anatomical differences between adult & pediatric lungs, aging in cardiovascular system and respiratory system.	**4 Hours**
	2. **Respiratory and cardiac rehabilitation for cardio respiratory disorders:** definition, aims and objective, Pathophysiology of diseases, physiotherapy assessment and principles of rehabilitation. Fitness programs for adults & Geriatric Population.	**6 Hours**
	3. **Cardiopulmonary investigations: (an overview)** Pulmonary function test & its interpretation Chest imaging & neck imaging. ECG interpretation and Echocardiograph in brief. Blood gas analysis & its interpretation. Special tests- stress test , exercise tolerance test, Interpretation of the procedures performed-open heart surgery, angiogram, nuclear test catheterization in brief.	**5 Hours**
Unit-2:	**1. Principles and techniques of physiotherapy in diseases of respiratory and cardiopulmonary system:** Physiotherapy techniques to increase lung volume & decrease work of breathing: Chest mobility exercises, positioning, Breathing re-education – Breathing control techniques, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP,IPPB, BiPAP.	**8 Hours**
	2. Physiotherapy techniques to clear secretions – Hydration, Aerosol therapy, Humidification, Nebulisation, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, Facilitation of Cough and Huff, cough-assisted techniques, Suctioning.	**4 Hours**

	3. Clinical examination & PT management of cardiovascular disorders: CCF, myocardial infarction, endocarditis, myocarditis, pericarditis, valvular disease of heart, congenital heart diseases, Ischemic Heart Diseases	**6 Hours**
	Clinical examination & PT management of respiratory disease: COPD, RLD; Chronic bronchitis, emphysema, asthma, cystic fibrosis, Bronchiectasis, pulmonary embolism, pulmonary TB, pleurisy, emphyema, atelectesis, pneumothorax, Respiratory failure, Pneumonia, Pleural effusion, Pulmonary edema	**7 Hours**
Unit-3:	**1. Principles of PT management in I.C.U**- Introduction to ICU: ICU monitoring –Apparatus, Airways and Tubes used in the ICU, Oxygen Therapy and Mechanical Ventilation. Physiotherapy for Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU.	**4 Hours**
	2. Pre and post-operative physiotherapy assessment and management in: Lobectomy, pneumonectomy, decortications, Thoracoplasty, Tracheostomy, angioplasty, mitral valvotomy (mitral stenosis), valve replacement, PDA, Coarctation of aorta, Septal defect, Fallot's tetralogy, bypass surgery, open heart surgery and heart transplant.	**5 Hours**
	3. **Physiotherapy management following Peripheral Vascular Disease (PVD).**	**3 Hours**
	4. **Abdominal & thoracic Surgeries** - Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax.	**2 Hours**
Unit-4:	**1. Cardiopulmonary resustications**– demonstrations.	**2 Hours**
	2. Neonatal and Pediatric Physiotherapy– Chest physiotherapy for children, neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit.	**2 Hours**
	3. Drug therapy– Drugs to prevent and treat inflammation, Bronchospasm, Breathlessness, mucolytics, Drugs to inhibit coughing, Drugs to reduce pulmonary hypertension.	**2 Hours**
	4. Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars- U.V.R and other electro therapeutics for healing of wounds, prevention of Hypergranulated Scars, Keloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues.	**2 Hours**
Unit-5:	**1. Physiotherapy in dermatology-** Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhydrosis. Care of anesthetic hand and foot.	**3 Hours**
	2. Physiotherapy in Obstetrics – Antenatal Care, Antenatal Education, Postnatal Care. Electrotherapy and Exercise Therapy measures for the re-education of Ano-Urethral sphincter.	**2 Hours**

