Ordinance & Syllabus

for

Bachelor of Physiotherapy (BPT)

Atal Bihari Bajpayee Medical University UP
Session 2021-22 Onwards (Semester System)

These ordinances shall be called "The Ordinances & Regulations, Syllabus and Scheme of Examination pertaining to norms for the Bachelor of Physiotherapy course"

Name of the Course- Bachelor of Physiotherapy (BPT)

Broad area of Profession- Healthcare Profession

No. of Seats: Not more than 60 seats in a college. (Seats in already existing /affiliated colleges will remain as it is.)

No. of Physiotherapy Beds: The Bed: Student ratio in the College should be 1:3

HUMAN RESOURCES REQUIREMENT FOR COMMENCING BPT DEGREE PROGRAM:

Teaching faculty: Teacher student ratio must be (1:10) Teacher: Student.

Non-Teaching Staff such as Librarian, Asst. Librarian, Clerk-2, Computer operator-1, Lab assistant for each Lab, Driver, Peon must be at least 7.

Pay Scales of Teaching and Non-Teaching Staff will be as per latest U.G.C Norms.

QUALIFICATIONS, EXPERIENCE AND OTHER ELIGIBILITY REQUIREMENTS FOR APPOINTMENT OF PHYSIOTHERAPY TEACHERS

I. ASSISTANT PROFESSOR: Bachelor's Degree in Physiotherapy (B.P.T./B. Th.P./B.P.Th.), Master's Degree in Physiotherapy (M.P.Th/M.Th.P./M.Sc. P.T/M.P.T./ MSPT) with at least 55% marks (or an equivalent grade in a point scale wherever the grading system is followed) from a recognized University.

II. ASSOCIATE PROFESSOR: i) Essential: A Master's Degree in Physiotherapy (M.P.T./M.P.Th./M.Th.P/M.Sc. P.T./ MSPT) with eight years' experience as Assistant Professor. ii) Desirable: Higher Qualification, such as Ph.D. degree in any discipline of Physiotherapy recognized by the U.G.C, and published work of high standard in peer-reviewed or UGC - listed journals.

III. PROFESSOR: Essential: Master's Degree in Physiotherapy (M.P.T./ M.P.Th./M.Th.P./M.Sc. P.T./MSPT), with ten years' experience. Desirable: (i) Higher Qualification like Ph. D. in any subject of Physiotherapy recognized by U.G.C, and (ii) Published work of high standard in peer -reviewed or UGC- listed journals.

IV. PRINCIPAL /DEAN: Essential: Master's Degree in Physiotherapy (M.P.T./M.Th.P./M.Pth./M.Sc. P.T./MSPT) with fifteen years total teaching experience, (i) Senior-most Professor shall be designated as the Principal / Dean (Physiotherapy). (ii) Desirable: Higher qualification like Ph.D. in any subject or Physiotherapy recognized by the UGC and published work of high standard in peer reviewed or UGC listed journals.

ACADEMIC FACILITIES:

A. **Academic Block:** The minimum required area in the academic block for urban areas is 4000 Sq Meter (43040 Sq Ft) and for rural areas is 8000 Sq Meter (86080 Sq Ft). In case of more than one course in that building there must be an additional 2000 Sq. meter more area per course. There should be minimum 10 sq.ft. space per student in classrooms, 15 sq. ft. space per student in laboratories. The space in clinical areas shall depend on the number of students posted in the clinics at a time.

Space allotment	**Requirement per unit (sq.ft)**	**No. of Units**	**Total area required (sq. ft.)**
*Department Office	500	1	500
* Principal's Office	300	1	300
* H.O. D/ Professor's Office	100 x 4	4	400
Associate Professor's office	50	8	400
Assistant Professor's office	50 x 24	24	1200
Common room for Staff	300	1	300
Seminar room/Mini Auditorium	1200	1	1200
Conference Hall	2500	1	2500

Class Rooms (with LCD projector, Audio Visual aids).	800	4	3200
Girls common room (with bed and attached washroom)	400	1	400
Boys Common room	200	1	200
Library with Reading Room	2500	1	2500
Hostel for Girls	Mandatory	Separate / shared with Medical/Dental College	
Hostel for Boys	Mandatory	Separate / shared with Medical/Dental College	
Out-door Physiotherapy department (Minimum 50 patients/day)	2500	1	2500
Gymnasium	1000	1	1000
Laboratories	Required in BPT SEM	Minimum Required Area	
Human Anatomy Lab	1st and 2nd Sem	1200 sq. ft.	

Human Physiology Lab	1st and 2nd Sem	1200 sq. ft.
Biochemistry & Biophysics Lab	1st Sem	1200 sq. ft.
Electrotherapy Lab & Electro-diagnosis Lab	3rd and 4th Sem	1200 sq. ft.
Exercise Therapy Lab	3rd and 4th Sem	1200 sq. ft.
Biomechanics & Kinesiology Lab	2nd and 3rd Sem	1200 sq. ft..
Dept. of Musculoskeletal Physiotherapy	7th and 8th Sem	1200 sq. ft.
Dept. of Neuro-physiotherapy (separate pediatrics and adults' sections)	7th and 8th Sem	1200 sq. ft.
Dept. of Cardio-respiratory Physio therapeutics & ICU	7th and 8th Sem	1200 sq. ft.
Dept. of Sports Physiotherapy (Therapeutic Gymnasium, Exercise Fitness & Analysis Lab)	7th and 8th Sem	1200 sq. ft.
Dept. of Community Physiotherapy (with Mobile Physiotherapy Van) for i) women's health ii) ergonomics iii) health promotion iv) geriatrics.	7th and 8th Sem	1200 sq. ft.

B. **Hospital**: Own hospital/ Attached hospital with 100 beds in which Orthopedic, Neurology, Cardiothoracic, ICU, Emergency and trauma, Gynecology. Physiotherapy department is mandatory. Student: Patient Ratio in hospital and Physiotherapy OPD should be 1:5. In case of an attached hospital there should be a maximum distance of 5 Km from the academic block of the College. The college must have its own/ tie-up with at least five PHCs/NGOs/Special Schools for Community based rehabilitation training.

Selection procedure:

1. He/she has passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or govt. recognized Board. With –Physics, Chemistry and Biology as major subjects with 50% marks in PCB for General/OBC Category and 45% marks in PCB for SC/ST Category.

a. Candidates who have passed the Senior Secondary school Examination of National Open School. Physics, Chemistry, Biology, English.

2. He/she has attained the age of 17 years as on 31st December of the year of admission.

3. Admission will be done through a common entrance test at the State Level /or through score of a National Level Entrance Exam on merit basis. The candidate must obtain at least 50% marks in the entrance examination to get admission.

Reservation for disability: 5% percent Horizontal reservation will be considered for Loco-motor disabled candidates only with a disability of loco-motor to the tune of maximum 40% to the lower extremity and other eligibility criteria with regard to qualification will be same as prescribed for unreserved category candidates.

Caste Certificate: Caste certificate issued by the competent authority as approved by Govt. of Uttar Pradesh will be acceptable.

Duration of the course

Duration of the course shall be 4 ½ years (8 Semester examination pattern + 6 months internship). (Total of 4780 hours in theory, practical & clinical) and minimum 960 hours of internship (to be completed in six months duration).

Minimum Course Total hours- 5740

Medium of instruction:

English shall be the medium of instruction for all the subjects of study and for examination of the course.

Commencement of the course-

First Semester	Odd Semester	August
Second Semester	Even semester	February

Third Semester	Odd Semester	August
Fourth Semester	Even semester	February
Fifth Semester	Odd Semester	August
Six Semester	Even semester	February
Seventh Semester	Odd Semester	August
Eight Semester	Even semester	February

The course shall commence no later than August for Odd semester and February for even semester.

Commencement of examination-
University examinations will be conducted one time in one Semester.

Working days during the year-
Each semester shall consist not less than 100 working days excluding examination days.

Marks qualifying for pass-

50% marks in theory and practical marks separately are required.

Attendance:
A candidate has to secure minimum-

1. 75% attendance in theoretical lectures
2. 85% in Skills training (practical) for qualifying to appear for the final examination

No relaxation, whatsoever, will be permissible to this rule under any ground including in medical illness /disposition etc.

Assessment:

Assessments should be completed by the academic staff, based on the compilation of the student's theoretical & clinical performance throughout the training program. To achieve this, all assessment forms and feedback should be included and evaluated.
The passing marks for every subject in the year should be 50% marks in theory and practical considered separately.

Skill based Outcomes and Monitorable Indicators: Competency Statements to be tested through written and practical examinations

1. Consults with the client to obtain information about his/her health, associated history, previous health interventions, and associated outcomes.
2. Collects assessment data relevant to the client's needs and physiotherapy practice.

3. Be able to conduct the patient evaluation and assessment as per condition.
4. Analyzing Assessment findings & establish a physiotherapy diagnosis and prognosis.
5. Develops and Recommends an intervention strategy.
6. Be able to prepare the patient (physically and emotionally) and as well as the equipment to be used as per treatment plan.
7. Implements intervention.
8. Be able to accurately explain the treatment plans and able to demonstrate and teach self exercises
9. Advise patient on appropriate nutrition, exercises, rest, relaxation other issues
10. Evaluates the effectiveness of interventions.
11. Be able to complete accurate treatment documentation.
12. Develops, builds, and maintains rapport, trust, and ethical professional relationships through effective communication.
13. Establishes and maintains inter professional relationships, which foster effective client-centered collaboration.
14. Understand the principles of continuous quality improvement.
15. Be able to carry out the daily/weekly Quality Control (QC) checks.
16. Be able to review the literature.
17. Be able to suggest implementation of research findings.
18. Be able to suggest/ initiate topics for physiotherapy research
19. Be able to interpret, apply and disseminate information as a member of the profession.

PROGRAM EDUCATION OBJECTIVES (PEOs)

The overall objectives of the learning outcome-based curriculum framework (LOCF) for BPT are as follows:

PEO No.	Education Objective
PEO 1	Students will be able to apply fundamental body of knowledge and clinical competency in Physiotherapy to achieve professional excellence.
PEO 2	Students will execute application of clinical and practical skills in Physiotherapy
PEO 3	Students will practice the profession by ethical norms and communicate effectively with the multi-disciplinary team.

PEO 4	Students will acquire creative proficiency in interpersonal and collaborative skills to identify, assess and formulate problems and execute the solution.
PEO 5	Students will be able to imbibe the culture of entrepreneurship, research, innovations, and incubate new avenues for professional growth.
PEO 6	Students will display lifelong learning process for a highly productive career and will be able to relate the concepts of Physiotherapy towards serving the cause of the society.

GRADUATE ATTRIBUTES

S No.	Attribute	Description
1.	Professional Knowledge	Develop scientific knowledge and understanding to practice as a health care professional
2.	Clinical / practical skills	Apply clinical / practical skills to prevent, assess and manage quality health care services
3.	Communication	Displays empathetic and professional communication skills to patients/clients, care- givers, other health professionals and other members of the community
4.	Cooperation/Team work	Ability to practice collaboratively and responsibly with multidisciplinary team members to deliver high quality health care
5.	Professional ethics	Ability to resolve ethical issues and practice the ethical values in the professional life
6.	Research / Innovation-related Skills	A sense of enquiry and investigation with ability to raise questions and translate the evidence into clinical practice.

7.	Critical thinking and problem solving	Ability to think critically and provide solutions for real life situations
8	Reflective thinking	Employ reflective thinking along with sense of awareness of one self and society
9	Information/digital literacy	Excel in use of information communication and technology in ongoing learning situations
11.	Multi-cultural competence	Ability to effectively engage and respond in a multicultural society
12.	Lifelong Learning	Demonstrate the ability to acquire knowledge and skills that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to demands of work place through knowledge/skill development/reskilling.

PROGRAM OUTCOMES (POs):

After successful completion of Master of Physiotherapy program, students will be able to:

PO No.	Attribute	Competency
PO 1	**Professional knowledge**	Possess and apply **scientific knowledge** to work as an member of health care system
PO 2	**Clinical/ Technical skills**	Employ **clinical skills** to provide quality health care services
PO 3	**Team work**	Demonstrate **team work** with shared goals with the interdisciplinary health care team to improve societal health
PO 4	**Ethical value & professionalism**	Possess and demonstrate **ethical values and professionalism** within the legal framework of the society

PO 5	**Communication**	**Communicate** professionally with the multidisciplinary health care team and the society
PO 6	**Evidence based practice**	Demonstrate high quality **evidence based practice** that leads to excellence in professional practice
PO 7	**Life-long learning**	Enhance knowledge and skills with the use of recent technology for the **continual improvement** of professional practice
PO 8	**Entrepreneurship, leadership and mentorship**	Display **entrepreneurship, leadership and mentorship** skills to practice independently as well as in collaboration with the multidisciplinary health care team

Program Outcomes (POs) and Course Outcomes (COs) Mapping

Sem.	Program Outcomes	Course Code	Course Name	Course Outcomes
I Sem	PO1- Professional Knowledge	BPT-101	Human Anatomy I (Including Applied Anatomy)	CO1
I Sem	PO1- Professional Knowledge	BPT-102	Human Physiology I (Including Applied Physiology)	CO2
I Sem	PO1- Professional Knowledge	BPT-103	Biochemistry	CO3
I Sem	PO1- Professional Knowledge	BPT-104	Bio physics	CO4
I Sem	PO1- Professional Knowledge PO5-Communication PO7- Life long Learning	BPT-105	Health Psychology	CO5

I Sem	PO5-Communication PO7- Life long Learning	BPT-106	Remedial English	CO6
II Sem	PO1- Professional Knowledge	BPT-107	Human Anatomy II (Including Applied Anatomy)	CO1 CO7
II Sem	PO1- Professional Knowledge	BPT-108	Human Physiology II (Including Applied Physiology)	CO2 CO8
II Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-109	Biomechanics and Kinesiology I	CO9
II Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills PO7- Life long Learning	BPT-110	Yoga-Basic theory, science and techniques	CO10
II Sem	PO5-Communication PO7- Life long Learning	BPT-111	Computers & Informatics	CO11
III Sem	PO1- Professional Knowledge	BPT-201	Exercise Therapy-I	CO12
III Sem	PO1- Professional Knowledge	BPT-202	Electrotherapy-I	CO13
III Sem	PO1- Professional Knowledge	BPT-203	Biomechanics and Kinesiology II	CO9 CO14
III Sem	PO1- Professional Knowledge	BPT-204	Microbiology	CO15

III Sem	PO4- Ethical Values PO7- Life long Learning	BPT-205	Environmental Science	CO16
III Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills PO5-Communication	BPT-206	Clinical Education	CO17
IV Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-207	Exercise Therapy II	CO12 CO18
IV Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-208	Electrotherapy II	CO13 CO19
IV Sem	PO1- Professional Knowledge	BPT-209	Pharmacology	CO20
IV Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-210	First Aid & Emergency Care	CO21
IV Sem	PO1- Professional Knowledge	BPT-211	Pathology	CO22
IV Sem	PO4- Ethical Values PO7- Life long Learning	BPT-212	Medical/Physiotherapy Ethics & Laws	CO23
IV Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills PO5-Communication	BPT-213	Clinical Education	CO17
V Sem	PO1- Professional Knowledge	BPT-301	Cardio-Pulmonary Medicine & Surgery	CO24
V Sem	PO1- Professional Knowledge	BPT-302	Clinical Neurology & Neuro Surgery	CO25

V Sem	PO1- Professional Knowledge	BPT-303	General Orthopaedics and Traumatology	CO26
V Sem	PO1- Professional Knowledge	BPT-304	General Medicine	CO27
V Sem	PO3- Team Work PO5-Communication	BPT-305	Introduction to Health Care Systems	CO28
V Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills PO5-Communication	BPT-306	Clinical Education	CO17
VI Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-307	PT in General Medical & Surgical condition	CO29
VI Sem	PO1- Professional Knowledge	BPT-308	Regional Orthopaedics and Diagnostic imaging	CO26 CO30
VI Sem	PO1- Professional Knowledge	BPT-309	Clinical Neurology and Neuro Surgery	CO31
VI Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills PO3-Team Work PO5-Communication	BPT-310	Community Physiotherapy and Rehabilitation	CO32
VI Sem	PO4- Ethical Values PO7- Life long Learning	BPT-311	Introduction to Quality & Patient Safety	CO33
VI Sem	PO4- Ethical Values PO5-Communication PO7- Life long Learning	BPT-312	Professionalism & Values	CO34

VII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-401	Physiotherapy Orthopaedics-I	CO35
VII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-402	Physiotherapy in Neurology-I	CO36
VII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-403	Physiotherapy in Cardiopulmonary conditions-I	CO37
VII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-404	Physiotherapy in Sports-I	CO38
VII Sem	PO6-Evidence Based Practice	BPT-405	Research Methodology & Biostatistics	CO39
VII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills PO6-Evidence Based Practice	BPT-406	Evaluation Methods and Outcome Measures	CO40
VII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills PO6-Evidence Based Practice	BPT-407	Clinical reasoning & Evidence based physiotherapy	CO17 CO41
VII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills PO6-Evidence Based Practice	BPT-408	Clinical education	CO17
VIII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-409	Physiotherapy in Orthopaedics-II	CO35 CO42
VIII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-410	Physiotherapy in Neurology-II	CO36 CO43

VIII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-411	Physiotherapy in Cardiopulmonary conditions -II	CO37 CO44
VIII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills	BPT-412	Physiotherapy in Sports-II	CO38 CO45
VIII Sem	PO3-Team Work PO6-Evidence Based Practice	BPT-413	Research Project	CO46
VIII Sem	PO5-Communication	BPT-414	Critique inquiry, case presentation and discussion.	CO48
VIII Sem	PO1- Professional Knowledge PO2- Clinical/ Technical Skills PO6-Evidence Based Practice	BPT-415	Clinical education	CO17

Curriculum & Syllabus

For

Bachelor of Physiotherapy (4 years 6 months program)

Atal Bihari Vajpayee Medical University U.P
From session 2021-2022
(Semester System)

Introduction:

Learning Objectives: At the completion of this course, the student should be-

1. The purpose of this curriculum is to delineate the cognitive, affective and psychomotor skills deemed essential for completion of this program and to perform as a competent physiotherapist who will be able to examine, evaluate, diagnose, plan, execute and document physiotherapy treatment independently or along with the multidisciplinary team.
2. Evaluate patients for impairments and functional limitations and be able to execute all routine physiotherapeutic procedures as per the evaluation.
3. Able to operate and maintain physiotherapy equipment used in treatment of patients, physiotherapy treatment planning (both electrotherapy and exercise therapy) & procedures independently.
4. Able to provide patient education about various physiotherapeutic interventions to the patient and care givers.

Program Objectives-

1. Course work entitles independent physiotherapy assessment and treatment in any health care delivery centers in India by the graduates.
2. The coursework is designed to train students to work as independent physiotherapists or in conjunction with a multidisciplinary team to diagnose and treat movement disorders as per red and yellow flags.
3. Course work will enlighten the skill of the graduate's physical/functional diagnosis, treatment planning, management, administration of physiotherapy treatment, and patient support.
4. Graduates can find employment opportunities in hospitals/nursing homes/sports teams/fitness centers/Community Rehabilitation/Health planning boards/health promotions services in both private and public sectors as well as in independent physiotherapy clinics.
5. Physiotherapy graduates are encouraged to pursue further qualification to attain a senior position in the professional field and also to keep abreast with the recent advances, new technology and research. The professional should opt for continuous professional education credits offered by national and international institutes.

PO1: The Students will be able to possess knowledge and comprehension of

Diagnosis and treatment utilizing physiotherapy Techniques

PO2: The students will be able to develop the skills for diagnosis and differential diagnosis in physiotherapy conditions

PO3: The students will be able to design and formulate the treatment plan to address the needs of patients

PO4: The students will be able to identify themselves as physiotherapists delivering effective health care

PO5: The students will be able to understand the health care needs of the society and the best practices to provide them

PO6: The student will be able to learn and apply the basic medical knowledge for diagnosis and effective management of physiotherapy conditions

PO7: The students will learn, practice, and implement appropriate ethical guidelines for effective and optimal treatment

PO8: The students will understand their roles and responsibilities either individually or as a rehabilitation team member in delivering effective health care

PO9: The students will have good leadership qualities and entrepreneurship skills by working and communicating effectively in an interdisciplinary environment either independently or with a team

PO10: The students will be able to demonstrate and apply the technical skills to integrate the core areas of physiotherapy practice

PO11: To provide students with sufficient breadth and depth of knowledge in physiotherapy and related areas and enable them for higher studies and life -long learning programs.

BPT Graduate Attributes:

1. The graduate will be a competent and reflective physiotherapy practitioner who can function safely and effectively while adhering to legal, ethical, and professional standards of practice in a multitude of physiotherapy settings for patients and clients across the lifespan and along the continuum of care from wellness and prevention to rehabilitation of dysfunction.
2. The graduate will utilize critical inquiry and evidence-based practice to make clinical decisions essential for autonomous practice.
3. The graduate will function as an active member of professional and community organizations. The graduate will be a service-oriented advocate dedicated to the promotion and improvement of community health.
4. The graduate will demonstrate lifelong commitment to learning and professional development.

Eligibility for admission:

Selection procedure:

1. He/she has passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board with 50% in physics, chemistry and biology (botany & zoology), i.e. –Physics, chemistry and biology as major subjects).
2. Candidates who have passed the Senior Secondary school Examination of National Open School. The candidate must pass in English.
    a. Physics, Chemistry, Biology (Botany+ Zoology considered as a combined)
    b. Physics, Chemistry, Biology.
3. He/she has attained the age of 17 years as on 31st December of the year of academic session.
4. Admission will be done through a common entrance test at the State Level /or through score of a National Level Entrance Exam on merit basis.

Medium of instruction:
English shall be the medium of instruction for all the subjects of study and for examination of the course.

Attendance:
A candidate has to secure minimum-
1. 75% attendance in theoretical.
2. 80% in Skills training (practical) for qualifying to appear for the final examination
No relaxation, whatsoever, will be permissible to this rule under any ground including in medical illness /disposition etc.

Assessment:
Assessments should be completed by the academic staff, based on the compilation of the student's theoretical & clinical performance throughout the training program. To achieve this, all assessment forms and feedback should be included and evaluated.
The passing marks for every subject in the year should be 50% marks in theory and practical considered separately.

Semester System

The semester system accelerates the teaching-learning process and enables vertical and horizontal mobility of students in learning. The credit based semester system provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The choice based credit system enables students to take courses

of their choice, learn at their own pace, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning

Semesters: A semester should not less than 100 days excluding the exam period

An academic year consists of two semesters:

Semesters	Starting Month
Odd Semesters 1 st ,3rd,5th,7th	August -January
Even Semesters 2 nd, 4th, 6th ,8th	February-July

Credits:

Credit defines the coefficient of contents/syllabus prescribed for a course and determines the number of hours of instruction required per week. Credits will be assigned in each course on the basis of number of lectures/ practical/tutorial/ laboratory work and other forms of learning required, to complete the course contents in a 15-20-weekschedule:

a. 1 credit = 1 hour of lecture per week

b. 3 credits = 3 hours of instruction per week

c. P - One credit for every two hours of laboratory or practical

d. CT - One credit for every three hours of Clinical training/Clinical rotation/posting

e. RP - One credit for every two hours of Research Project per week – Maximum Credit

20-25

	Lecture - L	Tutorial - T	Practical - P	Clinical Training/ Rotation– CT/CR	Research Project– RP*
1 Credit	1 Hour	2 Hours	2 Hours	3 Hours	2 Hours
RP*	Maximum Credit 20 – 25 / Semester				

Assigning total Credits for a Program: The UGC, in its notification No.F.1-1/2015 (Sec.) dated 10/4/15 has provided a set of Model curricula and syllabi for CBCS programs. In conformation with this notification, the BPT program credits for 4 1/2 years duration will be 184 credits in total, inclusive of clinical rotation/clinical training and research project.

BPT-101	Human Anatomy I (Including Applied Anatomy)	BPT-107	Human Anatomy II (Including Applied Anatomy)
BPT-102	Human Physiology I (Including Applied Physiology)	BPT-108	Human Physiology II (Including Applied Physiology)
BPT-103	Biochemistry	BPT-109	Biomechanics and Kinesiology I
BPT-104	Bio physics	BPT-110	Yoga-Basic theory, science and techniques
BPT-105	Health Psychology		

Semester Three		**Semester Four**	
Course code	**Core course**	**Course code**	**Core course**
BPT-201	Exercise Therapy-I	BPT-207	Exercise Therapy II
BPT-202	Electrotherapy-I	BPT-208	Electrotherapy II
BPT-203	Biomechanics and Kinesiology II	BPT-209	Pharmacology
BPT-204	Microbiology	BPT-210	First Aid & Emergency Care
		BPT-211	Pathology

Semester Five		**Semester Six**	
Course code	**Core course**	**Course code**	**Core course**
BPT-301	Cardio-Pulmonary Medicine & Surgery	BPT-307	PT in General Medical & Surgical condition
BPT-302	Clinical Neurology and Neuro Surgery	BPT-308	Regional Orthopaedics and Diagnostic imaging
BPT-303	General Orthopaedics and Traumatology	BPT-309	General Surgery
BPT-304	General Medicine	BPT-310	Community Physiotherapy and Rehabilitation

Semester Seven		Semester Eight	
Course code	**Core course**	**Course code**	**Core course**
BPT-401	Physiotherapy Orthopaedics-I	BPT-409	Physiotherapy in Orthopaedics-II
BPT-402	Physiotherapy in Neurology-I	BPT-410	Physiotherapy in Neurology-II
BPT-403	Physiotherapy in Cardiopulmonary conditions-I	BPT-411	Physiotherapy in Cardiopulmonary conditions - II
BPT-404	Physiotherapy in Sports-I	BPT-412	Physiotherapy in Sports-II
BPT-405	Research Methodology & Biostatistics	BPT-413	Research Project

Semester	Non-University Exam Subjects	Course code
I	Remedial English	BPT-106
II	Computers & Informatics	BPT-111
III	Environmental Science	BPT-205
III	Clinical Education	BPT-206
IV	Medical/Physiotherapy Ethics & Laws	BPT-212
IV	Clinical Education	BPT-213
V	Introduction to Health Care Systems	BPT-305
V	Clinical Education	BPT-306
VI	Introduction to Quality & Patient Safety	BPT-311
VI	Professionalism & Values	BPT-312
VI	Clinical Education	BPT -313
VII	Evaluation Methods and Outcome Measures	BPT-406
VII	Clinical reasoning & Evidence based physiotherapy	BPT-407
VII	Clinical education	BPT-408
VIII	Critique inquiry, case presentation and discussion.	BPT-414
VIII	Clinical education	BPT-415

Rules and Regulation for Examination of Bachelor of Physiotherapy

Letter Grades and Grade Points:

The UGC has recommended system of awarding grades and CGPA under Choice Based Credit Semester System for all the UG/PG courses. ABVMU would be following the absolute grading system, where the marks are compounded to grades based on pre-

determined class intervals. The UGC recommended 10-point grading system with the following letter grades
will be followed:

Table 1: Grades and Grade Points:

Letter Grade	Grade Point
O (Outstanding)	10
A+ (Excellent)	9
A (Very Good)	8
B (Good)	7
C (Above Average)	6
F (Fail)/ RA (Reappear)	0
Ab (Absent)	0
Not Completed (NC)	0
RC (<50% in attendance or in Internal Assessment)	

A student obtaining Grade F/RA will be considered failed and will require reappearing in the examination.

Candidates with NC grading are those detained in a course (s); while RC indicate student not fulfilling the minimum criteria for academic progress or less than 50% attendance or less than 50% in internal assessments (IA). Registrations of such students for the respective courses shall be treated as cancelled. If the course is a core course, the candidate has to re-register and repeat the course when it is offered next time.

CBCS Grading System - Marks Equivalence Table

Table 2: Grades and Grade Points

Letter Grade	Grade Point	% of Marks
O (Outstanding)	10	86-100
A+ (Excellent)	9	70-85
A (Very Good)	8	60 -69
B (Good)	7	55 -59
C (Above Average) – **Passing criteria for BPT**	6	50- 54
F (Fail))/ RA (Reappear)	0	Less than 50
Ab (Absent)	0	-
NC- not completed	0	-
RC- Repeat the Course	0	0

Table 3: Cumulative Grades and Grade Points

Letter Grade	Grade Point	CGPA
O (Outstanding)	10	9.01 - 10.00
A+ (Excellent)	9	8.01 – 9.00
A (Very Good)	8	7.01 – 8.00
B (Good)	7	6.00 - 7.00
C (Above Average)	6	5.01 - 6.00

Assessment of a Course: Evaluation for a course shall be done on a continuous basis. Uniform procedure will be adopted under the CBCS to conduct internal assessments, followed by one end-semester university examination (ES) for each course.

Courses in programs where in Theory and Practical/Clinical are assessed jointly, the minimum passing head has to be 50% Grade each for theory and practical's separately. RA (Re appear) grade in any one of the components will amount to reappearing in both components. i.e. theory and practical. Evaluation for a course with clinical rotation or clinical training or internship will be done on a continuous basis.

Eligibility to appear for the end-semester examinations for a course includes: Candidates having ≥ 75% attendance and obtaining the minimum 40% in internal assessment in each course to qualify for appearing in the end-semester university examinations.
The students desirous of appearing for university examination shall submit the application form duly filled along with the prescribed examination fee. Incomplete application forms or application forms submitted without prescribed fee or application form submitted after due date will be rejected and student shall not be allowed to appear for examination.

Passing Heads
Passing head for core theory and practical courses will be 50% inclusive of internal assessment.
For non-university subjects – The minimum prescribed marks for pass will be 50%.

Detention: A student not meeting any of the above criteria maybe detained (NC) in that particular course for the semester. In the subsequent semester, such a candidate requires improvement in all, including attendance and/or IA minimum to become eligible for the next end-semester examination.

Maximum Duration of course:
The maximum duration for completing the program will be **9** years from the date of joining in the course

Carry over benefit:

- A student will be allowed to keep term for Semester II irrespective of number of heads of failure in Semester I.
- A student will be allowed to keep term for Semester III if she/he passes each Semester I and II OR fails in not more than Two subjects each in semester I and II.
- Student will be allowed to keep term for Semester IV irrespective of number of heads of failure in Semester III. However, student must mandatorily have passed each course of Semester I and II in order to appear for Semester IV exam.
- Student will be allowed to keep term for Semester V, if she/he passes Semester I, II, III and IV OR has passed in all courses of Semester I and II and fails in not more than two courses each of Semester III and IV.
- Student will be allowed to keep term for Semester VI, irrespective of number of heads of failure in Semester V. However, student must mandatorily have passed each course of Semester I, II, III and IV in order to appear for Semester VI exam.
- Student will be allowed to keep term for Semester VII, if she/he passes Semester I, II, III, IV, V and VI OR has passed in all courses of Semester I, II, III and IV and fails in not more than two courses each of Semester V and VI. A student will not be allowed to appear for the Semester VIII examination unless she/he has cleared all previous examinations.
- Student will be allowed to commence internship if he/she passes Semester VIII examination.

Grace Marks:

- A student shall be eligible for grace marks, provided he/she appeared in all the papers prescribed for the examination.
- Maximum up to 5 grace marks in one subject only may be allowed for passing.
- No grace marks will be awarded in internal evaluation.

University End-Semester Examination

There will be one final university examination at the end of every semester.

A student must have minimum 75% attendance (Irrespective of the type of absence) in theory and practical in each subject to be eligible for appearing the University examination.

The Principal / Director shall send to the university a certificate of completion of required attendance and other requirements of the applicant as prescribed by the university, two weeks before the date of commencement of the written examination.

A student shall be eligible to sit for the examination only, if she / he secure a minimum of 40% in internal assessment (individually in theory and practical as applicable).

Internal examinations will be conducted at the level of constituent unit.

Notwithstanding any circumstances, a deficiency of attendance at lectures or practical

maximum to the extent of 10% - may be condoned by the Principal /Director.
If a student fails either in theory or in practical, he/ she have to re-appear for both.

Student may apply to the University following due procedure for re-evaluation/ recounting of theory marks in the presence of the subject experts. Internal assessment shall be submitted by the Head of the Department to the University through Director at least two weeks before commencement of university theory examination.

Supplementary examination: The supplementary examination will be held in the next semester. Eligibility to appear for supplementary examination will be as per rule mentioned above for carryover.

Re-Verification

There shall be provision of re-totalling/re-evaluation of the answer sheets; candidate shall be permitted to apply for recounting/re-totalling/re-evaluation of theory papers within 8 days from the date of declaration of results.

Scheme of University Exam Theory Program: General structure / patterns for setting up question papers for Theory / Practical courses, for BPT program of ABBMU are given in the following tables. Changes may be incorporated as per requirements of specific courses.

Theory Question Paper Pattern For University Examinations 80 Marks

Question Type	NO. of Question	Marks/Question	Question X Marks	Total Marks
Short	5	6	6X5	30
Very Short	10	2	2X10	20
Long	3	10	10X3	30

General Instructions (Theory)

A. Time duration of each Theory Paper will be of Three Hrs

B. Total Marks of each Theory Paper will be 80 Marks

C. There will be short answer, very short and long answer questions.

D. All questions are compulsory.

Practical exam Pattern For University Examinations 80 Marks

Exercise	Descriptions	Marks
Long Practical Exercise	Long Practical Exercise/Case	30
Short Practical Exercise	Short Practical Exercise/Case	20
Viva	Viva	30

General Instructions (Practical):

A. All the students have to remain present at the examination center 15 minutes before the scheduled time for examination.

B. Students have to carry with them I-card or examination receipt, and other necessary requirements for examination.

C. Candidate should not leave the practical hall without the permission of examiner.

D. Use of calculator is allowed but the use of mobile phones is strictly prohibited.

E. The candidate has to leave the laboratory only after the submission of all the answer sheets of the exercises performed

Research Project Report

BPT student should submit a suitable research project topic forwarded by the guide to college in Semester VIII. Completed project report should be submitted at least 20 days before the exam

Internship-

All students of Bachelor of Physiotherapy must undergo a compulsory rotatory internship for a continuous period of 6 months approved by the college after passing all examinations in all subjects. Internship should be done in a minimum 100 bedded government recognized hospital. The ratio of patients to intern shall be 5:1.

Eligibility for appearing for Internship: On completion of all course work (including of theory and practical examinations) a candidate is permitted by the Director/Principal to join internship.

Responsibilities during internship: During the internship period candidates should show at least 6 calendar months attendance. They must engage in practice/ skill based learning of professional conduct. Their learning outcomes must be maintained and presented in the form of logbooks, case studies, research project report.

Evaluation of internees and award of credits: All internees will be assessed based on their satisfactory attendance, performance in the postings/ research labs and the presentation of the logbook. The credits and hours of internship will be as defined in the BPT program

Eligibility for award of degree

A candidate shall have passed in all the subjects of all semester's I-VIII, completed Internship and submitted research project report to be eligible for award of BPT Degree.

The performance of a candidate in a course will be indicated as a letter grade, whereas grade point will indicate the position of the candidate in that batch of Candidates. A student is considered to have completed a course successfully and earned the prescribed credits if he/she secures a letter grade other than F/RA. A letter grade RA in any course implies he/she has to Re-appear for the examination to complete the course.

The RA grade once awarded in the grade card of the student is not deleted even when he/she completes the course successfully later. The grade acquired later by the student will be indicated in the grade sheet of the subsequent semester in which the candidate has appeared for clearance in supplementary exams

If a student secures RA grade in the Project Work/Dissertation, he/she shall improve it and resubmit it, if it involves only rewriting / incorporating the revisions suggested by the evaluators. If the assessment indicates lack of student performance or data collection then the student maybe permitted to re-register by paying the prescribed re-registration fee and complete the same in the subsequent semesters.

A candidate shall be declared to have passed the examination if he/she obtains the following minimum qualifying grade / marks:-

(a) For Core courses CT (Core Theory), CL (Core Lab), DE (Discipline centric Electives), clinical rotation and internship student shall obtain Grade B (50 % of marks) in the University End Semester Examination (ES) and in aggregate in each course which includes both Internal Assessment and End Semester Examination. (b) For Generic Electives (GE), Ability Enhancement (AE) and Skill Enhancement (SE) courses student shall obtain Grade D (40 % of marks) in the College Examination.

Computation of SGPA and CGPA

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

i. The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone & earned by a student, i.e.,

SGPA (Si) = $\sum$(Ci x Gi) / $\sum$Ci where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course.

ii. ii. The CGPA is also calculated in the same manner taking into account all the courses undergone & earned by a student over all the semesters of a programme, i.e.

CGPA = $\sum$(Ci x Si) / $\sum$ Ci where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

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

Classification of Successful Candidates

Overall Performance in a Program and Ranking of a candidate is in accordance with the University regulations.

Consolidated Grade Card - BPT Program			
Letter Grade	**%Mark range**	**Grade point**	**CGPA Range**
O	**80&above**	**10**	**9.01-10**
A+	**75-80**	**9**	**8.01-9**
A	**60-74**	**8**	**7.01-8**
B+	**55-59**	**7**	**6.01-7**

B	**50-54**	**6**	**5.01-6**
F/RA	**Less than 50**	**0**	**4.51-5.0**
Ab (Absent)		**0**	
Not completed (NC)		**0**	
Repeat the course (RC = <50% in attendance or Internal Assessment)			

A successful candidate will be :

i. Who secures not less than O grade with a CGPA of 9.01 – 10.00 shall be declared to have secured 'OUTSTANDING' provided he/she passes the whole examination in the FIRST ATTEMPT;

ii. ii. Who secures not less than A+ grade with a CGPA of 8.01 – 9.00 shall be declared to have secured 'EXCELLENT' provided he/she passes the whole examination in the FIRST ATTEMPT;

iii. iii. Who secures not less than A grade with a CGPA of 7.01 –8.00 and completes the course within the stipulated course period shall be declared to have passed the examinations with 'Very Good'

iv. iv. All other candidates (with grade B and above) shall be declared to have passed the examinations.