	3. **Response to exercise and Implications of physiotherapy** in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity.	**2 Hours**
	4. **Home program and education of family members in patient care.**	**1 Hour**
Text Books:	***1.*** *Cash's Textbook for Physiotherapists in Chest, Heart & Vascular diseases. JP Pub.* ***2.*** *Cash's text book in General Medicine & Surgical conditions for Physiotherapists. Downie – Jaypee Brothers.* ***3.*** *Donna Frown filter, Chest Physical therapy & pulmonary ehabilitation* ***4.*** *Brompton's hospital guide.* ***5.*** *Essentials of Cardiopulmonary Physical Therapy – Hillegass & Sadowsky - W.B.Saunders.* ***6.*** *ACSM Guidelines for Exercise Testing and Prescription , ACSM, Williams and Wilkins.* ***7.*** *Mackenzi Chest Physiotherapy in Intensive Care Unit , Williams and Wilkins.* ***8.*** *Irwin and Tecklin, Cardiopulmonary Physical Therapy, Mosby.* ***9.*** *Smith &Ball ,Cardiovascular / Respiratory Physiotherapy, Mosby.*	
Reference Books:	*1. Webber, Physiotherapy in Cardio – Vascular rehabilitation* *2. Wenger, Exercise & the Heart* *3. P.J. Mehta, ECG , Jaypee publication* *4. Irwin Scott, Cardiopulmonary Physical Therapy* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT 407**	**Discipline Specific Course-10** **BPT 4TH YEAR** **PHYSIOTHERAPY IN SPORTS**	**L-3** **T-0** **P-0** **C-3**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Understanding the knowledge, concepts and biomechanics of various sports injuries.	
CO2.	Describing effect of exercise on body systems, sports specific diet and measurement of fitness components and sports skills.	
CO3.	Outlining and employing the assessment plans, management and rehabilitation protocols for specific injuries on-field and off- field.	
CO4.	Explaining Athletic Drug Abuse and Doping, sports psychology and sports in special groups.	
Course Content:		
Unit-1:	**1.** Principles of injury prevention	**4 Hours**
	2. . Principles of training & Rehabilitation in sports injuries	**4 Hours**
	3. Sports injuries **Spine**– PIVD, Kissing spine, cervical whiplash injuries, facet joint syndrome, SI joint dysfunction **Hip**– muscle strain, piriformis syndrome, ITB syndrome, osteitis pubis **Knee**- menisci, cruciate, collateral, osteochondritis, chondromalacia patellae, biceps femoris tendonitis, swimmers knee, patello-femoral pain syndrome **Leg & ankle**– shin splint, achillis tendonitis & rupture, TA bursitis, ankle sprain, plantar fascitis, turf toe syndrome **Head & face**– maxillo-facial injuries, helmet compression syndrome **Shoulder-** instability of shoulder, rotator cuff injury, biceps tendonitis and rupture, pectoralis major rupture, scapular dyskinesis and acromio-clavicular joint injuries **Elbow**– tennis elbow, golfer's elbow **Wrist and hand**– carpal tunnel syndrome, gamekeeper's thumb	**25 Hours**
Unit-2:	**Physiological effects of exercise on body systems** Muscular system, Endocrine system, Cardio-respiratory system, Nervous system	**6 Hours**
Unit-3:	**Measurement of fitness components and sports skills** Measurement of muscular strength, Measurement of muscular endurance, Measurement of flexibility, Determination exercise endurance	**8 Hours**