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EVALUATION SCHEME

(MAXIMUM MARKS)

BPT FIRST SEMESTER

S.NO	Course	Course Code	Theory		Practical		Total M.M
			Internal M.M	External M.M	Internal M.M	External M.M	
1	Human Anatomy I (Including Applied Anatomy)	BPT-101	20	80	20	80	200
2	Human Physiology I (Including Applied Physiology)	BPT-102	20	80	20	80	200
3	Biochemistry	BPT-103	20	80	20	80	200
4	Bio physics	BPT-104	20	80	-	-	100
5	Health Psychology	BPT-105	20	80	-	-	
Non-University Exam Subjects							
6	Remedial English	BPT-106	-	-	-	-	-
Total			**100**	**400**	**60**	**240**	**700**

BPT SECOND SEMESTER

S.NO	Course	Course Code	Theory		Practical		Total M.M
			Internal M.M	External M.M	Internal M.M	External M.M	
1	Human Anatomy II (Including Applied Anatomy)	BPT-107	20	80	20	80	200
2	Human Physiology II (Including Applied Physiology)	BPT-108	20	80	20	80	200
3	Biomechanics and Kinesiology I	BPT-109	20	80	20	80	200
4	Yoga-Basic theory, science and techniques	BPT-110	20	80	20	80	200
Non-University Exam Subjects							
5	Computers & Informatics	BPT-111	-	-	-	-	-
Total			80	320	80	320	800

BPT THIRD SEMESTER

S.NO	Course	Course Code	Theory		Practical		Total M.M
			Internal M.M	External M.M	Internal M.M	External M.M	
1	Exercise Therapy-I	BPT-201	20	80	20	80	200
2	Electrotherapy-I	BPT-202	20	80	20	80	200
3	Biomechanics and Kinesiology II	BPT-203	20	80	20	80	200
5	Microbiology	BPT-204	20	80	-	-	100
Non-University Exam Subjects							
7	Environmental Science	BPT-205	-	-	-	-	-
8	Clinical Education	BPT-206	-	-	-	-	-
Total			80	320	60	240	700

BPT FOURTH SEMESTER

S.NO	Course	Course Code	Theory		Practical		Total M.M
			Internal M.M	External M.M	Internal M.M	External M.M	
1	Exercise Therapy II	BPT-207	20	80	20	80	200
2	Electrotherapy II	BPT-208	20	80	20	80	200
3	Pharmacology	BPT-209	20	80			100
4	First Aid & Emergency Care	BPT-210	20	80	-	-	100
5	Pathology	BPT-211	20	80	-	-	100
Non-University Exam Subjects							
6	Medical/Physiotherapy Ethics & Laws	BPT-212	-	-	-	-	-
7	Clinical Education	BPT-213	-	-	-	-	-
Total			100	400	40	160	700

BPT FIFTH SEMESTER

S.NO	Course	Course Code	Theory		Practical		Total M.M
			Internal M.M	External M.M	Internal M.M	External M.M	
1	Cardio-Pulmonary Medicine & Surgery	BPT-301	20	80	-	-	100
2	General Surgery	BPT-302	20	80	-	-	100
3	General Orthopaedics and Traumatology	BPT-303	20	80	-	-	100
4	General Medicine	BPT-304	20	80	-	-	100
8	Introduction to Health Care Systems	BPT-305	-	-	-	-	-
9	Clinical Education	BPT-306	-	-	-	-	-
Total			80	320	-	-	400

BPT SIXTH SEMESTER

S.NO	Course	Course Code	Theory		Practical		Total Marks
			Internal M.M	External M.M	Internal M.M	External M.M	
1	PT in General Medical & Surgical Condition	BPT-307	20	80	20	80	200
2	Regional Orthopaedics and Diagnostic imaging	BPT-308	20	80			100
3	Clinical Neurology and Neuro Surgery	BPT-309	20	80			100
4	Community Physiotherapy and Rehabilitation	BPT-310	20	80	20	80	200
Non-University Exam Subjects							
8	Introduction to Quality & Patient Safety	BPT-311	-	-	-	-	-
9	Professionalism & Values	BPT-312	-	-	-	-	-
10	Clinical Education	BPT -313	-	-	-	-	-
Total			80	320	40	160	600

BPT SEVENTH SEMESTER

S.NO	Course	Course Code	Theory		Practical		Total Marks
			Internal M.M	External M.M	Internal M.M	External M.M	
1	Physiotherapy in Orthopaedics-I	BPT-401	20	80	20	80	200
2	Physiotherapy in Neurology-I	BPT-402	20	80	20	80	200
3	Physiotherapy in Cardiopulmonary conditions-I	BPT-403	20	80	20	80	200
4	Physiotherapy in Sports-I	BPT-404	20	80	20	80	200
5	Research Methodology & Biostatistics	BPT-405	20	80	-	-	100
Non-University Exam Subjects							
6	Evaluation Methods and Outcome Measures	BPT-406	-	-	-	-	-
7	Clinical reasoning & Evidence based physiotherapy	BPT-407	-	-	-	-	-
8	Clinical education	BPT-408	-	-	-	-	-
Total			100	400	80	240	900

BPT EIGHTH SEMESTER

S.NO	Course	Course Code	Theory		Practical		Total Marks
			Internal M.M	External M.M	Internal M.M	External M.M	
1	Physiotherapy in Orthopaedics-I	BPT-409	20	80	20	80	200
2	Physiotherapy in Neurology-I	BPT-410	20	80	20	80	200
3	Physiotherapy in Cardiopulmonary-I	BPT-411	20	80	20	80	200
4	Physiotherapy in Sports-I	BPT-412	20	80	20	80	200
5	Research Project	BPT-413	100	-	-	-	100
Non-University Exam Subjects							
8	Critique inquiry, case presentation and discussion.	BPT414	-	-	-	-	-
9	Clinical education	BPT-415	-	-	-	-	-
Total			80	320	60	240	900

INTERNSHIP	Maximum Marks	Total Hour
6 Months	300	960

INTERNAL ASSESSMENT

It will be for theory and practical both. It will be done throughout all the semesters. Candidates must obtain at least 35% marks in theory and practical separately in internal assessment to be eligible for the annual university examination.

• Internal assessment (Theory) will be done as follows:

a) Class tests = 10 marks

b) Assignments/Projects/Clinical Presentations = 05 marks

c) Attendance = 05 marks

Total = 20 marks

Internal assessment (Practical) will be done as follows:

a) Laboratory manual = 10 marks

b) Day to day performance = 05 marks

c) Attendance = 05 marks

Total = 20 marks

Internal assessment of subjects without practical will be done as:

a) Class tests = 10 marks

b) Assignments/Projects/Class test/Clinical Presentations = 05 marks

c) Attendance = 05 marks

Total = 20 marks

CURRICULUM SCHEME

FIRST SEMESTER

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical	Total	
BPT-101	Human Anatomy I (Including Applied Anatomy)	80	64	144	6
BPT-102	Human Physiology (Including Applied Physiology)	80	64	144	6
BPT-103	Biochemistry	50	20	70	3
BPT-104	Bio physics	30	20	50	3
BPT-105	Health Psychology	50	-	50	3
	Non-University exam Subjects				
BPT-106	Remedial English	30	-	30	2
	Total	**320**	**168**	**488**	**23**

SECOND SEMESTER

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical	Total	
BPT-107	Human Anatomy II (Including Applied Anatomy)	80	64	144	6
BPT-108	Human Physiology II (Including Applied Physiology)	80	64	144	6
BPT-109	Biomechanics and Kinesiology I	80	64	144	6
BPT-110	Yoga-Basic theory, science and techniques	30	20	50	3
	Non-University exam Subjects				
BPT-111	Computers & Informatics	30	-	30	2
	Total	**300**	**212**	**512**	**23**

THIRD SEMESTER

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical	Total	
BPT-201	Exercise Therapy-I	80	64	144	6
BPT-202	Electrotherapy-I	80	64	144	6
BPT-203	Biomechanics and Kinesiology II	80	64	144	6
BPT-204	Microbiology	50	-	50	3
	Non-University exam Subjects				
BPT-205	Environmental Science	30	-	30	2
BPT-206	Clinical Observation		60	60	2
	Total	**320**	**252**	**572**	**25**

FOURTH SEMESTER

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical	Total	
BPT-207	Exercise Therapy II	80	64	144	6
BPT-208	Electrotherapy II	80	64	144	6
BPT-209	Pharmacology	50	-	50	3
BPT-210	First Aid & Emergency Care	30	30	60	3
BPT-211	Pathology	55	20	75	3
	Non-University exam Subjects				
BPT-212	Medical/Physiotherapy Ethics & Laws	30	-	30	2
BPT-213	Clinical Observation		60	60	2
	Total	**325**	**238**	**563**	**25**

FIFTH SEMESTER

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical	Total	
BPT-301	Cardio Pulmonary Medicine & Surgery	80	20	100	4
BPT-302	General Surgery	80	20	100	4
BPT-303	General Orthopaedics and Traumatology	80	20	100	4
BPT-304	General Medicine	80	20	100	4
	Non-University exam Subjects				
BPT-305	Introduction to Health Care Systems	30	-	30	2
BPT-306	Clinical Education		60	60	2
	Total	**350**	**140**	**490**	**20**

SIXTH SEMESTER

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical	Total	
BPT-307	PT in General Medical & Surgical Condition	80	64	144	6
BPT-308	Regional Orthopaedics and Diagnostic imaging	80	20	100	4
BPT-309	Clinical Neurology and Neuro Surgery	80	20	100	4
BPT-310	Community Physiotherapy and Rehabilitation	80	64	144	6
	Non-University exam Subjects				
BPT-311	Introduction to Quality & Patient Safety	15	-	15	1
BPT-312	Professionalism & Values	10		10	1
BPT -313	Clinical Education		60	60	2
	Total	**345**	**228**	**573**	**24**

SEVENTH SEMESTER

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical	Total	
BPT-401	Physiotherapy in Orthopaedics-I	80	64	144	4
BPT-402	Physiotherapy in Neurology-I	80	64	144	4
BPT-403	Physiotherapy in Cardiopulmonary conditions -I	80	64	144	4
BPT-404	Physiotherapy in Sports-I	80	64	144	4
BPT-405	Research Methodology & Biostatistics	50		50	1
	Non-University exam Subjects				
BPT-406	Evaluation Methods and Outcome Measures	30	30	60	2
BPT-407	Clinical reasoning & Evidence based physiotherapy	30	30	60	2
BPT-408	Clinical Education		60	60	2
	Total	**430**	**376**	**806**	**23**

EIGHTH SEMESTER

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical	Total	
BPT-409	Physiotherapy in Orthopaedics-II	80	64	144	4
BPT-410	Physiotherapy in Neurology-II	80	64	144	4
BPT-411	Physiotherapy in Cardiopulmonary conditions -II	80	64	144	4
BPT-412	Physiotherapy in Sports-II	80	64	144	4
BPT-413	Research Project		120	120	4
	Non-University exam Subjects				
BPT414	Critique inquiry, case presentation and discussion.	20	-	20	1
BPT-415	Clinical Education		60	60	2
	Total	**340**	**436**	**776**	**23**

Internship

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical /Clinical	Total	
BPT-416	Internship		960	960	16
	Total			**960**	

INTERNSHIP–Minimum 960 hours (calculated based on 8 hours per day,)

There shall be six months of Internship after the final year examination for candidates declared to have passed the examination in all the subjects. During the internship candidate shall have to work full time average 8 hours per day (each working day) for 6 Calendar months. Each candidate is allowed a maximum of 6 holidays during the entire Internship Program and in case of any exigencies during which the candidate remains absent for a period more than 6 days, he/she will have to work for the extra days during which the candidate has remained absent.

The Internship should be rotatory and cover clinical branches concerned with Physiotherapy such as

Orthopaedics -1 month

ICU - 1 month

Neurology and Neurosurgery -1month

Paediatrics and Medicine- 1 month

General Surgery and Obstetrics and Gynaecology -1 month

CTVS + Plastic Surgery - 1 month

The posting should be both inpatient and outpatient services. The student has to maintain a log book and it should be duly signed by the concerned clinical supervisor on a daily basis. The log book should also include six case studies from respective departments. Based on the attendance and work done during posting the Director/Principal/ head of institution/department shall issue 'Certificate of Satisfactory completion' of training following which the University shall award the Bachelor of Physiotherapy Degree or declare the candidate eligible for the same. No candidate shall be awarded a degree without successfully completing a six months internship. Institutions shall have to satisfy themselves that satisfactory infrastructure facilities of Physiotherapy exist in the Institute / Hospital where the internship training has to be undertaken. Following parameters / guidelines have been suggested:

a. It is mandatory for the Institution to have its own Physiotherapy clinic fully furnished with all the necessary equipment as per the curriculum of the Program.

b.Senior Physiotherapists with sufficient clinical experience should manage the physiotherapy departments in the Institutes/Hospitals.

c. Institute Director / Principal can at his discretion grant NOC to the students to do the Internship at the place of his/her choice provided the concerned Hospital fully satisfies the above criteria. For the purpose of granting NOC the candidate shall have to submit to the Institution the status of Physiotherapy services available at the place where he/ she intends to do Internship.

The Internship is continuously evaluated and marks are awarded at the end of Internship for a total of 300 marks (50 marks/Month/Departmental Posting). The marks are awarded by the Clinical supervisor/ HOD of the concern department. The marks awarded shall be submitted to the examination department within one week from the day of completion of internship.

BPT FIRST SEMESTER

HUMAN ANATOMY-I (Including Applied Anatomy)

BPT-101

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT101	HUMAN ANATOMY-I	144 (80 T + 64 P)	6	6	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION- It is designed to provide students with the working knowledge of the structure of the human body which is an essential foundation for their clinical studies.

COURSE OBJECTIVE - The student will be able to demonstrate knowledge in human anatomy as needed for the study and practice of physiotherapy and occupational therapy.

COURSE OUTCOMES

CO1: To identify the microscopic structures of various tissues and organs in the human body and correlate the structure with the functions.

CO2: To understand the basic principles of embryology including genetic inheritance and stages involved in development of the organs and systems from the time of conceptions till birth.

CO3: To understand the bones, joints, muscles, vascular and nerve supply of upper limb.

CO4: To know about basic anatomical knowledge of boundaries and contents of thoracic cavity.

CO5: To understand the bones, joints, muscles, vascular and nerve supply of head and neck.

UNIT I

General Anatomy

a. Introduction and subdivisions of Anatomy.

b. Anatomical nomenclature: Terms of Planes, Positions, Body parts and movements.

c. Basic tissues of the body: Definition, location and their function

d. Structure and appendages of skin

e. Superficial & deep fascia: Definition and functions, modifications of deep fascia

General Histology and Embryology

a. Epithelium, Connective Tissue
b. Muscle, bone and Cartilage
c. Nerve and Vessels
d. Development of skin fascia and blood vessels
e. Development of Endo, Exoskeleton, neural tube and spinal cord

UNIT II

Regional Anatomy

Thorax:

i. Cardio–Vascular System Mediastinum: Divisions and contents Pericardium: Thoracic Wall: position, shape and parts of the heart; conducting System; blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body region wise.
ii. Respiratory system- Outline of respiratory passages: Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on bronchopulmonary segments.
iii. Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm.
iv. Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action.
v. Applied Anatomy: Diaphragmatic Hernia, Applied anatomy of respiratory system, Applied anatomy of circulatory system, Applied anatomy of trachea and esophagus

UNIT III

Abdomen:

i. Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum.
ii. Large blood vessels of the gut.
iii. Location, size, shape, features, blood supply, nerve supply and functions of the following: stomach, liver, spleen, pancreas, kidney, urinary bladder, intestines, gallbladder.

b. Pelvis: Position, shape, size, features, blood supply and nerve supply of the male and female reproductive system.
c. Endocrine glands: Position, shape, size, function, blood supply and nerve supply of the following glands: Hypothalamus and pituitary gland, thyroid glands, parathyroid glands, Adrenal glands, pancreatic islets, ovaries and testes, pineal glands, thymus.
d. Applied Anatomy: Abdominal Hernia, Congenital anomalies, Clinical significance of 9 regions of abdomen, Surgical incisions, Applied

anatomy of visceral organs

UNIT IV

Musculoskeletal Anatomy- (All the topics to be taught in detail)

e. Connective tissue classification.
f. Bones- Composition & functions, classification and types according to Morphology and development.
g. Joints- definition, classification, structure of fibrous, cartilaginous joints, blood supply and nerve supply of joints.
h. Muscles– origin, insertion, nerve supply and actions.

UNIT V

Upper Extremity

i. Osteology: Clavicles, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges.
ii. Soft parts: Breast, pectoral region, axilla, front of arm, back of arm, cubital fossa, front of forearm, back of forearm, palm, dorsum of hand, muscles, nerves, blood vessels and lymphatic drainage of upper extremity.
iii. Joints: Shoulder girdle, shoulder joint, elbow joints, radioulnar joint, wrist joint and joints of the hand.
iv. Arches of hand, skin of the palm and dorsum of hand.
v. Applied Anatomy: Injuries related to dislocations/subluxation of joints of upper limb, Injuries related to fractures of bones of upper limb, entrapment neuropathies, Brachial plexus injury, Rotator cuff injuries, Injuries related to vascular supply of upper limb, Injuries related to nerve damage, Knowledge of ossification of bones of upper limb, Deformities, Anatomy related to surgical management of breast carcinoma. Knowledge of lymph nodes and lymph vessels and their pathology, Triangle of auscultation, soft tissue injuries of upper limb, Capsular injuries, Venipuncture in cubital fossa, Reflexes, Contractures and Syndromes of upper limb and thorax.

PRACTICAL- List of Practical/Demonstrations

1. Upper extremity including surface Anatomy.
2. Thorax including surface anatomy, abdominal muscles.
3. Embryology- models, charts & X-rays.

HUMAN PHYSIOLOGY-I (Including Applied Physiology)

BPT-102

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT102	HUMAN PHYSIOLOGY-I	144 (80 T + 64 P)	6	6	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION: The course is designed to assist the students to acquire knowledge of the normal human Physiology of various body systems and understand the alternation in physiology in disease and practice of Physiotherapy as applicable for each systemic disorder.

COURSE OBJECTIVE: The objective of this course is that after lectures, demonstrations, practical and clinics the student will be able to demonstrate an understanding of elementary human physiology.

COURSE OUTCOMES:

CO1: Understand the cell physiology in detail including the transport mechanism of human body and blood and body fluid distribution and composition.

CO2: Understand interaction and integration of different organ systems in health and diseases special nerve-muscle physiology.

CO3: Understand the functional mechanisms of cardiovascular system, student should be able to tell about the conducting system of heart, cardiac muscle, cardiac output along with the calculation and handling of equipment e.g. measurement of blood pressure

CO4: Describe the physiology of respiratory system which include mechanics of breathing, spirometer, transport of gases and the common disorders of respiratory system.

CO5: Demonstrate in depth the knowledge of GIT, Its structure, functions, composition & functions of different juices, movements, digestion & absorption and related applied.

THEORY

1. **General Physiology**
    a. Cell: Morphology, Organelles: their structure and functions
    b. Transport Mechanisms across the cell membrane
    c. Body fluids: Distribution, composition.
2. **Blood**
    a. Introduction: Composition and functions of blood.
    b. Plasma: Composition, formation, functions, Plasma proteins.
    c. RBC: count and its variations.

Erythropoiesis- stages, factors regulating.
Reticulo- endothelial system (in brief)
Haemoglobin – structure, function and derivatives
Anemia (in detail), types of Jaundice
Blood indices, PCV, ESR

d. WBC: Classification, Morphology, functions, count, its variation of each Immunity
e. Platelets: Morphology, functions, count, its variations
f. Hemostatic mechanisms: Blood coagulation – factors, mechanisms, their disorders, Anticoagulants.
g. Blood Groups: Landsteiner's law, types, significance, determination, Erythroblastosis foetalis.
h. Blood Transfusion: Cross matching, Indications and complications.
i. Lymph: Composition, formation, circulation and functions.
j. Applied Physiology: Thalassemia Syndrome, Hemophilia, VWF, Anemia, Leukocytosis, Bone marrow transplant, Oxygen debt.

3. Nerve Muscle Physiology

a. Introduction: Resting membrane potential, Action potential – ionic basis and properties.
b. Nerve: Structure and functions of neurons, Classification, Properties and impulse transmission of nerve fibers. Nerve injury – degeneration and regeneration.
c. Neuroglia: Types and functions.
d. Physiology of the Brain: Areas & Connections
e. Sympathetic and Parasympathetic regulation, thermoregulation
f. Peripheral nervous system
g. Muscle: Classification, Skeletal muscle: Structure, Neuromuscular junction: Structure, Neuromuscular transmission,
h. Applied Physiology: Muscles and Nervous System Functions, Types of nerve fibers, Action potential, Strength-duration curve, ECG, EMG, VEP, NCV, Degeneration and regeneration of nerve, Reactions of denervation, Synaptic transmission, stretch reflex- Mechanism and factors affecting it, Posture, Balance and Equilibrium/Coordination of voluntary movement, Voluntary motor action, clonus, Rigidity, incoordination, Special senses- Vision, taste, hearing, vestibular, Olfaction, myasthenia gravis. Excitation-Contraction coupling, Rigor-mortis.

4. Cardiovascular System

a. Introduction: Physiological anatomy and nerve supply of the heart and blood vessels. Organization of CVS, Cardiac muscles: Structure. Ionic basis of action potential and pacemaker potential, Properties.

b. Conducting system: Components, Impulse conduction Cardiac Cycle: Definition, Phases of cardiac cycle. Pressure and volume curves. Heart sounds – causes, character, ECG: Definition, Different types of leads, Waves and their causes, P-R interval, Heart block.

c. Cardiac Output: Definition, Normal value, Determinants, Stroke volume and its regulation, Heart rate and its regulation, their variations

d. Arterial Blood Pressure: Definition, Normal values and its variations, determinants, Peripheral resistance, Regulation of BP.

e. Arterial pulse.

f. Shock– Definition, Classification, causes and features

g. Regional Circulation: Coronary, Cerebral and Cutaneous circulation

h. Applied Physiology: Circulatory adjustment in exercise and in postural and gravitational changes, Pathophysiology of fainting and heart failure, Cardiovascular changes during exercise.

5. Respiratory System-

a. Introduction: Physiological anatomy– Pleura, tracheo-bronchial tree, alveolus, respiratory membrane and their nerve supply. Functions of respiratory system, Respiratory muscles.

b. Mechanics of breathing: Intrapleural and Intrapulmonary pressure changes during respiration, Chest expansion, Lung compliance: Normal value, pressure-volume curve, factors affecting compliance and its variations, Surfactant – Composition, production, functions, RDS

c. Spirometry: Lung volumes and capacities, Timed vital capacity and its clinical significance, Maximum ventilation volume, Respiratory minute volume.

d. Dead Space: Types and their definition.

e. Pulmonary Circulation Ventilation- perfusion ratio and its importance.

f. Transport of respiratory gases: Diffusion across the respiratory membrane, Oxygen transport – Different forms, oxygen-haemoglobin dissociation curve. Factors affecting it. P50, Haldane and Bohr Effect, Carbon dioxide transport: Different forms, chloride shift.

g. Regulation of Respiration: Neural Regulation, Hering-breuer's reflex, Voluntary control, Chemical Regulation.

h. Applied Physiology: Hypoxia: Effects of hypoxia, Types of hypoxia, hyperbaric oxygen therapy, Acclimatization Hypercapnia, Asphyxia, Cyanosis– types and features, Dysbarism, Disorders of Respiration: Dyspnoea, Orthopnoea, Hyperpnoea, hyperventilation, apnoea,

tachypnoea, periodic breathing- types Artificial respiration, Respiratory changes during exercise. Pulmonary Functions, Respiratory adjustments in exercises, Artificial respiration, Breath sounds.