Unit-4:	1. Pre-exercise evaluation, On & Off Field evaluation	**4 Hours**
	2. Diet and nutrition	**4 Hours**
Unit-5:	**1.** Drugs used in sports.	**3 Hours**
	2. Biomechanics of running, throwing, swimming.	**4 Hours**
	3. Sports psychology.	**2 Hours**
	4. **Sports in Special age groups**: Female athletic triad	**2 Hours**
	Younger athlete- Musculo-skeletal problems, management, children with chronic illness and nutrition	**2 Hours**
	Older athlete- Physiological changes with aging, benefits, risks of exercise in elderly, exercise prescription guidelines for elderly	**2 Hours**
Text Books:	***1.*** *Sports physiotherapy- Maria Zuluaga, Churchill Livingstone* ***2.*** *Peter Brukner, Karim Khan: Clinical Sports Medicine, Tata Mc Graw Hill* ***3.*** *Gregory S. Kolt, Lynn Snyder-Mackle: Physical Therapies in Sport and Exercise, Churchill Livingstone*	
Reference Books:	*1. Sports Injury : Assessment and Rehabilitation – David C. Reid* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT 410	**Discipline Specific Course-11** **BPT 4TH YEAR** **COMMUNITY BASED REHABILITATION**	**L-2** **T-0** **P-0** **C-2**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Understanding the concepts and principles of Community Based Rehabilitation and general rehabilitation.	
CO2.	Explaining the concept of disability, its evaluation, health and occupational health, geriatric health, national healthcare programs and policies, NGOs and assistive devices.	
CO3.	Practicing appropriate physiotherapy skills when rehabilitating the patient in community set up.	
CO4.	Summarizing the role of ergonomics, vocational rehabilitation and community awareness in Community Based Rehabilitation.	
Course Content:		
Unit-1:	**1. General Rehabilitation:** Conceptual framework of rehabilitation, definitions, various models of Rehab, Rehab team including Medical person/P.T./O.T. audiologist/speech therapist /P.&O./ rehab nurse/ psychologist/ vocational guide. WHO definition of Health & disease, Health care delivery system, National Policies of Rehab, National health care programs, Community awareness, Participation, Preventive aspects & demands of PT devices, National Institutions.	**2 Hours**
	2. Disability & its evaluation: Definition of Impairment, Handicap and Disability, Difference between impairment, handicap and disability, Disability evaluation, Types and Prevention and rehabilitation of disability.	**3 Hours**
Unit-2:	**1. Introduction to Community Based Rehabilitation:** Definition, Concept of CBR, Need for CBR, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR, Difference between Institution based and Community based Rehabilitation.	**3 Hours**
	2. Principles of Community based Rehabilitation: W.H.O.`s policies-about rural health care- concept of primary /tertiary health centers-district hospitals etc., Principles of a team work in C.B.R. of physically handicapped person, Agencies involved in rehabilitation of physical handicapped - Legislation for physically handicapped. Concept of multipurpose health worker. Role of family members in the rehabilitation of a physically handicapped.	**3 Hours**
Unit-3:	**1. Health Promotion:** Physiological changes with aerobic exercises in various systems of the body, Clinical applications of aerobic exercise, Obesity; criteria for overweight & obese patients screening and weight reductions program, Measurement of Body Mass Composition.	**3 Hours**

	2. Geriatrics: Definition: gerontology, geriatrics, aging, senior citizen in India, NGO's, legal rights, and benefits. Institutional community based elderly. Old age homes. Physiology of aging: changes in various systems: musculoskeletal, cardio-pulmonary, neurological, special senses Clinical implication, strategies for improvement. Compensatory approaches and physiotherapy management. Theories of aging	**5 Hours**
Unit-4:	**1. Occupational & Environmental Hazards**: Accidents due to: Physical agents: e.g. heat/cold, light, noise, vibration, UVR. Ionizing radiation. Chemical agents: inhalation, local action & ingestion. Psychological Hazards: monotonocity job dissatisfaction, work anxiety, quality control, interpersonal relationships, work hours. Mechanical Hazards: overuse /fatigue,	4 Hours
	2. Role of ergonomics in prevention of occupational hazards. Injuries due to ergonomics alteration & ergonomic evaluation of work place.	**1 Hour**
	3. Industrial health: Job analysis, job description, job demand analysis, task analysis, Employee fitness, job modification	**2 Hours**
	4. Management of occupational hazards: Acute care, concept of functional capacity assessment, work hardening and work conditioning.	**2 Hours**
	5. Employment acts [briefly]: Employee state insurance scheme. Workman's compensation act. Legal aspects of disability in terms of compensation for PWD, benefits & rights.	**2 Hours**
	6. Vocational Rehabilitation: Introduction, evaluation & management	**2 Hours**
Unit-5:	**1. Prosthetics &Orthotics:** Definition and Biomechanical principles in designing of appliances & assessment. Classification of Aids & appliances. Differences between prosthesis and orthosis. Prostheses – For Lower limb and upper limb indications and checkout. Introduction to Splints / Orthoses – For spine, upper & lower limb. Upper Limb Orthoses: - Knuckle Bender splint, Cock Up Splint, Opponens splint, finger splints, aero plane splint, wrist hand orthosis. Spinal Orthoses: Head Cervical Orthoses, Cervical, Thoraco-lumbar, Lumbo – sacral Orthoses (Knight brace, Taylors's Brace, Milwawkee Brace, Collars); Lower Limb Orthoses: HKAFO, KAFO, AFO, Foot Orthoses (Shoe Modification); Wheel Chair – Parts and prescription	**10 Hours**

	2. Role of Physiotherapy in CBR: Screen**in**g for disabilities, Prescribing assistive aids, Modifications physical and architectural barriers for disabled, Strategies to improve ADL Rehabilitation programs for various neuro- musculoskeletal and cardiothoracic disabilities like RA, Hemiplegia, Paraplegia, Cerebral palsy, Polio, severe OA, Amputation; sensory loss—vision, hearing, speech impairment, Degenerative, Geriatric patients, other disabling conditions.	**4 Hours**
Text Books:	1. *Bhaskar Rao, Text book of Community Medicine & Community Health, Paras Medical Publisher* 2. *Andrew Guccione Geriatrics Physiotherapy, Elsevier Mosby.* 3. *Glenda Key, Industrial Therapy, Mosby* 4. *Chinnathurai, Short textbook of prosthetics and orthotics, Jp Medical Pub* 5. *Pruthvish, Community Based Rehabilitation of Persons with Disabilities* 6. *Madhuri, Geriatric Medicine and Rehabilitation Medicine for Physiotherapist* 7. *Squires, Rehabilitation of the Older Person , Nelson Thornes*	
Reference Books:	1. *Mural K F, Ergonomics Man in his working environment* 2. *Nordin Andersons Pope, Musculoskeletal Disorders in work place- Principle & Practice, Mosby Elsevier* 3. *G R Madan, Indian Social Problem Vol 2, Allied Publishers,Disability2000-RCI* 4. *Gautam Bannerjee , Legal Rights of disabled in India* 5. *ICF -WHO Health Organisation 2001publication* 6. *Park, Preventive &Social Medicine, Banarsidas Bhanot* 7. *Hallender Padmini Mendes, Training in the Community for the people with disability* 8. *David Werner , Disabled Village Children, Hesperian Foundation* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT 411	Discipline Specific Course-12 BPT 4TH YEAR MEDICAL ETHICS AND EVIDENCE BASED PRACTICE	L-1 T-0 P-0 C-1
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Understanding the principles and theories of various legal aspects of healthcare, medical ethics and physiotherapy.	
CO2.	Outlining the history of physiotherapy and various levels of evidences with their use in physiotherapy practice.	
CO3.	Analyzing the tools for Evidence Based Practices, its limitations and research critique to Physiotherapy.	
CO4.	Practicing the ethical principles in physiotherapy.	
Course Content:		
Unit-1:	**1. HISTORY OF PHYSIOTHERAPY**	1 Hour
	2. P.T. VALUES & ETHICS Ethical values and principles applied to moral issues and health care; Ethical principles related to physiotherapy, Scope of practice, enforcing standards in health profession-promoting quality care; Professional ethics in research, education and patient care delivery; Medical ethics in clinical decision-making.	2 Hours
	3. HUMAN VALUES : Objectives, Morals, Values, Ethics, Integrity, Work ethics, Service learning, Virtues, Respect for others, Living peacefully, Caring, Sharing, Honesty, Courage, Valuing time, Cooperation, Commitment, Empathy, Self-confidence, Challenges in the work place, Spirituality.	2 Hours
	4. GENDER SENSITISATION: Gender, Gender stereotypes, gender equality, gender mainstreaming. Gender sensitivity in family, education, employment and language. Constitutional provisions and legal system in India.	2 Hours
Unit-2:	**1. ETHICS OF VARIOUS ORGANISATIONS** World Confederation of Physical therapists (WCPT); Indian Association of Physiotherapists (IAP); Few international associations.	2 Hours
	2. P.T. LAW &LEGALCONCEPTS Medico legal aspects of physical therapy, liability, informed consent negligence, malpractice, licensure, consumer protection act.	2 Hours
Unit-3: Evidence Based Practice	**1. INTRODUCTION** Evidence based physiotherapy- Definition History of evidence based healthcare in general and physiotherapy in particular; Need for evidence based physiotherapy.	1 Hour
	2. STEPS IN THE PRACTICEOFEBP Sackett's steps of evidence based practice	1 Hour