PRACTICAL

More detailed study of the physiology and practical applications of the following selected topics with emphasis on aspects, which should help in understanding the nature and treatment of common clinical situations of interest in Physiotherapy.

1. Clinical Examination: Examination of Radial pulse, blood pressure, CVS, Respiratory system, Sensory system, Motor System, reflexes, cranial nerves.
2. Amphibian Experiments– Demonstration and Dry charts Explanation, Normal cardiogram of amphibian heart, Properties of Cardiac muscle, Effect of temperature on cardiogram, Simple muscle curve, Effect of increasing the strength of the stimuli
3. Effect of temperature on muscle contraction, Effect of two successive stimuli, Effect of Fatigue, Effect of load on muscle contraction, Genesis of tetanus and clonus, Velocity of impulse transmission.
4. Haematology: To be done by the students
   Study of Microscope and its uses, Determination of RBC count, WBC count, Differential leukocyte count, Estimation of hemoglobin, Calculation of blood indices, Determination of blood groups, Determination of bleeding time, Determination of clotting time, Demonstrations only: Determination of ESR, Determination of PCV

BIOCHEMISTY
BPT-103

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT103	**BIOCHEMISTY**	**70 (50 T + 20 P)**	**3**	**3**	**20 (T) + 20 (P)**	**80 (T) + 80 (P)**	**200**

COURSE DESRCIPTION- The course describes structures & functions of cell in brief; normal functions of different components of food, Enzymes, define Basal metabolic rate & factors affecting the same [in brief], with special reference to obesity; nutritional aspects of carbohydrates, lipids, proteins & vitamins &their metabolism with special reference to obesity; define enzymes, discuss in brief, factors affecting enzyme activity; describe in details biochemical aspects of muscle contraction.

COURSE OBJECTIVE- The students will be able to understand the biochemical change of the various elements of the body at cellular level and extra cellular level.

COURSE OUTCOME-

CO1: The graduate should be able to understand the importance of nutrition.

CO2: The graduate should be able to identify the different types of biomolecules (carbohydrate, lipid and amino acid), to understand the chemistry of various types of biomolecules in maintaining the health.

CO3: The graduate should be able to understand the importance of Enzymes, nucleic acid and Digestion of biomolecules.

CO4: The graduate should be able to understand the importance of different pathways concerned with carbohydrate, lipid and protein metabolism along with their application in different physical and clinical conditions after the completion of the course.

CO5: To understand the importance of Vitamin, minerals, Cell biology, muscle contraction, Hormones, Clinical biochemistry and acid base balance.

1. Nutrition: RDA, BMR, SDA, caloric requirement and balanced diet.
2. Carbohydrates: Definition, classification and general functions. Carbohydrate Metabolism - Glycolysis, T.C.A cycle.
3. Lipids: Definition, classifications and general functions. Essential fatty acids and their importance, Cholesterol, Lipoproteins. Metabolism-b−Oxidation of fatty acids, fatty liver and ketosis.
4. Amino Acids: Definition, classification, essential and nonessential amino acids.
5. Proteins: Definition, classification, and Biomedical Importance. Metabolism:
6. Formation and fate of ammonia, Urea cycle and its significance.
7. Study of hemoglobin and myoglobin with their functions.
8. Enzymes: Definition, classification with examples, Factors affecting enzyme action,
   isoenzyme and coenzyme, Clinical importance of enzymes.
9. Biochemistry of connective tissue - Introduction, various connective tissue proteins
   collagen, elastin- structure and associated disorders.
10. Vitamins: Definition, classification and functions, dietary source, daily requirement
    and deficiency disorders.
11. Cell Biology: Introduction, Cell structure, Cell membrane structure and function, various types of absorption, Intracellular organelles and their functions, briefly on cytoskeleton.
12. Muscle Contraction: Contractile elements in muscle, briefly on the process of muscle contraction, Energy for muscle contraction.
13. Clinical Biochemistry: Normal levels of blood and urine constituents, Relevance of blood and urine levels of Glucose, Urea, Uric acid, Creatinine, Calcium, Phosphates, pH and Bicarbonate, Liver function tests, Renal function tests.

PRACTICAL

Qualitative and Quantitative estimation: Routine blood investigations normal values LFT, KFT, TFT, Lipid Profile, Thyroid Profile, Plasma glucose GTT, G.t curve Plasma protein, Plasma creatinine Demo experiments enzymes assays, Na, K, Ca.

BIOPHYSICS
BPT-104

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT103	BIOPHYSICS	35 (20 T + 15 P)	3	3	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE OBJECTIVE- Describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc. and the simple instruments used to test /calibrate these components [such as potentiometer, oscilloscope etc.] of the circuitry, and will be able to identify such components

COURSE OUTCOME-
CO1: Explain various terms used in relation to biophysics, mechanics, biomechanics & kinesiology.
CO2: Explain the physics principles & Laws of Electricity, & Electromagnetic spectrum
CO3: Discuss effects of environmental &man-made electromagnetic field at the cellular level & outline risk factors on prolonged exposure.
CO4: Describe the Main electrical supply, Electric shock, examine precautions to be taken for prevention of electric shock
CO5: Identify and describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc. & the simple instruments used to test /calibrate these components (such as potentiometer, oscilloscope, mustimeter) of the circuit; & identify such components.

1. Overview of Electrophysiology different electrical signals in human body. Potential of nerve – resting membrane potential–ionic basis. Nernst equation. Hodgkin-Huxley model. Goldman equation.
2. Action potential- ionic basis, gating kinetics and physio-pharmacology of different ion channels. Voltage clamp studies, biphasic and compound action

potential. Receptor potential- general transduction mechanism, stimulus–receptor relationship, adaptation of receptors.

3. Non-Ionizing Radiation physics: Electricity and Magnetism at the Cellular level, Different sources of non-Ionizing radiation-their physical properties, various types of optical radiations-UV, visible & IR sources, Lasers-Theory and mechanism.
4. Measurement of fluence from optical sources, Optical properties of tissues, theory and experimental techniques, interaction of laser radiation with tissues, photo thermal, photochemical, photo ablation electromechanical effect.
5. Radiofrequency & Microwave radiation, Production and properties, interaction mechanism of RF and microwaves with biological systems, Thermal and non-thermal effects on whole body, lens and cardiovascular systems, tissue characterization.
6. Hyperthermia and other applications. Biomagnetism, Effects, applications. Electrical Impedance and Biological Impedance, Principle and theory of thermography, applications in biology & medicine. The use of electromagnetic, acoustic and mechanical energies to produce biophysical effects at the cellular, tissue, organic level.
7. Photobiological phenomenon: Photoactivation of biological systems, Photodynamic therapy and mechanism of photodynamic action on cells. Photo bio-stimulation through Lasers. Photo-medicine. Optical properties of skin, Acute and chronic effect of sunlight on skin, Photosensitivity, Phototoxicity, photo allergy and clinical implication, Beneficial effects of sun and artificial light energy, Photoprotection, Photo immunology. Medi photonics: Lasers in dermatology, oncology and cell biology.

PRACTICAL

Measurement of Pressure, Movement, Force, Frequency & Time using different instruments.

Demonstration of different therapeutic currents oscilloscope.

HEALTH PSYCHOLOGY

BPT-105

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT104	HEALTH PSYCHOLOGY	50 T	3	3	20 (T)	80 (T)	100

COURSE DESCRIPTION – This course will develop the basic knowledge of Psychology with respect to the normal development of a child and the psychological

condition of patient in terms of Health-related psychological introspection. This develops the utilization and importance of Psychology with respect to Physiotherapy treatment.

COURSE OBJECTIVE – The student will be able to recognize and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical surgical patients/conditions. They should also understand the elementary principles of behavior for applying in the therapeutic environment. In addition, the students will be able to show their proficiency based on written and internal evaluation.

COURSE OUTCOMES –

CO1: Recognize and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical-surgical patients/conditions.

CO2: Understand the elementary principles of behavior for applying in the therapeutic environment.

CO3: Perform psychosocial assessment of patients in various developmental stages

CO4: Understand Ego defense mechanisms and learn counseling techniques to help those in need.

CO5: Know about importance of psychology in health delivery system.

THEORY

1. **Introduction to Psychology**
    a. Schools: Structuralism, functionalism, behaviorism, Psychoanalysis.
    b. Methods: Introspection, observation, inventory and experimental method.
    c. Branches: pure psychology and applied psychology
    d. Psychology and physiotherapy

2. **Growth and Development**
    a. Lifespan: Different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age).
    b. Heredity and environment: role of heredity and environment in physical and psychological development, "Nature v/s Nurture controversy".
3. **Sensation, attention and perception**
    a. Sensation: Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium and visceral sense.
    b. Attention: Types of attention, Determinants of attention (subjective determinants and objective determinants).
    c. Perception: Gestalt principles of organization of perception (principle of figure ground and principles of grouping), factors influencing perception (past experience and context).
    d. Illusion and hallucination: different types.

4. **Motivation**
    a. Motivation cycle (need, drive, incentive, reward).
    b. Classification of motives.
    c. Abraham Maslow's theory of need hierarchy
5. **Frustration and conflict**
    a. Frustration: sources of frustration.
    b. Conflict: types of conflict.
    c. Management of frustration and conflict
6. **Emotions**
    a. Three levels of analysis of emotion (physiological level, subjective state, and overt behavior).
    b. Theories of emotion
    c. Stress and management of stress.
7. **Intelligence**
    a. Theories of intelligence.
    b. Distribution of intelligence.
    c. Assessment of intelligence
8. **Thinking**
    a. Reasoning: deductive and inductive reasoning
    b. Problem solving: rules in problem solving (algorithm and heuristic)
    c. Creative thinking: steps in creative thinking, traits of creative people
9. **Learning**
    a. Factors affecting learning.
    b. Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory.
    c. The effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.
10. **Personality**
    a. Approaches to personality: type & trait, behavioristic, psycho analytic and humanistic approach.
    b. Personality assessment: observation, situational test, questionnaire, rating scale, interview, and projective techniques.
    c. Defense Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjection, acting out.
11. **Social psychology**
    a. Leadership: Different types of leaders, Different theoretical approaches to leadership.
    b. Attitude: development of attitude, Change of attitude.
12. **Clinical psychology** – Models of training, abnormal behavior assessment, clinical judgement, psychotherapy, self-management methods, physiotherapist

patient interaction, aggression, self-imaging, stress management, assertive training, Group therapy, Body awareness, Pediatric, child and geriatric clinical psychology.

13. **Counselling**: Principles and Types of counselling, PLISSIT model, Principles and techniques of counselling special children and their family members.
14. **Yogic Psychology**: Mann, Buddhi, Chit, Ahankar,Vrittis, True knowledge and Inaccurate knowledge, Imagination, Sleep, Memory, Kleshas, Lack of awareness, Vikshepas, disease, apathy and mental dullness, dilemma and indecision, carelessness, haste, indifference, laziness, absence of non-attachment, false perception, Failure to attain, Fear of missing out (FOMO), Digital distraction, guilt and shame. vighnas, solutions.

REMEDIAL ENGLISH
BPT-106

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT106	REMEDIAL ENGLISH	30 T	2	2	20 (T)	80 (T)	100

COURSE DESCRIPTION- The course is designed to enable students to enhance ability to comprehend spoken and written English, required for effective communication in their professional work.

COURSE OBJECTIVE - The objectives of this course are to write grammatically correct English, to develop writing skills, to understand and express meaningfully the prescribed tent. To comprehend and communicate in simple English; grooming the personality of the students.

COURSE OUTCOMES –

CO1: Understand about the grammatical and idiomatic usages

CO2: To gain knowledge about various methods of patient education, barriers of communication and how to overcome them.

CO3: Become fluent in speaking and enhance the ability to communicate effectively with colleagues, doctors, patients etc. and writing various official letters, writing patients reports and summarize scientific sessions.

CO4: Handling difficulty situations with grace style and professionalism.

CO5: To enable students to enhance ability to comprehend spoken and written

English, required for effective communication in their professional work.

This course introduces the elements of English as used in medical terminology. Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes. Topics include: origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and terminology specific to the student's field of study. Spelling is critical and will be counted when grading tests. Derivation of medical terms. Define word roots, prefixes, and suffixes. Conventions for combined morphemes and the formation of plurals. Basic medical terms in health care and physiotherapy. Form medical terms utilizing roots, suffixes, prefixes, and combining roots. Interpret basic medical abbreviations/symbols.

Communicative English

Time words and Tenses
Active and Passive Voice
Direct-Indirect Speeches
Prepositions and Conditionals
Practice of daily use words, numerals and tongue twisters
Vocabulary building, Construction of simple sentences
Basic sentence pattern, subject and Predicate

Functional English

Introduction to Functional English
Describing Actions and Processes, Offering, Requests, Routines/Timetable, Making Comparisons, Sharing Interests and Experience

Conversational Skills

An Introduction to Conversations for various purposes importance of acquiring Conversational Skills
Models, Techniques and Types of Conversations

Introduction to Communication and Key Concepts in Communication

An Introduction to Communication
Basic Terms, Concepts, and Contexts of Communication
Factors influencing message encoding, the nature of message, and message uses and effects
Importance, Types and Principles of Communication

Effective Listening and Reading Skills

An Introduction to Listening and Reading
Purposes, Types and Techniques of Listening and Reading

Barriers to effective Listening & Reading and overcoming the Barriers
Note-taking and Note-making
Writing Skills: An Introduction to Writing
Importance of Effective Writing Paragraph Development: Coherence – Topic Sentence, Supporting Sentence & Data etc.
Business Letter Writing

BPT SECOND SEMESTER

HUMAN ANATOMY-II (Including Applied Anatomy)

BPT-106

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT106	HUMAN ANATOMY--II	144 (80 T + 64 P)	6	6	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION- The study of anatomy will include identification of all gross anatomical structures. Particularly emphasis will be placed on description of bones, joints, muscles, the brain, cardio pulmonary and nervous system, as these are related to the application of physiotherapy and occupational therapy in patients.

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

COURSE OUTCOMES –

CO1: Identify the axis and planes of different movements in human body and should be able to tell common anatomical terminology.
CO2: Identify the structures and classification of various connective tissues, bones, joints and muscles in the human body and correlate the structure with the functions.
CO3: Discuss about the structural and functional importance of muscles, joints, long and short nerves and different spaces in upper limb and lower limb, trunk and pelvis including applied aspect.
CO4: Gain knowledge of greater vessels, muscles and structural and functional importance of different viscera
CO5: Identify and describe various parts of nervous system

1. Lower extremity

i. Osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metatarsals and phalanges.
ii. Soft parts: Gluteal region, front and back of the thigh (Femoral triangle, femoral canal and inguinal canal), medial side of the thigh (Adductor canal), lateral side of the thigh, popliteal fossa, anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of lower limb, venous drainage of the lower limb, arterial supply of the lower limb, arches of foot, skin of foot.
iii. Joints: Hip Joint, Knee joint, Ankle joint, joints of the foot.
iv. Applied Anatomy: Injuries related to dislocations/subluxation of joints of lower limb, Injuries related to fractures of bones of lower limb, anatomy of entrapment neuropathies, Injuries related to vascular supply of lower limb, Injuries related to nerve damage, Knowledge of ossification of bones of lower limb, Deformities, Soft tissue injuries of upper limb, Capsular injuries, Reflexes, Contractures and Syndromes of lower limb, Intramuscular injection.

2. Trunk & Pelvis

i. Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs.
ii. Soft tissue: Pre and Para vertebral muscles, intercostals muscles, anterior abdominal wall muscles, Intervertebral disc.
iii. Pelvic girdle and muscles of the pelvic floor.
iv. Applied Anatomy: Injuries related to fractures, bony deformities, Spondylolisthesis, Spondylolysis, Spondylitis, Nerve entrapments, Spinal cord injuries: hemiplegia and paraplegia

3.Head and Neck

i. Osteology: Mandible and bones of the skull.
ii. Soft parts: Muscles of the face and neck and their nerve and blood supply- extraocular muscles, triangles of the neck.
iii. Gross anatomy of eyeball, nose, ears and tongue.
iv. Temporomandibular joints

4. Neuro-Anatomy - Organization of Central Nervous system- Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital system

i. Cranial nerves
ii. Peripheral nervous system
iii. Neurons, classification with examples.
iv. Simple reflex arc.
v. Parts of a typical spinal nerve/Dermatome/Myotome/Sclerotome
vi. Peripheral nerve

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vii. Neuromuscular junction
viii. Sensory end organs
ix. Central Nervous System
x. Spinal cord segments in relation to vertebral column
xi. Brain Stem
xii. Cerebellum
xiii. Structure and features of meninges
xiv. Inferior colliculi
xv. Superior Colliculi
xvi. Thalamus
xvii. Hypothalamus
xviii. Corpus striatum
xix. Cerebral hemisphere
xx. Lateral ventricles
xxi. CSF circulation
xxii. Blood supply to brain
xxiii. Basal ganglia
xxiv. The pyramidal system
xxv. Pons, medulla, extra pyramidal systems
xxvi. Anatomical integration

5. **Surface Anatomy:** surface anatomy of the musculoskeletal system, group work in surface anatomy of the thorax, abdomen, neck, limbs, thorax and abdomen, the pelvic region.

6. **Radiological Anatomy**

Radiological features of various soft tissues and bones are relevant to Head, Neck, Thorax, Abdomen, limbs and Pelvis.

PRACTICAL- List of Practical/Demonstrations

1. Lower extremity including surface Anatomy.
2. Head & Spinal cord and Neck and Brain including surface Anatomy.
3. Histology- Elementary tissue including surface Anatomy.
4. Embryology- models, charts & X-rays.

HUMAN PHYSIOLOGY-II (Including Applied Physiology)

BPT-107

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT107	HUMAN PHYSIOLOGY-	144 (80 T	6	6	20 (T) +	80 (T) +	200

	II	+ 64 P)			20 (P)	80 (P)	

COURSE DESCRIPTION- The course is designed to assist the students to acquire knowledge of the normal human Physiology of various body systems and understand the alternation in physiology in disease and practice of Physiotherapy as applicable for each systemic disorder

COURSE OBJECTIVE- The objective of this course is that after lectures, demonstrations, practical and clinics the student will be able to demonstrate an understanding of elementary human physiology

COURSE OUTCOME –

CO1: demonstrate a brief knowledge of pathway of vision, auditory, taste, smell and balance along with their disorders.

CO2: Understand the function of Peripheral and central nervous system and their function. They should be able to tell different pathways present in central nervous system with their location function and lesion including Upper and Lower motor neuron lesion.

CO3: understand the physiology of excretory system and its related applied.

CO4: To understand the influence of various environmental factors including personal stressors like exercise on various organ systems.

CO5: understand the endocrines, male and female reproductive system with reference to hormones, puberty, contraception, pregnancy & lactation.

1. Digestive System

a. Introduction: Physiological anatomy and nerve supply of alimentary canal, enteric nervous system.

b. Salivary Secretion: Saliva: Composition, Functions, Regulation, Mastication (in brief)

c. Swallowing: Definition, Different stages, Function.

d. Stomach: Functions, Gastric juice: Gland, composition, function, regulation, Gastrin: Production, function and regulation, Peptic ulcer, Gastric motility, Gastric emptying, vomiting.

e. Pancreatic Secretion: Composition, production, function, Regulation.

f. Liver: Functions of liver, Bile secretion: Composition, functions and regulation, Gallbladder: Functions.

g. Intestine: Succus entericus: Composition, function and regulation of secretion, Intestinal motility and its function and regulation.

h. Mechanism of Defecation.