Unit-4:	**1. LEVELS OF EVIDENCE AND ITS SIGNIFICANCE** Systematic reviews and Meta-analysis; Randomized Controlled trials; Clinical practice guidelines; Cohort studies and cross sectional studies; Case reports and case series; Expert opinion	**2 Hours**
	2. SOURCES OF EVIDENCE Pubmed , CINAHL, PEDro, Google Scholar, OVID, APTA's Hooked on Evidence	**1 Hour**
Unit-5:	**1. CRITICAL APPRAISAL OF EVIDENCE** Process of critical appraisal; Critical appraisal of evidence about the effects of intervention (treatment); Critical appraisal of evidence about diagnostics tests; Critical appraisal of evidence about prognosis; Critical appraisal of clinical practice guidelines	**2 Hours**
	2. BARRIERS AND LIMITATIONS OF EBP	**2 Hours**
	3. APPLICATION OF EVIDENCE INTO PRACTICE Practical application of evidence about the effects of intervention (treatment) in actual patient scenario with clinical case examples; Practical application of evidence about the diagnostic test for an individual patient, in actual patient scenario with clinical case examples; Practical application of evidence about the prognosis for an individual patient, in actual patient scenario with clinical case examples. Practical application of clinical practice guideline for an individual patient, in actual patient scenario with clinical case examples.	**2 Hours**
Text Books:	*1. Physical Therapy Ethics by Donald L. Gabard, Mike W. Martin, F.A. Davis,2003.*	
Reference Books:	*5. Medical Ethics: A Reference guide For Guaranteeing Principled Care and Quality, Eldo E Frezza, Taylor and Francis Ltd.* *** Latest editions of all the suggested books are recommended.**	

Course Code: **BPT 451**	**Skill Enhancement Course-12** **BPT 4TH YEAR** **PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS (LAB)**	**L-0** **T-0** **P-2** **C-1**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Applying the principles of assessment, rehabilitation, management of various Orthopaedic conditions and manual therapy techniques.	
CO2.	Analyzing the patients' assessment for physical testing and diagnosis of various Orthopaedic conditions and diseases and available treatment strategies and selection of the suitable rehabilitation.	
CO3.	Justifying the choice of treatment protocol.	
Course Content:		**46 Hours**
	1. Lab demonstration of basic principles of physiotherapy assessment, functional assessment and application of physiotherapy in orthopaedics conditions.	
	2. Student must maintain a Lab manual which is to be duly checked by staff and later should be submitted during Lab examination.	
Text Books:	1. *Tidy's physiotherapy, Churchill Livingstone.* 2. *Textbook of orthopedics- Cash, JP Publications.* 3. *Clinical orthopedic rehabilitation- Brotzman, Elsevier.* 4. *Orthopedic physiotherapy - Jayant Joshi, Elsevier.* 5. *Rehabilitation Assessment and Treament – O' Sullivan Schmitz* 6. *Sports physiotherapy- Maria Zuluaga, Churchill Livingstone*	
Reference Books:	1. *Therapeutic Exercise - Carrie Hall &Brody, Wolters Kluwer/Lippincott Williams & Wilkins Health* 2. *Rehab Medicine-Part I/II – Delisa, Lippincott Williams & Wilkins* 3. *Atlas of Orthotics – AAOS, Mosby Elsevier.* 4. *Orthotics and Prosthetic in Rehab – Lusardi, Elsevier Saunders* 5. *Hand Rehab - James Hunter, Mosby* 6. *Orthopedic Principles and their Applications- Turek Vol 1,2, Lippincott, Williams and Wilkins.* *** Latest editions of all the suggested books are recommended**	