2. Renal System

a. Physiology of kidney and urine formation.

b. Glomerular filtration rate, clearance, Tubular function.

c. Water excretion, concentration of urine regulation of Na+, Cl-, K+

excretion
d. Physiology of urinary bladder
e. Neural control of Micturition
f. Applied physiology: Types of bladders

3. Male & Female Reproductive System Male

a. Physiology of ovary and testis
b. Physiology of menstrual cycle and spermatogenesis
c. Functions of progesterone, estrogen and testosterone
d. Puberty & menopause
e. Physiological changes during pregnancy

4. Endocrine System-

a) Introduction: Major endocrine glands, Hormone: classification, mechanism of action, Functions of hormones.
b) Pituitary Gland: Anterior Pituitary and Posterior Pituitary hormones: Secretory cells, action on target cells, regulation of secretion of each hormone. Disorders: Gigantism, Acromegaly, Dwarfism, Diabetes insipidus. Physiology of growth and development: hormonal and other influences.
c) Pituitary- Hypothalamic Relationship.
d) Thyroid Gland: Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxedema, Cretinism, Grave's Disease.
e) Parathyroid hormones: secretory cell, action, regulation of secretion. Disorders: Hypoparathyroidism, Hyperthyroidism, Calcium metabolism and its regulation.
f) Adrenal Gland: Adrenal Cortex: Secretory cells, synthesis, action, regulation of secretion of Aldosterone, Cortisol, and Androgens. Disorders: Addison's disease, Cushing's syndrome, Conn's syndrome, Adreno genital syndrome.
g) Adrenal Medulla: Secretory cells, action, regulation of secretion of adrenaline and noradrenaline, Disorders: Pheochromocytoma.
h) Endocrine Pancreas: Secretory cells, action, regulation of secretion of insulin and glucagon, Glucose metabolism and its regulation, Disorder: Diabetes mellitus. Diabetes Mellitus, Physiological basis of Peptic Ulcer, Jaundice, GIT disorders and Dietary fiber, Thyroid functions, Vitamins deficiency.
i) Calcitriol, Thymus and Pineal gland (very brief).
j) Local Hormones (Briefly).

PRACTICAL

More detailed study of the physiology and practical applications of the following selected topics with emphasis on aspects, which should help in understanding the nature and treatment of common clinical situations of interest in Physiotherapy.

Recommended Demonstrations

- Spirometry
- Artificial Respiration
- ECG
- Perimetry
- Ergometry

BIOMECHANICS AND KINESIOLOGY I
BPT-108

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT108	BIOMECHANICS AND KINESIOLOGY I	144 (80 T + 64 P)	6	6	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION- This Course Supplements the Knowledge of anatomy and enables the student to have a better understanding of the principles of biomechanics and their application in musculoskeletal and various other dysfunctions.

COURSE OBJECTIVE- On completion of this subject, the students will be able to analyze normal human movement from a global perspective, integrating biomechanics, muscle mechanics and motor control theory. Experience quantitative methods of movement analysis using various methods. Apply the analytic methods to specific example of normal human motor performance. Use these methods for evaluation and treatment of disorders of the musculoskeletal system.

COURSE OUTCOME-
CO1: The basics of mechanics of force system, equilibrium, lever and pulley.
CO2: Describe the joint structure, classification and function of joints and biomechanics of Connective tissue
CO3: Describe the muscle structure and function of muscles, types of muscles, contractions and factors effecting muscle recruitment and functions
CO4: Develop ability to analyze the kinetics and kinematic motions of all the joints
CO5: Discuss the normal cytoskeleton structure and components of joints and muscles

Biomechanics and Kinesiology I
a. Introduction to Biomechanics and kinesiology and related terminology
b. Motion: definition, types of motion, plane and axis of motion, factor determining the kind and modification of motion
c. Force - Definition, diagrammatic representation of force, point of application, classification of forces, concurrent, coplanar and collinear forces, composition and resolution of forces, angle of pulls of muscle

d. Friction
e. Gravity - Definition, line of gravity, Centre of gravity
f. Equilibrium - Supporting base, types, and equilibrium in static and dynamic state g. Levers - Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever in human body
h. Pulleys - system of pulleys, types and application
i. Elasticity - Definition, stress, strain, HOOKE'S Law
j. Springs - properties of springs, springs in series and parallel, elastic materials in use

1. **Muscle biomechanics**
   Definition, properties of muscle, muscular contraction, structural classification, action of muscle in moving bone, direction of pull, angle of pull, functional classification, coordination of muscular system.
2. **Joint structure and Function**
   a. Introduction: Basic Principle of Human Joint design & Joint Function.
   b. Materials Found in Human Joints: Structure of Connective Tissue.
   c. Brief about Specific Connective Tissue Structures.
   d.General Properties of Connective Tissue: Mechanical Behavior, Viscoelasticity
   e. Time and Rate-Dependent Properties, Properties of Specific Tissues
   f. General Changes with Disease, Injury, Immobilization, Exercise, and Overuse

Practical:

The course involves a description of principles of biomechanics and their application in musculoskeletal function and dysfunction. At the end of the course, the candidate will be able to– 1. Understand the principles of Biomechanics. 2. Describe the properties of connective tissue, & effect of mechanical loading, & factors which influence the muscle strength, & mobility of articular & periarticular soft tissues. 3. Practical Aspects of muscle, joint ligaments, Tendon, disc, Bursa etc. 4. Practical analysis of Posture & Gait analysis. 5. Practical aspect to demonstrate different types of joints

INTRODUCTION TO YOGA – BASIC THEORY, SCIENCE AND TECHNIQUES

BPT-109

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark

BPT109	**INTRODUCTION TO YOGA**	**50 (20 T + 30 P)**	**3**	**3**	**20 (T) + 20 (P)**	**80 (T) + 80 (P)**	**200**

COURSE DESRCIPTION- The course gives idea about the basic principles of yoga and its implication with other adjunct therapies in different conditions.

COURSE OBJECTIVE- The course will provide deeper insight into the curriculum of Yogic Sciences along with the practical applications of Yoga and physiotherapy techniques.

COURSE OUTCOME-

CO1: To know about the basic principles of biophysics relative to mechanics of movement/ motion and understand the efficacy of various position used in therapeutic
CO2: Understand the definition, principal of yoga and their benefits and cautions for each Asanas.
CO3: Describe Asanas in various positions in their physiological changes occur in body.
CO4: Acquire skills of performing Pranayama,Yogasanas and meditation.
CO5: enable and impart skill in them to practice and apply Yogic practices for Health to general public and teach Yoga for Total personality development and spiritual evolution

THEORY

1. **Foundations of Yoga**
   a. Introduction to Yoga and its philosophy
   b. Brief history, development of Yoga
   c. Philosophical foundations of Yoga
   d. Streams & types of Yoga
   e. Meditation-brief introduction about types.

2. **Yoga and Health**
   a. Concept of body in yoga – Pancha kosha theory
   b. Concept of Health and Disease in yoga
   c. Stress management through yoga
   d. Disease prevention and promotion of positive health through yoga
   e. Physiological effects of Yoga practices Physiological effects of Shatkriyas
   f. Physiological effects of Asanas
   g. Physiological effects of Pranayamas
   h. Physiological effects of Relaxation techniques
   i. Physiological effects of Meditation

PRACTICAL - List of Practical/Demonstrations (30hours)

5. **Sukshma Vyayama / Sithilikarna Vyayama and Surya Namaskar**: (3hours)
    a. Loosening exercises of each part of the body particularly of the joints
    b. 12 step Surya namaskar with prayer and specific mantras

6. **Yogic kriyas** [Observation/demonstration only] (3hours)
    a. Neti (Jala Neti, Sutra Neti)
    b. Dhauti (Vamana Dhauti, Vastra Dhauti)
    c. Trataka
    d. Shankaprakshalana (Laghu & Deergha)

7. **Yog asanas**
    a. Standing postures (4hours)
        i. Tadasana (Upward stretch posture)
        ii. Ardha Chakrasana (Half wheel posture)
        iii. Ardha Kati chakrasana (Half lumber wheel posture)
        iv. Utkatasana (Chair posture)
        v. PadaHastasana (Hand to toes posture)
        vi. Trikonasana (Triangle posture)
        vii. ParshvaKonasana (Side angle posture)
        viii. Garudasana (Eagle posture)
        ix. Vrikshasana (Tree posture)

    b. **Prone positions**
        i. Makarasana (Crocodile posture)
        ii. Bhujangasana (Cobra posture)
        iii. Salabhasana (Locust posture)
        iv. Dhanurasana (Bow posture)
        v. Naukasana (Boat posture)
        vi. Marjalasana (Cat posture)

    c. **Supine postures**
        i. Ardhahalasana/Uttana Padasana
        ii. Sarvangasana (All limb posture)
        iii. Pawanamuktasana (Wind releasing posture)
        iv. Matsyasana (Fish posture)
        v. Halasana (Plough posture)
        vi. Chakrasana (Wheel posture)

vii. Setu Bandhasana (Bridge posture)
viii. Shavasana (Corpse posture)

d. Sitting postures

i. Parvatasana (Mountain posture)
ii. Bhadrasana (Gracious posture)
iii. Vajrasana (Adamantine posture)
iv. Paschimottanasana (Back stretching posture)
v. Janushirasana (Head to knee posture)
vi. Simhasana (Lion posture)
vii. Gomukhasana (Cow head posture)
viii. Ushtrasana (Camel posture)
ix. Ardha Matsyendrasana (Half matsyendra spine twist posture)
x. Vakrasana (Spinal twist posture)
xi. Kurmasana (Turtle posture)
xii. Shashankasana (Rabbit posture)
xiii. Mandukasana (Frog Posture)

e. Meditative postures

i. Siddhasana (Accomplished pose)
ii. Padmasana (Lotus posture)
iii. Samasana
iv. Swastikasana (Auspicious posture)

8. Pranayamas

a. The practice of correct breathing and Yogic deep breathing
b. Kapalabhati
c. Bhastrika
d. Sitali
e. Sitkari
f. Sadanta
g. Ujjayi
h. Surya Bhedana
i. Chandra Bhedana
j. Anuloma-Viloma/Nadishodana
k. Bhramari

9. Relaxation Techniques

a. Shavasana
b. Yoga Nidra

10. **Meditation techniques-** effect of meditation on chakras, method of meditation techniques.

COMPUTERS & INFORMATICS

BPT-110

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT110	COMPUTERS & INFORMATICS	30	2	2	-	-	-

COURSE DESCRIPTION- The students will be able to appreciate the role of computer technology. The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation.

COURSE OBJECTIVE- The course is designed to create awareness among the students about basic operation of Computer.

COURSE OUTCOME-

CO1: Tell about the fundamentals of computer like generations, languages, input output devices, storage and memory and processes.
CO2: Describe the basic use of Windows, computer applications like MS word, Excel and power points.
CO3: describe different operating system, types and components of computer networks
CO4: Use the internet and application of computer in clinical settings.
CO5: To learn the use of Internet services for Research and Documentation

Topics to be covered under the subject areas follow:

1. Introduction to computer: I/O Devices, Operating Systems, Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.
2. Introduction to Excel: introduction, about worksheet, entering information, saving work books and formatting, printing the worksheet, creating graphs.
3. Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.
4. Medical Record Keeping and Health Informatics
5. Application of Computers in clinical settings, Digital Equipments, Medical Electronics

6. Robotics in Physiotherapy
7. Artificial Intelligence in Physical Therapy: What is Artificial Intelligence? AI-enabled devices, SWORD, Motion Coach, Physitrack, AI-enabled robotics, Deep learning frameworks

PRACTICAL: Practical on fundamentals of computers-

1. Learning to use MS office: MS word, MS Power Point, MS Excel.
2. Demonstration of Medical Electronic components
3. Demonstration of Robotics in Physiotherapy
4. Demonstration of AI based applications.

BPT THIRD SEMESTER

BPT-201

Course No.	Title	Total Hour	Hours / week	Credit	IA Mark	SE Mark	Total Mark
BPT201	EXERCISE THERAPY-I	144 (80 T + 64 P)	6	6	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESRCIPTION- At this course, the students will have a better understanding of the principles of exercise therapy both basic and advanced as well as assessment techniques. The student's skill will be enhanced through hands on training provided during the practical hours.

COURSE OBJECTIVE- Describe basic concepts of exercise therapy-positions, types of movements, classification

COURSE OUTCOMES-

CO1: At the completion of course, the student shall be able to describe the basics of mechanics involved in exercise therapy.
CO2: Describe and demonstrate fundamental and derived positions
CO3: Describe and demonstrate active, passive, resisted movements and soft tissue manipulation
CO4: Demonstrate principles, application of techniques like goniometry, MMT
CO5: Describe the various assessment techniques needed

THEORY

1. Introduction to exercise therapy
2. Mechanical principle applied in human body – gravity, centre of gravity, line of

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3. gravity, base of support, equilibrium, axis and planes
4. Lever and pulley
5. Disability models – ICIDH model of disability, Nagi model of disability, ICF model
6. Exercise physiology – effect of exercise in various systems – musculoskeletal,neuromuscular, cardiovascular, respiratory system
7. Assessment of patient's condition – Measurements of Vital parameters, Starting Positions – Fundamental positions & derived Positions, Planning of Treatment
8. Movements
a. Passive Movements: Causes of immobility, Classification of Passive movements, Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses, Techniques of giving passive movements.
b. Active Movements
c. Definition of strength, power & work, endurance, muscle actions.
d. Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction & relaxation, muscle fiber type, motor unit, force gradation.
e. Causes of decreased muscle performance
f. Physiologic adaptation to training: Strength & Power, Endurance.
g. Types of active movements
9. Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses.
10. Active Assisted Exercise: principles, techniques, indications, contraindications, effects and uses Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses Resisted Exercise: Definition, principles, indications, contraindications, precautions & techniques, effects and uses.
11. Types of resisted exercises: Manual and Mechanical resistance exercise, Isometric exercise, Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Isokinetic exercise, Open-Chain and Closed-Chain exercise.
12. Stretching: Definition, properties of soft tissue, mechanical and neurophysiological properties of connective tissue, mechanical properties of non contractile tissue. Determinants, type and effect of stretching, precautions, general applications of stretching technique.
13. Methods of Testing
a. Functional tests
b. 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
c. Tests for neuromuscular efficiency i. Electrical tests ii. Manual Muscle Testing: Introduction to MMT, Principles & Aims, Indications & Limitations, Techniques of MMT for group & individual: Techniques of MMT for upper limb/Techniques of MMT for lower limb/Techniques of MMT for spine. iii.Anthropometric Measurements: Muscle girth– biceps, triceps, forearm, quadriceps, calf iv. Static power Test v. Dynamic power Test vi. Endurance test vii. Speed test

d. Tests for Co-ordination
e.Tests for sensation
f. Pulmonary Function tests
g. Measurement of Limb Length: true limb length, apparent limb length, segmental limb length
h. Measurement of the angle of Pelvic Inclination
14. Relaxation a. Definitions: Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism, Indications of relaxation, Methods & techniques of relaxation- Principles & uses, Types: General, Local, Jacobson's, Mitchel's, Heartfulness Relaxation.
15. Therapeutic Massage :History and Classification of Massage Technique, Principles, Indications and Contraindications, Technique of Massage Manipulations, Physiological and Therapeutic Uses of Specific Manipulations
16. Suspension – definition, types, uses and therapeutic application
17. Therapeutic Gymnasium- Set-up of gymnasium & its importance, Various equipment in the gymnasium, Operational skills & uses of the equipment.
PRACTICAL 1. Different test methods
2. Demonstrate relaxation techniques.
3. Demonstrate Starting positions and derived positions
4. Demonstrate to apply the technique of passive movements
5. Demonstrate various techniques of Active movements
6. Demonstrate various relaxation techniques
7. Demonstrate massage technique application according to body parts.
8. Mechanical Principles applied in Physiotherapy like force, Torque, Centre of Gravity, etc. 9. Demonstration of different types of levers in the human body.
10. Demonstration of different types of pulleys and strings used in Physiotherapy.

ELECTROTHERAPY-I

BPT-202

Course No.	Title	Total Hour	Hours / week	Credit	IA Mark	SE Mark	Total Mark
BPT202	ELECTROTHERAPY-I	144 (80 T + 64 P)	6	6	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION- In this course the student will learn the Principles, Techniques, and Effects, Indication, Contra-Indication and the dosage parameter for various indications of electrotherapeutic modalities in the restoration of physical

function.

COURSE OBJECTIVE- The objective of this course is that the student will be able to list the indications, contraindications, dosages of electrotherapy modalities, demonstrates the different techniques, and describe their effects on various conditions.

COURSE OUTCOMES-

CO1: Acquire knowledge of various superficial thermal agents such as Paraffin wax bath, Cryotherapy, homemade remedies, etc.; their physiological and therapeutic effects, Merits/ demerits; and also acquire the skill of application.

CO2: Acquire knowledge of high frequency modalities, their basic physics, working, physiological and therapeutic effects

CO3: Recall physics principles and Laws of Electricity, Electro-magnetic spectrum, and ultra -sound.

CO4: Describe effects of environmental & man-made electro- magnetic field at the cellular level & risk factors on prolonged exposure.

CO5: Describe the main electrical supply, Electric shock & precautions-;

THEORY

Section I

Basic Electronics: P-N Junction, Transistor characteristics, Transistor as Amplifier, Cascade Amplifiers, DC coupling, Field effect Transistors, Light sensitive semiconductor devices, Oscillators -Phase shift, Wein Bridge, Relaxation Oscillators, Operational Amplifiers, Circuits and characteristics of OP-Amplifiers in different configuration, Concept of Digital Electronics, Binary number system, Binary Arithmetic, Analog to Digital conversion, Digital to Analog conversion, Counters, Shift Resistors, Memory, Introduction to Microprocessor, CRO- Design Working and Applications. Bioelectric Signal Monitoring and Recording. Origin and Characteristics of Bioelectric signals & recording, Electrodes-types Design and properties and Utility, Skin contact impedance of Electrodes, noise suppression techniques, recording system, Medical Display systems, Patient Monitoring systems, Biomedical Telemetry. Transducers and Measurement of Physiological event, Transducers- properties and the principle of Transducers.

a. Current Electricity: Units of Electricity: farad, Volt, Ampere, Coulomb, Watt
b. Condensers: Definition, principle, Types, construction and working, capacity & uses.
c. Magnetism: Definition, Properties of magnets, Electromagnetic induction, Transmission by contact, Magnetic field and magnetic forces, Magnetic effects of an electric field.
d. Conductors, Insulators, Potential difference, Resistance and intensity
e. Ohm's law and its application to DC and AC currents, Fuse: construction, working and application.

f. Transmission of electrical energy through solids, liquids, gases and vacuum.
g. Rectifying Devices - Thermionic valves, Semiconductors, Transistors, Amplifiers, transducer and Oscillator circuits.
h. Display devices and indicators – analogue and digital.
i. Transformer: Definition, Types, Principle, Construction, Eddy current, working uses.
j. Chokes: Principle, Construction and working, Uses

Low frequency Currents

1. Basic types of current
    a. Direct Current: types, physiological & therapeutic effects.
    b. Alternating Current
2. Types of Current used in Therapeutics
    a. Modified D.C
        i. Faradic Current
        ii. Galvanic Current
    b. Modified A.C
        i. Sinusoidal Current
        ii. Diadynamic Current.
3. Faradic Current: Definition, Modifications, Techniques of Application of Individual, Muscle and Group Muscle stimulation, Physiological & Therapeutic effects of Faradic Current, Precautions, Indications & Contra-Indications, and Dangers.
4. Galvanic Current: Definition, Modifications, Physiological & Therapeutic effects of Galvanic Current, Indications & Contra-Indications, Dangers, Effect of interrupted galvanic current on normally innervated and denervated muscles and partially denervated muscles.
5. Sinusoidal Current & Diadynamic Current in Brief.
6. HVPGS– Parameters & its uses
7. Ionization/Iontophoresis: Techniques of Application of Iontophoresis, Indications, Selection of Current, commonly used Ions (Drugs) for pain, hyperhidrosis, would heal.
8. Cathodal/Anodal galvanism.
9. Micro Current & Macro Current
10. Types of Electrical Stimulators
    a. NMES- Construction, component.
    b. Neuromuscular diagnostic stimulator- construction, component.
    c. Components and working Principles
11. Principles of Application: Electrode tissue interface, Tissue Impedance, Types of Electrodes, Size & Placement of Electrode – Water bath, Unipolar, Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance.
12. Nerve Muscle Physiology: Action Potential, Resting membrane potential,

Propagation of Action Potential, Motor unit, synapse, Accommodation, Stimulation of Healthy Muscle, Stimulation of Denervated Muscle, and Stimulation for Tissue Repair.

13. TENS: Define TENS, Types of TENS, Conventional TENS, and Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS. Types of Electrodes & Placements of Electrodes, Dosage parameters, Physiological & Therapeutic effects, Indications & Contraindications.
14. Pain: Define Pain, Theories of Pain (Outline only), and Pain Gate Control theory in detail.
15. tDCS- Principles, Physiology of action, indications, contraindications and techniques of application.

Radiation therapy/Actinotherapy:

1. IRR: Define IRR, wavelength & parameters, Types of IR generators, Production of IR, Physiological & Therapeutic effects, Duration & frequency of treatment, Indication & Contraindication. [2Hours]
2. UVR: Define UVR, Types of UVR, and UVR generators: High pressure mercury vapour lamp, Water cooled mercury vapour lamp, Kromayer lamp, fluorescent tube, Theraktin tunnel, PUVA apparatus, Physiological & Therapeutic effects. Sensitizers & Filters, test dosage calculation. Calculation of E1, E2, E3, E4 doses. Indications, contraindications. Dangers. Dosages for different therapeutic effects, Distance in UVR lamp [8Hours]

Superficial heating Modalities

1. Wax Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers.
2. Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications.
3. Moist Heat Therapy: Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications.
4. Cyclotherm: Principles of production, Therapeutic uses, Indications & Contraindications.
5. Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications.
6. Whirl Pool Bath: Construction, Method of Application, Therapeutic Uses, Indications & Contraindications.

Cryotherapy: Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application with dosages.

PRACTICAL

The student of Electrotherapy must be able to demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.

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
6. Plotting of SD curve with chronaxie and rheobase
7. Demonstrate FG test
8. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
9. Demonstrate the technique of UVR exposure for various conditions– calculation of test dose
10. Technique of treatment and application of Hydro collator packs, cryotherapy, contrast bath, wax therapy
11. Demonstrate the treatment method using whirlpool bath
12. Winding up procedure after any electrotherapy treatment method.

BIOMECHANICS & KINESIOLOGY II

BPT-203

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT203	BIOMECHANICS & KINESIOLOGY II	144 (80 T + 64 P)	6	6	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESRCIPTION- This Course Supplements the Knowledge of anatomy and enables the student to have a better understanding of the principles of biomechanics and their application in musculoskeletal and various other dysfunctions.

COURSE OBJECTIVE- Describe the joint structure, classification and function of joints and biomechanics of Connective tissue. Describe the muscle structure and function of muscles, types of muscles, contractions and factors effecting muscle recruitment and function. Describe the biomechanics of the thoracic and chest wall and patho-biomechanics associated with chest deformities. Describe the analysis of posture and gait during static and dynamic movement, relation with LOG, Pathomechanics of abnormal gait and posture.

COURSE OUTCOME-

CO1: On successful completion of this programme, students should be able to describe the understanding of basics of mechanics, muscle structure and contraction, factors effecting muscle contraction and recruitment

CO2: Describe mechanics of chest wall during various movements and the patho-mechanics associated with various chest conditions and deformities

CO3: Analyze normal mechanics of posture and gait in various planes and axis

CO4: Analyze the patho mechanics associated with abnormal posture and gait.

CO5: Describe biomechanics of shoulder, elbow, wrist, hip, knee, ankle joint, vertebral column.

Kinesiology of the vertebral column-

a. General structure and function
b. Regional structure and function– Cervical region, thoracic region, lumbar region, sacral region
c. Muscles of the vertebral column
d. General effects of injury and aging

Kinesiology of the peripheral joints-

e. The shoulder complex: Structure and components of the shoulder complex and their integrated function
f. The elbow complex: Structure and function of the elbow joint – humeroulnar and humeroradial articulations, superior and inferior radioulnar joints; mobility and stability of the elbow complex; the effects of immobilization and injury.
g. The wrist and hand complex: Structural components and functions of the wrist complex; structure of the hand complex; functional position of the wrist and hand.
h. The hip complex: structure and function of the hip joint; hip joint pathology- arthrosis, fracture, bony abnormalities of the femur.
i. The knee complex: structure and function of the knee joint – tibiofemoral joint and patellofemoral joint; effects of injury and disease.
j. The ankle and foot complex.: structure and function of the ankle joint, subtalar joint, talocalcaneonavicular joint, transverse tarsal joint, tarsometatarsal joints, metatarsophalangeal joints, interphalangeal joints, structure and function of the plantar arches' muscles of the ankle and foot, deviations from normal structure and function – Pes Planus and Pes Cavus.

Analysis of Posture and Gait – Static and dynamic posture, postural control, kinetics and kinematics of posture, ideal posture analysis of posture, effects of posture on age, pregnancy, occupation and recreation; general features of

gait, gait initiation, kinematics and kinetics of gait, energy requirements, kinematic and kinetics of the trunk and upper extremities in relation to gait, stair case climbing and running, effects of age, gender, assistive devices, disease, muscle weakness, paralysis, asymmetries of the lower extremities, injuries and malalignments in gait; Movement Analysis: ADL activities like sitting–to standing, lifting, various grips, pinches.

PRACTICAL- shall be conducted for various joint movements and analysis of the same. Demonstration may also be given as how to analyze posture and gait. The student shall be taught and demonstrated to analysis for activities of daily living– ADL– (like sitting to standing, throwing, lifting etc.) The student should be able to explain and demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced, and mention the axis and planes through which the movements occur. The demonstrations may be done on models or skeleton.

MICROBIOLOGY

BPT-204

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT204	MICROBIOLOGY	50 T	3	3	20	80	100

COURSE DESCRIPTION- Microbiology involves the study of common organisms causing diseases including nosocomial infections and precautionary measures to protect one from acquiring infections. The knowledge and understanding of Microbiology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient. Particular effort is made in this course to avoid burdening the student.

COURSE OBJECTIVE- Understand the importance of microbiology, the basic concepts of microbiology, the importance of sterilization & the nosocomial infection and its prevention in the relative field.

COURSE OUTCOMES-

CO1: Know about prevalent communicable diseases

CO2: Describe the agents responsible for causing clinical infection to CNS, Musculoskeletal Respiratory, and Genitourinary system.

CO3: Illustrate the best method to prevent the development of infection.
CO4: Understand to recognize the sign and symptom considered red flag for serious diseases.
CO5: Acquire knowledge of common immunological disorders and their resultant effects on the human body. They will be able to perform, demonstrate, implement and apply the concept of microbiology in better understanding with relevance to human disease.

GENERAL MICROBIOLOGY:

a. Introduction and history of Medical Microbiology

b. Morphology, Nutritional Requirements, Metabolism, Growth, Classification and identification of Bacteria

c. Sterilizations and Disinfection

IMMUNOLOGY

a. Infection, Immunity, Antigens, antibody, antigen-Antibody Reaction, Complement System

b. Structure and Function of Immune system, Immune Response

c. Immunodeficiency Diseases, Hypersensitivity, Autoimmunity

BACTERIOLOGY

a. Staphylococcus, Streptococcus, Pneumococcus, Neisseria

b. Corynebacterium, Clostridium, Bacillus

c. Enterobacteriaceae, Pseudomonas, Vibrio

d. Mycobacteria, Treponema

VIROLOGY

a. General Characteristics and Classification of Virus

b. Virus-Host Interaction

c. DNA and RNA Virus

d. Measles, Mumps, Rubella, Polio, Influenza, Rabies, Dengue, Hepatitis, HIV

MISCELLANEOUS

a. Medical Mycology

b. Parasitology

c. Normal Microbial Flora of The Human Body

d. Hospital Acquired Infection 5. Universal Precautions

Clinical/Applied Microbiology-

a. Streptococcal infections: Rheumatic fever and Rheumatic heart disease, Meningitis.
b. Tuberculosis
c. Pyrexia of unknown origin, leprosy.

d. Sexually transmitted diseases, Poliomyelitis.
e. Hepatitis
f. Acute-respiratory infections, Central nervous System infections, Urinary tract infections.
g. Pelvic inflammatory disease, Wound infection, Opportunistic infections, HlV infection.
h. Malaria, Filariasis, Zoonotic diseases.
i. Culture and sensitivity tests
j. Hospital acquired infections

ENVIRONMENTAL SCIENCE
BPT-205

Course No.	Title	Total Hour	Hours / week	Credit	IA Mark	SE Mark	Total Mark
BPT205	ENVIRONMENTAL SCIENCE	30	2	2	-	-	-

COURSE DESCRIPTION-

COURSE OBJECTIVE- The course gives the awareness on the ecosystem structure and process which interlinked with human survival, intensively need attention at global and regional level.

COURSE OUTCOMES-
CO1: To understand the concept and function of the environment and recognize the physical, chemical, and biological components of the earth's systems and their functions.
CO2: To identify common and adverse impacts of human activities on biotic communities, soil, water, and air quality and suggest sustainable strategies to mitigate these impacts.
CO3: Develop an understanding of environmental pollutions and hazards and general measures to control them.
CO4: To realize the importance of biodiversity for maintaining ecological balance and Global conservation practices and strategies.
CO5: To analyze the need for sustainable development in respect of environmental management through Policies, movements and social awareness.

Natural resources Renewable and non-Renewable resources:
Natural resources and associated problems. a) Water Resources: Use and over

utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. b) Mineral Resources: Use and exploitation, environmental effects of extracting and using minerals resources, case studies. c) Food Resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer -pesticide problems, Water logging, Salinity, case studies. d) Energy Resources: Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources, case studies. e) Land Resources: Land as a resource, Land degradation, Man induced landslides, Soil erosion and desertification. - Role of an individual in conservation of natural resources - Equitable use of resources for sustainable lifestyles.

Ecosystems: a) Concept of an Ecosystem. b) Structure and Function of an Ecosystem c) Producer Consumer and decomposers. d) Energy flow in the Ecosystem. e) Ecological Succession.

Biodiversity and its conservation: a) Introduction - Definition: Genetic, Species and Ecosystem diversity. b) Bio-Geographical classification of India, c) Value of Biodiversity: Consumptive use, productive use, Social, ethical, aesthetic and option values d) Biodiversity at Global, National & Local levels. e) Hotspots of Biodiversity f) Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts

Environmental pollution: a) Definition, Causes, effects and control measures of-Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear Hazards b) Solid Waste Management: Causes, effects and control measures of urban and Industrial Wastes .c) Role of an Individual in prevention of pollution. d) Pollution case studies e) Disaster Management: floods, earthquake, cyclones and landslides.

Social issues and Environments: a) Resettlement and Rehabilitation of people; its problems and concerns, case studies. b) Environmental ethics: issues and possible solutions c) Greenhouse effect and global Warming, effects of acid Rain and their remedial measures and ozone Layer depletion.

Human pollution and the environments: a) Population growth variation among nations, Population Explosion, Family welfare programme b) Environment and Human Health c) Human Rights. e) Role of Information Technology in Environment and Human Health, Case studies.

Field Work a) Visit to a local area to document environmental assets river/forest/grassland/hill/mountain b) Visit to a local polluted site – Urban/Rural/Industrial/Agricultural c) Study of common plants, insects, birds • Study of simple ecosystems-pond, river, hill slopes etc.

CLINICAL OBSERVATION BPT-206

BPT FOURTH SEMESTER

EXERCISE THERAPY II

BPT-207

Course No.	Title	Total Hour	Hours / week	Credit	IA Mark	SE Mark	Total Mark
BPT207	EXERCISE THERAPY-II	144 (80 T + 64 P)	6	6	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESRCIPTION- At this course, the students will have a better understanding of the principles of exercise therapy both basic and advanced as well as assessment techniques. The student's skill will be enhanced through hands on training provided during the practical hours.

COURSE OBJECTIVE- Describe basic concepts of exercise therapy-positions, types of movements, classification

COURSE OUTCOMES-

CO1: Analyze Normal human posture [static &dynamic] & various Normal Musculo skeletal movements during Gait, activities of daily living, & describe the movements of the Thorax during breathing.

CO2: Describe the Biophysical properties of connective tissue, effect of mechanical loading, factors influencing the Muscle strength, mobility of articular &peri-articular soft tissues.

CO3: Describe the physiological & Therapeutic uses, merits /demerits of various exercise modes.

CO4: Acquire the skill of assessment of isolated &group muscle strength, & Range of motion of the joints subjectively & objectively.

CO5: Describe the pattern of normal and abnormal movements of various joints and activities

EXERCISE THERAPY II

1. **Joint mobilization:Definition** – Mobilization, Manipulation, indications, limitations, contraindications and precautions, applications of Mobilization technique to various joints. Principles of Maitland, Mulligan and Meckzi joint Manipulation techniques.

2. **Resisted exercise:** Definition – strength, power, endurance. Guiding principle of resisted exercise, determinants, types Manual and Mechanical Resistance Exercise, Isometric Exercise, Dynamic Exercise - Concentric and Eccentric, Dynamic Exercise -Constant and Variable Resistance, Isokinetic Exercise, Open-Chain and Closed-Chain

Exercise, precautions, contraindications. Progressive Resistance Exercise - de Lormes, Oxford, MacQueen, Circuit Weight Training, Plyometric Training— Stretch Shortening Drills, Isokinetic Regimens

3. **Proprioceptive Neuromuscular Facilitation** – Principles, Diagonal patterns of movements, Basic procedures, Upper Extremity Diagonal patterns, Lower Extremity Diagonal Patterns. Technique in PNF – Rhythmic Initiation, Repeated Contractions, Reversal of Antagonists, Alternating Isometrics, Rhythmic Stabilization.

4. Aerobic Exercises – Definitions, Physiological response to Aerobic Exercise, Evaluation of aerobic capacity – exercise testing, Determinant of Aerobic Exercise, Physiological Changes with Aerobic Training, Aerobic Exercise Program, Applications of Aerobic Program in patients with chronic illness.

5. **Hydrotherapy:** Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Therapeutic Exercises in Hydrotherapy, Special equipments used.

6. **Balance training:** Definition and Key terms, Balance control, Components of balance, Balance Impairment, Examination of Impaired Balance, Balance training

Exercises.

7. **Posture:** Normal Postural Control, Postural Alignment, Postural Stability, Postural Impairment and Mal-Alignment, Postural Training.

8. **Breathing Exercises:** Aims and Goals of Breathing Exercises, Procedures of Diaphragmatic Breathing, Segmental Breathing, Pursed-Lip Breathing, Respiratory Resistance Training, Glossopharyngeal Breathing. Exercises to mobilize the chest, Postural Drainage, Manual Technique used in Postural Drainage, Postural Drainage Positions, Modified Postural Drainage.

9. **Gait Training:** Definition, Different methods of Gait Training, Gait Training in Parallel Bars, Walking Aids: Types: Crutches, Canes, Frames; Principles and training with walking aids.

10. **Instrument Assisted Soft Tissue Mobilization:** General Description of Inflammation and repair, Acute, Sub Acute, and Chronic stage, General Treatment Guidelines.Techniques and Principles of Mobilization and Manipulation. Techniques and Principles of Cupping therapy, IASTM and reflexology. Techniques and Principles of PRT (Position release techniques), MET (Muscle energy techniques), Active and Passive release of soft tissues,Butler concepts and techniques.

11. **Bed Rest Complications:** Indications of prolonged bed rest,Complications after a period of prolonged immobilization related to Neurological, Musculoskeletal, Cardiovascular and gastrointestinal systems, prevention and treatment of the complications.

PRACTICAL

1. Joint Mobilisation to individual joint
2. Stretching of individual and group muscles
3. Resisted exercises to individual and group muscles, open and closed kinematic exercises.

4. PNF patterns to upper and lower limb.

5. Various types breathing exercises, chest mobilization exercises, postural drainage

6. Gait training with various walking aids

ELECTROTHERAPY-II

BPT-208

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT208	ELECTROTHERAPY-II	144 (80 T + 64 P)	6	6	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION- In this course the student will learn the Principles, Techniques, and Effects, Indication, Contra-Indication and the dosage parameter for various indications of electrotherapeutic modalities in the restoration of physical function.

COURSE OBJECTIVE- The objective of this course is that the student will be able to list the indications, contraindications, dosages of electrotherapy modalities, demonstrates the different techniques, and describe their effects on various conditions.

COURSE OUTCOMES-

CO1: Describe the Production &Physiological effects, Therapeutic uses, merits, demerits indication &contraindications of various low/medium Frequency Currents modes.
CO2. Describe the Physiological effects &therapeutic uses of various therapeutic ions & Topical Pharmaco-therapeutic agents to be used for the application of Iontophoresis & sono/phonophoresis
CO3. Acquire the skill of Application of the Electro therapy modes like UVR and LASER on models, for the purpose of Assessment &Treatment.
CO4. Acquire an ability to select the appropriate mode as per the tissue specific & area specific application
CO5: Describe about magnetotherapy, its effect and therapeutic uses.

Electro-diagnosis

1. FG Test
2. SD Curve: Methods of Plotting SD Curve, Apparatus selection, Characters of Normally innervated Muscle, Characters of Partially Denervated Muscle;

Characters of Completely denervated Muscle, Chronaxie & Rheobase.

3. Nerve Conduction Velocity Studies
4. EMG: Construction of EMG equipment.
5. Bio-feedback.

Medium Frequency Currents

1. Interferential Therapy: Define IFT, Principle of Production of IFT, Static Interference System, Dynamic Interference system, Dosage Parameters for IFT, Electrode placement in IFT, Physiological & Therapeutic effects, Indications & Contraindications.
2. Russian Current
3. Rebox type Current

High Frequency Currents

- Electromagnetic Spectrum.
- SWD: Define shortwave, 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 and therapeutic effects, indications, contraindications, dangers, dosage parameters.
- Long wave diathermy- Principles of application, Indications and Contraindications, Physiological effects.
- LASER: Define LASER, Types of LASER, Principles of Production, and Production of LASER by various methods, Methods of application of LASER. Dosage of LASER, Physiological & Therapeutic effects of LASER, Safety precautions of LASER, Classifications of LASER, Energy density & power density.
- Pulsed Electromagnetic Energy: Principles, Production & Parameters of PEME, Uses of PEME.
- Microwave Diathermy: Define Microwave, Wavelength & Frequency, Production of MW, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications & Contraindications, Dangers of MWD.

Ultrasound:

Define Ultrasound, Frequency, Piezoelectric effects: Direct, Reverse, Production of US, Treatment Dosage parameters: Continuous & Pulsed mode, Intensity, US Fields: Near field, Far field, Half value distance, Attenuation, Coupling Media, 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, and Phonophoresis: Define Phonophoresis, Methods of application, commonly used drugs, Uses, Dosages of US.

Magnetotherapy

Magnetic Stimulation: Physiological Effect of Magnetism, Principles, Therapeutic uses, Indications & contraindication.

PRACTICALS

The student of Electrotherapy must be able to demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.

- Demonstrate the technique for patient evaluation–receiving the patient and positioning the patient for treatment using electrotherapy.
- Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.
- Demonstrate placement of electrodes for various electrotherapy modalities.
- Electrical stimulation for the muscles supplied by the peripheral nerves
- Faradism under Pressure for UL and LL
- Plotting of SD curve with chronaxie and rheobase
- Demonstrate FG test
- Application of Ultrasound for different regions- various methods of application
- Demonstrate treatment techniques using SWD, PSWD, PEMF, Microwave diathermy
- Demonstrate treatment techniques using Magnetotherapy.
- Demonstrate treatment method using IFT for various regions
- Calculation of dosage and technique of application of LASER
- Winding up procedure after any electrotherapy treatment method.
- Demonstrate the technique of application of Long wave diathermy.

PHARMACOLOGY–

BPT-209

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT209	PHARMACOLOGY	50T	3	3	20	80	100

COURSE DESCRIPTION - This course introduces the student to basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy. The student after completing the course will be able to understand the

general principles of drug action and the handling of drugs by the body. The student will be aware of the contribution of both drug and physiotherapy factors in the outcome of treatment.

COURSE OBJECTIVE- Introduce the students to basic pharmacology of various common medication used and its effects on patients in physical therapy Treatment of ailment of cardiovascular system, GIT, endocrine system, by drugs. To make student understand the drug and physiotherapy contribution in the outcome of the treatment.

COURSE OUTCOME –

CO1: 1. To understand the various routes of drugs administration, pharmacodynamics and pharmacokinetics of drugs.

CO2: . To understand the various drugs used for the treatment of ANS, PNS and CNS conditions with their mechanism of action and adverse effects.

CO3: To understand the various drugs used for the treatment of endocrine system with their mechanism of action and adverse effects.

CO4: To understand the various drugs used for the treatment of GIT problems with their mechanism of action and adverse effects

CO5: To understand the various drugs used for the treatment of ailment of cardio vascular system, bronchial asthma, skin lesions with their mechanism of action and adverse effects.