Course Code: **BPT 452**	**Skill Enhancement Course-13** **BPT 4TH YEAR** **PHYSIOTHERAPY IN NEUROLOGICAL CONDITOINS (LAB)**	**L-0** **T-0** **P-2** **C-1**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Analyzing the patient for neurological conditions.	
CO2.	Interpreting the knowledge of different neurological approaches and conditions to develop an effective treatment plan.	
CO3.	Justifying the choice of treatment approach used.	
Course Content:		**46 Hours**
	1. Lab demonstration of basic principles of physiotherapy assessment, functional assessment and application of physiotherapy in neurological conditions.	
	2. Student must maintain a Lab manual which is to be duly checked by staff and later should be submitted during Lab examination.	
Text Books:	1. *Cash's Text book for Physiotherapist in Neurological disorders-Jaypee bros.* 2. *Proprioceptive Neuro muscular Facilitation – by Herman Kabat* 3. *Susan B O' Sullivan, Physical Rehabilitation, Assessment and treatment, F A Davis Company* 4. *"Right in the middle" – by Patricia Davis, Springer Verlag.*	
Reference Books:	1. *Therapeutic exercise – by Basmajiian Williams & Wilkins – 5th edn.* 2. *Physical Rehabilitation – by Krusen, Saunders* 3. *Brain's disorders of Nervous system* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT 458	**Skill Enhancement Course-14** **BPT 4TH YEAR** **PHYSIOTHERAPY IN CARDIO RESPIRATORY AND GENERAL CONDITIONS (LAB)**	**L-0 T-0 P-2 C-1**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Practicing the various treatment strategies for the management of cardiorespiratory and other medical conditions.	
CO2.	Analyzing the basic principles of physiotherapy assessment of cardiorespiratory and other medical conditions.	
CO3.	Justifying the selection of the preferred approach amongst the various strategies.	
Course Content:		**46 Hours**
	1. Lab demonstration of basic principles of physiotherapy assessment, functional assessment and application of physiotherapy in cardio – respiratory, OBG, Skin, and other medical conditions.	
	2. Student must maintain a Lab manual which is to be duly checked by staff and later should be submitted during Lab examination.	
Text Books:	*3. Cash's Textbook for Physiotherapists in Chest, Heart & Vascular diseases. JP Pub.* *4. Cash's text book in General Medicine & Surgical conditions for Physiotherapists. Downie - Jaypee Brothers.* *5. Donna Frown filter, Chest Physical therapy & pulmonary rehabilitation* *6. Brompton's hospital guide.* *7. Essentials of Cardiopulmonary Physical Therapy – Hillegass & Sadowsky - W.B. Saunders.* *8. ACSM Guidelines for Exercise Testing and Prescription, ACSM, Williams and Wilkins.* *9. Mackenzie, Chest Physiotherapy in Intensive Care Unit , Williams and Wilkins.*	
Reference Books:	*1. Webber, Physiotherapy in Cardio – Vascular rehabilitation* *2. Wenger, Exercise & the Heart* *3. P.J. Mehta, ECG , Jaypee publication* *4. Irwin Scott, Cardiopulmonary Physical Therapy* *** Latest editions of all the suggested books are recommended.**	

Course Code: BPT 459	**Skill Enhancement Course-15** **BPT 4TH YEAR** **PHYSIOTHERAPY IN SPORTS (LAB)**	**L-0** **T-0** **P-2** **C-1**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Understanding and applying the sports specific special tests for various tissues.	
CO2.	Applying various methods of assessment and management of an injured athlete, on and off field.	
CO3.	Justifying the selection of the preferred approach amongst the various strategies.	
Course Content:		**46 Hours**
	1. Lab demonstration of basic principles of physiotherapy assessment, functional assessment and application of sports physiotherapy	
	2. Student must maintain a Lab manual which is to be duly checked by staff and later should be submitted during Lab examination..	
Text Books:	***1.*** *Sports physiotherapy- Maria Zuluaga, Churchill Livingstone* ***2.*** *Peter Brukner, Karim Khan: Clinical Sports Medicine, Tata Mc Graw Hill* ***3.*** *Gregory S. Kolt, Lynn Snyder-Mackle: Physical Therapies in Sport and Exercise, Churchill Livingstone*	
Reference Books:	*1. Sports Injury : Assessment and Rehabilitation – David C. Reid* **** Latest editions of all the suggested books are recommended.***	

Course Code: BPT 466	**Skill Enhancement Course-16** **BPT 4TH YEAR** **COMMUNITY BASED REHABILITATION (LAB)**	**L-0** **T-0** **P-2** **C-1**
Course Outcomes:	**On completion of the course, the students will be:**	
CO1.	Understanding and applying the concepts of organization of community based rehabilitation centers.	
CO2.	Demonstrating the use of various Orthotic and Prosthetic devices.	
CO3.	Applying knowledge of ergonomics at workplace.	
Course Content:		**46 Hours**
	1. Demonstration of methods of using orthotic & prosthetic devices.	
	2. Methods of organization of community based rehabilitation centres.	
	3. To know about industrial hazards and musculoskeletal disorders associated with workplace design.	
Text Books:	*1. Bhaskar Rao, Text book of Community Medicine & Community Health, Paras Medical Publisher* *2. Andrew Guccione Geriatrics Physiotherapy, Elsevier Mosby.* *3. Glenda Key, Industrial Therapy, Mosby* *4. Chinnathurai, Short textbook of prosthetics and orthotics, JP Medical Pub* *5. Pruthvish, Community Based Rehabilitation of Persons with Disabilities* *6. Madhuri, Geriatric Medicine and Rehabilitation Medicine for Physiotherapist* *7. Squires, Rehabilitation of the Older Person , Nelson Thornes*	
Reference Books:	*1. Mural K F, Ergonomics Man in his working environment* *2. Nordin Andersons Pope, Musculoskeletal Disorders in work place- Principle & Practice, Mosby Elsevier* *3. G R Madan, Indian Social Problem Vol 2, Allied Publishers,Disability2000-RCI* *4. Gautam Bannerjee , Legal Rights of disabled in India* *5. ICF -WHO Health Organisation 2001publication* *6. Park, Preventive &Social Medicine, Banarsidas Bhanot* *7. Hallender Padmini Mendes, Training in the Community for the people with disability* *8. David Werner, Disabled Village Children, Hesperian Foundation* *** Latest editions of all the suggested books are recommended**	

Course Code: BPT 457	**Skill Enhancement Course-17** **BPT 4TH YEAR** **SUPERVISED CLINICAL TRAINING**	**L-0** **T-0** **P-8** **C-4**
Course Outcomes:	***On completion of the course, the students will be****:*	
CO1.	*Recalling the concepts of anatomy, physiology, biomechanics, exercise therapy, electrotherapy, assessment skills and knowledge of various disease conditions.*	
CO2.	*Utilizing the knowledge of assessment skills, concept of rehabilitation skills and therapeutic skills to rehabilitate patient.*	
CO3.	*Applying the concepts of research methodology to develop a small project.*	
CO4.	*Justifying the use of assessment tool and rehabilitation techniques.*	
Course Content:		138 Hours
	With an objective of exposing students to real life situations, handling patients, refine their skills and promote practical implication of their theoretical learning. Through these postings he/she will learn the assessment, diagnosis, goal formulation, treatment plan formulation, and execution of therapeutic skills of physiotherapy and shall be able to deliver quality service to the patients visiting respective department. The students shall be divided into groups for being posted in following wards under the supervision of one faculty per ward, for duration of minimum one month per ward: 1. *PhysiotherapyOPD* 2. *Medicinewards* 3. *ICU's (ICCU, Medicine ICU, surgical ICU,CCU)* 4. *Paediatricward* 5. *Obstetrics &gynecologyward* 6. *OrthopaedicWard* 7. *SurgicalWard* *Student will maintain a Register / Log book in which the prescribed Case Histories & written assignments are documented. Further they have to obtain signatures from the respective clinical In- charge at the end of the assignment.* *Format for Case Presentation Evaluation of Supervised Clinical*	