1. **General Pharmacology–**
    a. Introduction, Definitions, Nomenclature of drugs, Classification of drugs, Sources of drugs, Routes of drug administration, Distribution of drugs, Metabolism and Excretion of drugs Pharmacokinetics, Pharmacodynamics, Factors modifying drug response, Adverse effects.
2. **Autonomic Nervous system –**
    a. General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System
    b. Cholinergic and Anticholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants.
3. **Cardiovascular Pharmacology–**
    a. Drugs used in the treatment of heart failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators
    b. Antiarrhythmic Drugs
    c. Drugs used in the treatment of vascular disease and tissue ischemia: Vascular Disease, Hemostasis Lipid-Lowering agents, Antithrombotic, Anticoagulants and Thrombolytics Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers, Cerebral Ischemia Peripheral

Vascular Disease.

4. **Neuro pharmacology–**
   a. Sedative – Hypnotic Drugs: Barbiturates, Benzodiazepines
   b. Antianxiety Drugs: Benzodiazepines, Other Anxiolytics
   c. Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium
   d. Antipsychotic drugs
5. **Disorders of Movement-**
   a. Drugs used in Treatment of Parkinson's disease
   b. Antiepileptic Drugs
   c. Spasticity and Skeletal Muscle Relaxants
6. **Inflammatory/Immune Diseases-**
   a. Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, non-aspirin NSAIDs, drug Interactions with NSAIDs
   b. Glucocorticoids: Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids
   c. Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout
   d. Drugs Used in the Treatment of Neuromuscular Immune/Inflammatory Diseases: Myasthenia gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythematous, Scleroderma, Demyelinating Disease
   e. Respiratory Pharmacology: Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis
7. **Digestion and Metabolism-**
   a. Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemic
8. **Geriatrics-**
   a. Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension.
9. **Chemotherapy and Antibiotics**
   a. General principles of chemotherapy. Sulfonamides & Fluoroquinolones. Beta – Lactam antibiotics – I (Penicillin) Beta – Lactam antibiotics – II (Cephalosporins) Macrolides aminoglycosides Tetracyclines and chloramphenicol (Broad spectrum antibiotics) Anti-Tuberculosis drugs Anti –Leprosy drugs

FIRST AID & EMERGENCY CARE

BPT-210

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT210	FIRST AID &	50	3	3	20	80	100

	EMERGENCY CARE						

COURSE OBJECTIVE- To acquire knowledge about first aid, emergencies

Introduction of First Aid
Definition, aims and importance of First Aid.
Rules/General principles of First Aid
Concepts of Emergency
Procedure and Techniques in First Aid
Preparation of first Aid kit, Dressing bandaging and splinting
Transportation of injured patient
CPR-Mouth to mouth, Sylvester, Schafer, External cardiac massage
First Aid in Emergency
Asphyxia, Drowning, shock
Wound and bleeding, Injuries of the soft and dense tissue
Injury of joint and bone, Falls, Hanging
Foreign body ear, ear and nose and throat
Burns and scalds
Poisoning- Ingestion, inhalation, bite and stings

Assessing a Casualty and vitals parameters
Assessing the sick or injured, Mechanisms of injury
Primary survey, Secondary survey
Head-to-toe examination, Monitoring vital signs

Community Emergencies and Community Resources
Fire, Explosion, Floods, Earth-Quakes and famines
Role Of PT in disaster management
Community Resources-Police, Ambulance services
Voluntary agencies-local, state national and International

Emergency Management
Principle of Emergency care
Triage
Airways obstruction, Basic knowledge of First aid management of burn
Basic knowledge of First aid for medical and surgical emergency
Basic knowledge of first aid management of heat stroke
Basic knowledge of First aid management of snake bite and poisoning

Emergency Disaster Management
Natural calamities-Flood, earthquake,Volcanic eruptions
Man-made disaster-Explosion, War, Fire Accidents

Suraj

28/4/22

The Unconscious Casualty
Breathing and circulation, Life-saving priorities
Unconscious adult, Unconscious child, Unconscious infant, how to use an AED
Techniques and Equipment
Removing clothing, Removing headgear, Casualty handling, First aid materials, Dressings, Cold compresses, Principles of bandaging, Roller bandages, Tubular gauze bandages, square knots, hand and foot cover, Arm sling, Elevation sling, improvised slings.

BLS and ACLS
BLS guideline for adult and paediatrics
CPR techniques, choking
ACLS basic guidelines

PATHOLOGY
BPT-211

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT211	PATHOLOGY	55T+20P	3	3	20	80	100

COURSE DESCRIPTION: This subject follows the basic subjects of Anatomy, Physiology and Biochemistry and it forms a vital link between pre-clinical subjects and clinical subjects. Pathology involves the study of causes and mechanisms of diseases. The knowledge and understanding of Pathology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient. Particular effort is made in this course to avoid burdening the student.

COURSE OBJECTIVE- The student will be able to understand the concepts of cell injury and changes in relation towards the pathological effects of infectious and non-infectious diseases &understand the disease process, the clinical significance (with special emphasis on neuro-musculoskeletal and cardio-respiratory system)

COURSE OUTCOMES-
CO1: Recall etiology pathogenesis and clinic pathological correlation of common infections & non-infections disease.
CO2:. Illustrate the knowledge of cell injury and its healing process.
CO3: Describe normal and altered different organ system in different diseases and their clinical significance
CO4: Understand common hematological disorders and investigations necessary to diagnose them.

CO5: Understand in brief, about the Hematological diseases and their resultant effects on the human body.

CELL INJURY, INFLAMMATION & NEOPLASMS:

a. Cells: Brief outline of cell injury, hypertrophy, atrophy, degeneration, necrosis and gangrene

b. Inflammation: Definition, vascular and cellular phenomena, difference between transudate and exudates, granuloma

c. Neoplasm: Definition, characteristic features, benign and malignant tumor, spread of tumor, cancer pain syndrome.

VASCULAR & CARDIORESPIRATORY SYSTEM

a. Circulatory Disturbance: Odema, Hemorrhage, Embolism, Thrombosis, Infraction, Shock, Volkmann's ischemic contracture

b. Blood Disorder: Concepts of Anemia, Bleeding disorder- Hemophilia

c. Cardiovascular System (CVS): Etiopathogenesis and Gross pathology of Atherosclerosis, coronary heart disease, Rheumatic heart disease

d. Respiratory System: Chronic Bronchitis, Asthma, Bronchiectasis, Emphysema

BONES, JOINTS & MUSCULAR SYSTEM

a. Bones: Etiopathogenesis and gross pathology of following conditions: Rickets/Osteomalacia, Osteoporosis, Osteomyelitis, Hyperparathyroidism

c. Joint: Osteoarthritis, Rheumatoid Arthritis, Gout, Spondyloarthopathy (including Ankylosing Spondylitis), Osteonecrosis, Paget's disease

d. Muscles: Myositis ossificans, Myofascial Pain syndrome, Septic arthritis

HEPATO-BILIARY, ENDOCRINE & INTEGUMENTARY SYSTEM

a. Hepato-Biliary System: Jaundice Types, etiopathogenesis and diagnosis

b. Endocrine: Diabetes Mellitus, Non-Neoplastic lesion of thyroid-Thyrotoxicosis, Myxedema

c. Skin: Brief outline of Scleroderma, Psoriasis, Pressure Ulcer, and Burn.

CENTRAL NERVOUS SYSTEM

a. CNS: Etiopathogenesis and gross pathology of following conditions- Meningitis, Encephalitis, Parkinson's, Amyotrophic lateral sclerosis, Ataxias, Multiple sclerosis, Neuropathies (Carcoat Marie Tooth disease, Compression and Entrapments, diabetics G.B. Syndrome), malformation, CVA, Extradural and Intra Dural Hematoma

b. Myopathies: Poliomyelitis, Myopathies, Myasthenia gravis, Muscular dystrophy.

MEDICAL/PHYSIOTHERAPY LAW AND ETHICS

BPT-212

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT212	MEDICAL/PHYSIOTHERAPY LAW AND ETHICS	30	2	2	-	-	-

COURSE DESCRIPTION- The students will enable to know about evolution of Physiotherapy, identify various laws and regulation that should be followed during clinical practice of Physical Therapy.

COURSE OBJECTIVE – To know about evolution of Physiotherapy, identify various laws and regulation that should be followed during clinical practice of Physical Therapy.

COURSE OUTCOMES-

CO1: On completion of the course the students should be able to know the medical law and ethics
CO2: Able to know the legal and illegal issues faced in hospital.
CO3: The students should understand the code of ethics for physiotherapist
CO4: They will be able to treat patient more lawfully in clinical and hospital setting and maintain their records.
CO5: Understand the importance of ethics in the relative field & basic concepts of ethics.

Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Few of the important and relevant topics that need to focus on areas are as follows:

1. Medical ethics versus medical law – Definition – Goal - Scope
2. Introduction to Code of conduct
3. Basic principles of medical ethics – Confidentiality
4. Malpractice and negligence - Rational and irrational therapy
5. Autonomy and informed consent - Right of patients
6. Care of the terminally ill - Euthanasia
7. Organ transplantation

8. Medical diagnosis versus physiotherapy diagnosis.
9. Medico legal aspects of medical records – Medico legal case and type – Records and documents related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information – Unauthorized disclosure - retention of medical records – other various aspects.
10. Professional Indemnity insurance policy
11. Development of standardized protocol to avoid near miss or sentinel events
12. Obtaining informed consent.
13. Biomedical ethical principles
14. Code of ethics for physiotherapists
15. Ethics documents for physiotherapists
16. Laws affecting physiotherapy practice

BPT FIFTH SEMESTER

CARDIO PULMONARY MEDICINE & SURGERY
BPT-301

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT 301	CARDIO PULMONARY MEDICINE & SURGERY	100 (80 T + 20 P)	6	4	20 T + 20 P	80 T + 80 P	100

COURSE DESCRIPTION - Following the basic science and clinical science course, this course introduces the student in pulmo-thoracic conditions which commonly cause disability.

COURSE OBJECTIVE-The objective of this course is that after lectures and demonstrations in addition to clinics the student will be able to demonstrate an understanding of pulmo-thoracic conditions causing disability and their management. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by cardiovascular pathology on the functioning of the individual.

COURSE OUTCOMES-
CO1: Interpretation of different invasive and noninvasive diagnostic investigation to make proper assessment in various respiratory and cardiovascular dysfunction
CO2: Develops the skills to execute different Physiotherapy techniques used in treatment of Cardio-respiratory dysfunctions.
CO3: To select strategies for cure, care & prevention; adopt restorative & rehabilitative measures for maximum possible functional independence of a patient at home, work place & in community.
CO4: Be able to execute the effective Physiotherapeutic measures with appropriate clinical reasoning to improve pulmonary function.
CO5: To design & execute effective tailored cardiopulmonary rehabilitation programme.

1. Anatomy and Physiology a. Respiratory system: Upper respiratory tract, Lower respiratory tract – Trachea, Bronchial tree, Bronchopulmonary segments, Respiratory unit, hilum of lung, Muscles of respiration, Pleura, intrapleural space, intrapleural pressure, surfactant, Mechanics of respiration – Chest wall movements, lung & chest wall compliance, V/Q relationship,

airway resistance, Respiratory centre, Neural & chemical regulation of respiration, Lung volumes and lung capacities, Spirometer, lung function test, Pulmonary circulation, Lung sounds, cough reflex b. Cardiovascular systems: Chambers of heart, semilunar and atrioventricular valves, Coronary circulation, conductive system of heart, Cardiac cycle, ECG, Heart sounds, Blood pressure, pulse, cardiac output

2.CardioVascular system diseases: a. Define, etiology, pathogenesis, clinical features, complications,

b. Conservative and surgical management of the following conditions

i. Ischemic heart disease
ii. Myocardial infarction
iii. Heart failure
iv. Cardiac arrest
v. Rheumatic fever
vi. Hypertension
vii. Infective endocarditis
viii. Myocarditis & cardiomyopathy

Examination of the Cardiovascular System Investigations: ECG, Exercise Stress Testing, Radiology; 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 – resulting in valve disorders, Ischemic Heart Disease, Coronary Valve Disease, Congenital disorders of the Heart, Cardiac Arrest; Examination and Investigations of diseases of arteries and veins; Hypertension: Definition, causes, classification, types, assessment, investigations and management. c. Disorders of the Heart – Definition, Clinical features, diagnosis and choice of management for the following disorders : Congenital Heart diseases – Acyanotic congenital heart disease & Cyanotic congenital heart disease: Patent Ductus Arteriosus, Coarctation of Aorta, Atrial Septal Defect, Ventricular Septal Defect, Tetralogy of Fallot, Transposition of Great Vessels; Acquired Heart Disease – Mitral Stenosis & Insufficiency, Aortic Stenosis and Insufficiency, Ischemic Heart Disease – Coronary Artery Disease, Cardiac tumors. 3.

3.Respiratory System

a. Respiratory Disease: Examination of the Respiratory System – Investigations: Chest Radiographs, Pulmonary Function Testing, Arterial Blood Gas Analysis; Clinical manifestations of Lung disease; Patterns 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, Upper Respiratory Tract Infections, Pneumonia, Tuberculosis, Fungal Diseases, Interstitial Lung Diseases, Diseases of the pleura, diaphragm and chest wall; Respiratory failure – Definition, types, causes, clinical features, diagnosis and management.

b. Chest wall disorders - Definition, Clinical features, diagnosis and choice of

management for the following disorders – chest wall deformities, chest wall tumors, Spontaneous Pneumothorax, Pleural Effusion, Empyema Thoracis, Lung abscess, Hemothorax, Cardiac Tamponade, Cardiac and Pulmonary Contusions, Bronchiectasis, Tuberculosis, Bronchogenic Carcinoma, Bronchial Adenomas, Metastatic tumors of the Lung, tracheal Stenosis, Congenital tracheomalacia, Neoplasms of the trachea, Lesions of the Mediastinum, Carcinoma of the female breast.

4.Thoracic surgeries – Thoracotomy – Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications, Lung surgeries: Pneumonectomy, Lobectomy, segmentectomy – Indications, Physiological changes and Complications; Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung, Cardiac surgeries – An overview of the Cardio-Pulmonary Bypass Machine – Extra cardiac Operations, Closed Heart surgery, Open Heart surgery, Transplant Surgery – Heart, Lung – Indications, Physiological changes and Complications ,Congenital Heart Surgeries .

GENERAL SURGERY

BPT-302

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT302	GENERAL SURGERY	100 (80T + 20P)	4	4	20 T + 20 P	80 T + 80 P	100

COURSE DESRCIPTION- It covers relevant aspects of General Surgery and surgical conditions in which Physiotherapy play a significant role. This course is designed to develop the basic knowledge of surgery and to understand a surgical patient, its special needs in relation to physical therapy which will help them provide good rehabilitation.

COURSE OBJECTIVE- The objective of this course is that the student will be able to demonstrate a general understanding of the surgeries that therapists would encounter in their practice. They should have a brief idea of the etiology and pathology, what the patient's symptoms and the resultant functional disability. This would help the candidates to understand the limitation imposed by the diseases on any therapy that may be prescribed.

COURSE OUTCOMES-

CO1: To understand fluid and electrolyte changes in surgical patient.
CO2: To understand changes in respiratory and cardiovascular parameters in surgical patients.
CO3: To understand the complications of surgery.
CO4: To understand investigations and management of common surgical conditions.

CO5: The student will be able to differentiate surgical cases and handling the cases will become easier as they can relate theoretical knowledge with practical learning

1. Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management; Nutrition in the surgical patient; Wound healing –basic process involved in wound repair, basic phases in the healing process, clinical management of wounds, factors affecting wound healing, Scars – types and treatment, Hemostasis– components, hemostatic disorders, factors affecting bleeding during surgery, Transfusion therapy in surgery – blood components, complications of transfusion; Surgical Infections; General Post–Operative Complications and its management.
2. Reasons for Surgery; Types of anesthesia and its effects on the patient; Types of Incisions; Clips Ligatures and Sutures; General Thoracic Procedures – Radiologic Diagnostic procedures, Endoscopy – types, Biopsy – uses and types, Overview and Drainage systems and tubes used in Surgery.
3. Definition, Indication, Incision, Physiological changes and Complications following Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy, Mastectomy, Nephrectomy, Prostatectomy.
4. Burn: Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management, Skin Grafts – Types, Grafting Procedures, Survival of Skin Graft; Flaps – Types and uses of Flaps.
5. ENT: Common problems of ear, otitis media, Otosclerosis, functional achonia and deafness, management facial palsy classification, medical and surgical management of lower motor neuron type of facial palsy.
6. Ophthalmology: Ophthalmologic surgical conditions, refraction's, conjunctivitis, glaucoma, corneal ulcer, iritis, cataract, retinitis, detachment of retina, defects of extra-ocular muscles – surgical management.
7. Surgical Oncology – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer.
8. Obstetrics and Gynecology: High risk pregnancy, prenatal and postnatal common complications , investigation and management. Prolapse of uterus and vagina. Principle of common gynaecological operations: hysterectomy, D&C, D&E, Pap smear, pelvic repair, caesarian section, nephrectomy, Hysterosalphyngography, Dilatation and Curettage, Laproscopy, Colposopy, Hysterectomy. Carcinoma of female reproductive organs – surgical management in brief. Mastectomy – Simple, radical, Hysterectomy.
9. Incontinence – Types, Causes, Assessment and Management.
10. Diseases of the Arteries and Veins: Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases: Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease,

Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins.

GENERAL ORTHOPEDICS AND TRAUMATOLOGY

BPT-303

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT303	GENERAL ORTHOPEDICS AND TRAUMATOLOGY	100 (80 T +20 P)	6	4	20 T + 20 P	80 T + 80 P	100

COURSE DESCRIPTION - This subject follows the basic science subjects to provide the knowledge about orthopedic conditions the therapist would encounter in their practice.

COURSE OBJECTIVE-The objective of this course is that after completion of the lectures and discussion the student will be able to demonstrate an understanding of orthopedic conditions causing disability, list the etiology, clinical features and methods of investigations and management.

COURSE OUTCOMES-

CO1: To understand the traumatology of upper and lower limb fractures with their management.

CO2: To understand the pathophysiology of various musculoskeletal conditions, congenital and acquired anomalies with its treatment protocol.

CO3: Demonstrate an understanding of orthopaedic conditions causing disability, list the aetiology, clinical features and methods of investigations and management.

CO4: To understand the management of various orthopaedic surgeries.

CO5: To understand various injuries, factures and deformities of musculoskeletal system with its treatment Protocol.

1. Introduction: Introduction to orthopedics, Clinical examination in an orthopedic patient, Common investigative procedures, Radiological and Imaging techniques in Orthopedics, Inflammation and repair, Soft tissue healing.
2. Traumatology: 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),

3. Fractures and Dislocations of Upper Limb:
4. Fracture of Spine
5. Fractures and Dislocations of Lower Limb
6. Fracture of Pelvis and Lower Limb
7. Soft Tissue Injuries such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, and bursitis. Mechanism of injury of each, clinical features, managements –conservative and surgical
8. Hand Injuries
9. Peripheral Nerve Injuries, Classification of Nerve Injuries, Clinical features and management, including reconstructive surgery for Radial, median and ulnar nerve lesions, femoral nerve, Sciatic and lateral popliteal lesions. Brachial Plexus injuries including Erb's, Klumpke's and Crutch Palsy.
10. Amputations - Definition, levels of amputation of lower and upper limbs, indications, complications.
11. Traumatic Spinal Cord Injuries - Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia.
12. Deformities – Congenital and Acquired deformities.
13. Bone Tumors: classification, clinical features, management - medical and surgical of the following tumors: Osteoma, Osteosarcoma, Osteochondroma, Enchondroma, Ewing's sarcoma, Giant cell tumor, Multiple myeloma, Metastatic tumors. Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis.
14. Inflammatory and Degenerative Conditions: Osteoarthritis, Rheumatoid arthritis, Ankylosing spondylitis, Gouty arthritis, Psoriatic arthritis, hemophilic arthritis, Still's disease (juvenile rheumatoid arthritis), Charcot's joints.
15. Connective Tissue Disorders – Systemic Lupus Erythematosus, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)
16. Neuromuscular Disorders: Cerebralpalsy, Poliomyelitis, Spinal Dysraphism, Leprosy.
17. Orthopedic Surgeries: Arthrodesis, Arthroplasty (partial and total replacement), Osteotomy, External fixators, Spinal stabilization surgeries (Harrington's, Luque's, Steffi plating) etc. Limb reattachments.

GENERAL MEDICINE

BPT-304

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT304	GENERAL MEDICINE	100 (80 T +20 P)	6	4	20 T + 20 P	80 T + 80 P	100

COURSE DESCRIPTION- This subject follows the basic science subjects to provide the knowledge about relevant aspects of general medicine. The student will have a general understanding of the diseases the therapist would encounter in their practice.