Training (BPT)

Name of candidate:

*Year:*_____

Topic of Presentation:

Date: _____

	Parameters	**Maximum marks**	**Internal Examiner 1**	**Internal Examiner 2**
1.	Knowledge of the Topic/case	5		
2.	Content of the presentation	5		
3.	Confidence & Attitude	5		
4.	Quiz	5		
Total		20		

**If a student has given more than one presentation, then the average of marks obtained would be considered. Performance during the session (20 marks) shall be based on the case presentations given by the student.*

PROJECT WORK

Course Code: BPT460	Research Project Report-1 BPT 4TH YEAR RESEARCH PROJECT	L-0 T-0 P-4 C-2

The project is designed to develop the aptitude among students to read, sele reference, review of literature, collection of data, analysis and to present their rese work. It can be a written report, case study or a case series, experimental st exploratory study etc; in a selective group of patients or normal subjects.

Each student will receive guidance from the physiotherapy teacher towards refe relevant literature/collect required data and discuss them with the project g periodically. After correction and edition of handwritten manuscripts by the pr guide, the Student will complete his/her study work into a manual form for submis to the Institution of study. The students will do their project work in 4th year and h be submitted before start of their yearend examnation.

At the end of session, the student has to submit the project work to the college w includes a hard copy & soft copy. The submission of project work is compulso appear in the final end – year exam.

EVALUATION SCHEME FOR RESEARCH PROJECT

S.NO.	CRITERIA	INTERNAL EXAMINER –I (50)	INTERNAL EXAMINER-II (50)	REMARKS
1.	Statement of Problem			
2.	Literature Review			
3.	Research Design			
4.	Sampling Design			
5.	Data Collection Procedure			
6.	Analysis of Data & Interpretation			
7.	Ethical Aspects			
8.	Interpretation of the finding			
9.	Conclusion			
10.	Presentation/Report writing			

Course Code: BPT461	Internship Posting-1 BPT 4TH YEAR INTERNSHIP	L-0 T-0 P-48 C-24

Guidelines: Placement in a recognized hospital where In-patient and Out-patient facilities are available. Following fields of Internship program to be given by HOD/ Principal of Physiotherapy department/ college:

1. Muskulo-Skeletal [Surgical /Medical]
2. Traumatology / Rheumatology
3. Burns & Plastic Surgery
4. Neuro-Sciences [Surgical / Medical]
5. Paediatric
6. Psychiatry /Psycho-somatic
7. Cardio-Respiratory-[Surgical/Medical]
8. Surgery /Medicine
9. Intensive Care [Surgical / Medical / Trauma]
10. Obstetrics & Gynecology
11. Geriatrics
12. Community based Rehabilitation
13. Project

[Internship Includes Project on evidence based investigation measures or Clinical trials / Prospective case studies /case reports.]

Evaluation of the Internship

1. The student shall put up not less than 90% attendance during each assignment. Student's performance shall be graded by the respective clinic section In-charge at the end of each assignment. The candidates shall repeat the particular assignment if the performance is found unsatisfactory [Grade-C or 0]

2. **Project**-submitted by the candidate will be dully verified & a viva shall be conducted on the same at the end of the Internship. Internship completion certificate shall be issued to the candidate ONLY after the satisfactory performance in Project Viva as well as in the "Attitude" during EACH clinical assignment. Completion certificate shall be given after satisfactory report from different departments. Only six leaves are allowed to an internee during the period of his/her internship. If he/she extends his/her leaves during the duration of internship, the period the internship shall be extended by double of the days for which the student was absent.