COURSE OBJECTIVE- The objective of this course is that the student will be able to list the etiology, pathology, clinical features and treatment methods for various medical conditions. Infection: 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 – HIV infections and Aids.

COURSE OUTCOMES-

CO1: To understand pathophysiological changes in infectious and metabolic disorders with their treatment

CO2: To understand pathophysiological changes in respiratory and skin disorders with their treatment

CO3: To understand pathophysiological changes in cardiovascular and haematological disorders with their treatment

CO4: To understand clinical features, investigations and management of psychiatric disorders.

CO5: The student will be able to differentiate paediatric cases and handling the cases will become easier as they can relate theoretical knowledge with practical learning.

1. Poisoning: Clinical features – general management – common agents in poisoning – pharmaceutical agents – drugs of misuse – chemical pesticides - Envenomation.
2. Food and Nutrition: Assessment – Nutritional and Energy requirements; Deficiency diseases – clinical features and treatment; Protein – Energy Malnutrition: Clinical features and treatment; Obesity and its related disorders: Causes – Complications – benefits of weight loss – management of Obesity – diet, exercise and medications.
3. Endocrine diseases: Common presenting symptoms of endocrine disease – common classical disease presentations, clinical features and its management; Diabetes Mellitus: Etiology and pathogenesis of diabetes – clinical manifestations of the disease – management of the disease – Complications of diabetes.
4. Diseases of the blood: Examinations of blood disorders – Clinical manifestations of blood disease; Anemia – signs and symptoms – types and management; Hemophilia - Cause – clinical features severity of disease – management – complications due to repeated hemorrhages –complications due to therapy.
5. Diseases of the digestive system : Clinical manifestations of gastrointestinal disease – Etiology, clinical features, diagnosis, complications and treatment of the following conditions : Reflux Oesophagitis, Achlasia Cardia, Carcinoma of

Oesophagus, GI bleeding, Peptic Ulcer disease, Carcinoma of Stomach, Pancreatitis, Malabsorption Syndrome, Ulcerative Colitis, Peritonitis, Infections of Alimentary Tract; Clinical manifestations of liver diseases - Aetiology, clinical features, diagnosis, complications and treatment of the following conditions: Viral Hepatitis, Wilson's disease, Alpha 1-antitrypsin deficiency, Tumors of the Liver, Gallstones, Cholecystitis.

6. Diseases of the Skin: Examination and clinical manifestations of skin diseases; Causes, clinical features and management of the following skin conditions: Leprosy, Psoriasis, and Pigmentary Anomalies, Vasomotor disorders, Dermatitis, Coccal and Fungal Parasitic and Viral infections.
7. Pediatrics : Problems and management of LBW infants, Perinatal problems and management, Congenital abnormalities and management, Respiratory conditions of childhood, Cerebral Palsy - causes, complications, clinical manifestations, treatment ; Spina Bifida - management and treatment, Epilepsies - types, diagnosis and treatment; Recognizing developmental delay, common causes of delay ; Orthopedic and Neuromuscular disorders in childhood, clinical features and management ; Sensory disorders - problems resulting from loss of vision and hearing ; Learning and behavioral problems - Hyperactivity, Autism, Challenging behaviors, Educational delay, The Clumsy Child.
8. Psychiatric Disorders: Classifications, Causes, Clinical manifestations and treatment methods used in Psychiatry, Modalities of psychiatric treatment, Psychiatric illness and physiotherapy, Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses – Anxiety neurosis, Depression, Obsessive compulsive neurosis, Psychosis, Maniac-depressive psychosis, Post-traumatic stress disorder, Psychosomatic reactions: Stress and Health, theories of Stress - Illness.

   Etio-pathogenesis, manifestations, and management of psychiatric illness

   a. Drug dependence and alcoholism,
   b. Somato form and Dissociative Disorders – conversion reactions, Somatization, Dissociative Amnesia, and Dissociative Fugue,
   c. Personality disorders
   d. Child psychiatry - manifestations, and management of childhood disorders – attention deficit syndrome and behavioral disorders.
   e. Geriatric psychiatry.

INTRODUCTION TO NATIONAL HEALTH CARE DELIVERY SYSTEM IN INDIA

BPT-305

Students' basic insight into the main features of the Indian health care delivery system and how it compares with the other systems of the world. Topics to be covered under the subject areas follow:

1. Introduction to health care delivery system: Health care delivery system in

India at primary, secondary and tertiary care, Community participation in health care delivery system, Health system in developed countries. Private Sector, National Health Mission, National Health Policy, Issues in Health Care Delivery System in India

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

3. Introduction to AYUSH system of medicine: Introduction to Ayurved, Naturopathy, Unani, Siddha, Homeopathy

f. Need for integration of various system of medicine

4. Health scenario of India - past, present and future

5. Demography &Vital Statistics- Demography – its concept, Vital events of life & its impact on demography, Significance and recording of vital statistics, Census & its impact on health policy.

CLINICAL EDUCATION

BPT-306

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU

BPT SIXTH SEMESTER

PHYSIOTHERAPY IN GENERAL MEDICAL & SURGICAL CONDITION

BPT-307

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT307	PT IN GENERAL MEDICAL & SURGICAL CONDITION	144 (80 T + 64 P)	6	6	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESRCIPTION- Acquire the knowledge of evaluation and physiotherapeutic treatment for medical and surgical conditions. Acquire the knowledge of various conditions where physiotherapy plays a vital role int he rehabilitation.

COURSE OBJECTIVE- To Identify discuss and analyze cardiovascular and pulmonary dysfunction. Acquire knowledge of rational of basic investigative approaches in the medical system and surgical intervention.

COURSE OUTCOME-

CO1: To understand pathophysiological changes during antenatal and infectious and metabolic disorders with their PT treatment

CO2: To understand pathophysiological changes in respiratory and cardiovascular disorders with their PT treatment

CO3: To understand pathophysiological changes in burn and oncology with their PT treatment

CO4: Diagnose condition from history taking, clinical evaluation and investigation in patients with skin disorders and wound.

CO5: To understand various injuries with its treatment Protocol

Review of the pathophysiology and principles of Physiotherapeutic management in the following conditions:

1. Metabolic and Deficiency Diseases: Diabetes Mellitus, Osteoporosis, Obesity etc. Physiotherapy management of Hypertension.

2. Oncology

a. Classification and Characteristics of common tumours

b. Carcinoma breast.

c. Carcinoma head and neck.

d. Complications of Tumors

3. Common condition of Skin - Acne, Psoriasis, Alopecia, Leucoderma, Leprosy.

4. AIDS

5. Oedema

a. Definition, types, factors controlling tissue fluid circulation, cause of edema,

b. Physiotherapy assessment and management of edema

6. Inflammation

a. Signs of inflammation, stages

b. Acute, chronic and suppurative

c. Physiotherapy management

7. Gangrene

a. Types and their management

8. Psychiatric Disorders

• Introduction: Definition, defence mechanism, symptomatology, types & causes of mental disorders, psychosomatic disorders.

• Disorders:-

a. Psychosis – Schizophrenia (including paranoid), Manic Depressive psychosis

b. Obsessive-compulsive Disorders

c. Dementia – types & principles of management.

d. Depressive disorders

e. Anxiety Disorders

f. Neurosis

g. Alzheimer's Disease

• Therapies –

a. Psychotherapy–Group therapy, Psychodrama,
b. Behaviour modification,
c. Family therapy
d. Play therapy,
e. Psychoanalysis,
f. Hypnosis.

9. Geriatric Medicine

• Normal aging – definition, the anatomical, physiological and cognitive changes related to aging

• The examination & assessment of a geriatric patient.

• Common Problems with Elderly-Its assessment and Management

• Falls in Elderly

• Physiotherapy Management

PRACTICAL - Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consist of evaluation and assessment methods on student models, treatment techniques and practice sessions.

PHYSIOTHERAPY IN GENERAL SURGICAL CONDITION

THEORY

1. Physiotherapy in mother and child care – ante and post-natal management, early intervention and stimulation therapy in childcare (movement therapy)
2. Applied Yoga in Obstetric and Gynecological conditions
3. Complication common to all operations
4. Abdominal incisions.
5. Physiotherapy in pre and post-operative stages.
6. Operations on upper G.I.T.- oesophagus, stomach, duodenum
7. Operations on large and small intestine–Appendectomy, cholecystectomy, partial colectomy, ileostomy, hernia and herniotomy, herniorrhaphy, hernioplasty.
8. Physiotherapy in dentistry

9. Burns and its treatment– physiotherapy in burns, skin grafts, and reconstructive surgeries.
10. Management of wound ulcers- Care of ulcers and wounds- Care of surgical scars- U.V.R and other electro therapeutics for healing of wounds, prevention of Hyper-granulated Scars Keloids, Electro therapeutics measures for relief of pain during mobilization of scars tissues.
11. Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases.
12. Physiotherapy in dermatology - Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhidrosis. Massage maneuvers for cosmetic purposes of skin; use of specific oil as medium; Care of anesthetic hand and foot; Evaluation, planning and management of leprosy-prescription, fitting and training with prosthetic and orthotic devices.
13. ENT– sinusitis, non-suppurative and chronic suppurative otitis media, osteosclerosis, labrynthitis, mastoidectomy, chronic rhinitis, laryngectomy, pharyngeo – laryngectomy, facial palsy.
14. Sexual Rehabilitation- Male and female Sexual health issues post disability, Role of physiotherapist in counselling about sexual health of patients with special needs, stroke and post-ICU discharge patients. Erectile dysfunction and role of Physiotherapy. Principles and techniques of Pilates and allied therapeutics in sexual dysfunction.
15. Physiotherapy management in Peripheral Vascular diseases.

PRACTICAL - Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

Bedside case presentations and case discussions

Lab sessions consist of evaluation and assessment methods on student models, treatment techniques and practice sessions

BPT-308

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT308	**REGIONAL ORTHOPAEDICS AND DIAGNOSTIC IMAGING**	**144 (80 T + 20P)**	**6**	**4**	**20 (T)**	**80 (T)**	**100**

COURSE DESCRIPTION- This subject follows the basic science subjects to provide the knowledge about Orthopedic conditions the therapist would encounter in their practice.

COURSE OBJECTIVE- The objective of this course is that the student will be able to demonstrate an understanding of orthopaedic conditions causing disability, list the aetiology, clinical features and methods of investigations and management.

COURSE OUTCOMES-

CO1: To understand the traumatology of upper and lower limb fractures with their management.

CO2: To understand the pathophysiology of various musculoskeletal conditions, congenital and acquired anomalies with its treatment protocol.

CO3: Demonstrate an understanding of orthopaedic conditions causing disability, list the aetiology, clinical features and methods of investigations and management.

CO4: To understand the management of various orthopaedic surgeries.

CO5: To understand various injuries, factures and deformities of musculoskeletal system with its treatment Protocol.

1. Regional Conditions:
    a. Shoulder: Periarthritic shoulder (adhesive capsulitis), Rotator cuff tendinitis, Supraspinatus Tendinitis, Infraspinatus Tendinitis, Bicipital Tendinitis, Subacromial Bursitis.
    b. Elbow: Tennis Elbow, Golfer's Elbow, Olecranon Bursitis (student's elbow), Triceps Tendinitis.
    c. Wrist and Hand: De Quervain's Tenosynovitis, Ganglion, Trigger Finger/Thumb, Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture.
    d. Pelvis and Hip: IT Band Syndrome, Piriformis Syndrome, Trochanteric Bursitis.
    e. Knee: Osteochondritis Dissecans, Prepatellar and Suprapatellar Bursitis, Popliteal Tendinitis, Patellar Tendinitis, Chondromalacia Patella, Plica Syndrome, Fat Pad Syndrome (Hoffa's syndrome).
    f. Ankle and Foot: Ankle Sprains, Plantar Fasciitis/Calcaneal Spur, Tarsal Tunnel Syndrome, Achilles Tendinitis, Metatarsalgia, Morton's neuroma.
    g. Infective conditions: Osteomyelitis (Acute/chronic), Brodie's abscess, TB spine and major joints like shoulder, hip, knee, ankle, elbow etc.
    h. Arthritic conditions: Pyogenic arthritis, Septic arthritis, Syphilitic infection of joints
    i. Syndromes: Cervico brachial syndrome, Thoracic outlet syndrome, Vertebro-basilar syndrome, Scalenus syndrome, Costoclavicular

syndrome, Levator scapulae syndrome, Piriformis syndrome.

j. Cervical and Lumbar Pathology: Prolapsed intervertebral disc (PID), Spinal Canal Stenosis, Spondylosis (cervical and lumbar), Spondylolysis, Spondylolisthesis, Lumbago/Lumbosacral strain, Sacralisation, lumbarisation, Coccydynia, Hemivertebra.

Introduction of types of imaging are most commonly use in orthopaedics and traumatology

1. **X-ray**-Indication, Contraindication, Advantages, Disadvantages, Common views for different joint, spine and bones, X-ray image reading, clinico-radiological correlation
2. **CT-Scan**-Indication, Contraindication, Advantages, Disadvantages, Types, image and report reading, clinic-radiological correlation
3. **Color Doppler Ultrasound**-Indication, Contraindication, Advantages, Disadvantages for musculoskeletal structure, Types, and report reading, clinic-radiological correlation
4. **MRI**-Indication, Contraindication, Advantages, Disadvantages, Types, image sequence, for spine knee and shoulder, image and report reading, clinic-radiological correlation
5. **Bone Scan**-Indication, contraindication, Advantages, Disadvantages clinico-radiological correlation
6. **PET-Scan**-Indication contra indication, clinic-radiological correlation
7. **BMD**-Indication contra indication and reports correlation with physical findings

BPT-309

CLINICAL NEUROLOGY & NEUROSURGERY

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT309	CLINICAL NEUROLOGY & NEUROSURGERY	100 80T + 20P	6	4	20 (T) + 20 (P)	80 (T) + 80 (P)	100

COURSE DESCRIPTION – This subject follows the basic science subjects to provide the knowledge about relevant aspects of neurology & neurosurgery. An understanding of the approach of neurologists to the health care of people with neurologic conditions. The student will have a general understanding of the diseases the therapist would encounter in their practice.

COURSE OBJECTIVE- The objective of this course is that after 60hrs of lectures and discussion the student will be able to list the etiology, pathology, and clinical features and treatment methods for various neurological conditions. Following the basic science and clinical science course, this course introduces the student to the neurological conditions which commonly cause disability.

COURSE OUTCOMES-

CO1: To understand pathophysiological changes in neurological disorders with their assessment

CO2: To understand the management of various neurological disorders

CO3: Clinical decision-making ability and management expertise

CO4: Plan a better rehabilitation care for patients pre and post neurosurgery

CO5: To understand the medical and surgical management of various neurological condition.

1. Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping.
2. Classification of neurological involvement depending on level of lesion.
3. Neurological assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system.
4. Investigations: principles, methods, views, normal/abnormal values/features, types of following investigative procedures - skull x-ray, CT, MRI, evoked potentials, lumbar puncture, CSF examination, EMG, NCV.
5. Neuro-ophthalmology: Assessment of visual function – acuity, field, colour

vision, Pupillary reflex, accommodation reflex, abnormalities of optic disc, disorders of optic nerve, tract, radiation, occipital pole, disorders of higher visual processing, disorders of pupil, disorders of eye movements, central disorders of eye movement.

6. Deafness, vertigo, and imbalance: Physiology of hearing, disorders of hearing, examination & investigations of hearing, tests of vestibular function, vertigo, peripheral vestibular disorders,central vestibular vertigo.

   Lower cranial nerve paralysis – Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, trigeminal sensory neuropathy, lesions in facial nerve, facial palsy, bell's palsy, hemifacial spasm, Glossopharyngeal neuralgia, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve, Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia.
7. Cerebro-vascular diseases: Define stroke, TIA, RIA, stroke in evolution, multi-infarct dementia and Lacunar infarct, Classification of stroke – Ischemic, hemorrhagic, venous infarcts, Risk factors, cause of ischemic stroke, causes of hemorrhagic stroke, Classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndrome, investigations, differential diagnosis, medical and surgical management.
8. Head injury: Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.
9. Higher cortical, neuro psychological and neurobehavioral disorders: Causes of blackouts, physiological nature of Epilepsy, classification, clinical features, investigations, medical & surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizures, and Epilepsy syndromes in adult, Classification and clinical features of Dyssomnias, Parasomnias, Dementia, Obsessive – compulsive disorders. Neural basis of consciousness, causes & investigations of Coma, criteria for diagnosis of Brain death, Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Perceptual disorders and Speech disorders.
10. Movement disorders: Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Parkinson's disease, Dystonia, Chorea, Ballism, Athedosis, Tics, Myoclonus and Wilson's disease.
11. Cerebellar and coordination disorders: Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich's ataxia, Ataxia telangiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis.
12. Spinal cord disorders: Functions of tracts, definition, etiology, risk factors,

pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Spinal cord injury, Compression by IVD prolapse, Spinal epidural abscess, Transverse myelitis, Viral myelitis, Syringomyelia, Spina bifida, Sub acute combined degeneration of the cord, Hereditary spastic paraplegia, Radiation myelopathy, Progressive encephalomyelitis, Conus medullaris syndrome, Bladder & bowel dysfunction, and Sarcodosis.

13. Brain tumors and spinal tumors: Classification, clinical features, investigations, medical and surgical management.
14. Infections of brain and spinal cord: Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Meningitis, Encephalitis, Poliomyelitis and Post-polio syndrome, Complications of systemic infections on nervous system – Septic encephalopathy, AIDS, Rheumatic fever, Brucellosis, Tetanus, and Pertussis.
15. Motor neuron diseases: - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders - Amyotrophic lateral sclerosis, Spinal muscular atrophy, Hereditary bulbar palsy, Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy.
16. Multiple sclerosis - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications.
17. Disorders of neuromuscular junction – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism.
    Muscle diseases: Classification, investigations, imaging methods, Muscle biopsy, Management of muscle diseases, genetic counseling, Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy, non-dystrophic myotonia.
18. Polyneuropathy – Classification of Polyneuropathies, Hereditary motor sensory neuropathy, hereditary sensory and Autonomic neuropathies, Amyloid neuropathy, acute idiopathic Polyneuropathies, Guillain-Barre syndrome - Causes, clinical features, management of GBS, Chronic Idiopathic Polyneuropathies, diagnosis of polyneuropathy, nerve biopsy.
19. Focal peripheral neuropathy: Clinical diagnosis of focal neuropathy, neurotmesis, Axonotmesis, Neuropraxia, Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – RSD, Nerve tumors, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & Intercostal 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, Pudendal nerve palsy.

20. Paediatric neurology: Neural development, Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders - Cerebral palsy, Hydrocephalus, Arnold-chiari malformation, Basilar impression, Klippel-Feil syndrome, Achondroplasia, Cerebral malformations, Autism, Dandy walker syndrome and Down's syndrome.
21. Toxic, metabolic and environmental disorders: Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – Encephalopathy, Alcohol toxicity, Recreational drug abuse,Toxic gases & Asphyxia, Therapeutic & diagnostic agent toxicity, Metal toxicity, Pesticide poisoning, Environmental & physical insults, Pant & Fungal poisoning, Animal poisons, & Complications of organ transplantation.
22. Introduction, Indications and Complications of following Neurosurgeries: Craniotomy, Cranioplasty, Stereotactic surgery, Deep brain stimulation, Burr-hole, Shunting, Laminectomy, Hemilaminectomy, Rhizotomy, Microvascular decompression surgery, Endarterectomy, Embolization, Pituitary surgery, Ablative surgery - Thalamotomy and Pallidotomy, coiling of aneurysm, Clipping of aneurysm, and Neural implantation.

COMMUNITY PHYSIOTHERAPY AND REHABILITATION

BPT-310

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT 310	COMMUNITY PHYSIOTHERAPY AND REHABILITATION	(80 T + 64 P)	6	6	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION- The subject serves to integrate the knowledge gained by the students in community medicine and other areas with skills to apply these in clinical situations of health and disease and its prevention. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease conditions and plan and set treatment goals and apply the skills gained in rehabilitating and restoring functions.

COURSE OBJECTIVE- The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease.

COURSE OUTCOMES-

CO1: To understand the team approach in rehabilitation of disability. To understand the role of community and other institutions for rehabilitation.

CO2: Identification of residual potentials in patients with partial or total disability (temporary or permanent). Formulation of appropriate goals (long & short term) in treatment & rehabilitation will be discussed.

CO3: Application of various orthosis, prosthesis, wheelchairs and other assistive devices for different medical and Physical conditions.

CO4: To understand the importance of administration in setting of department.

CO5: To understand the organizational structure of a department or an organization.

Health scenario of India - past, present and future. Demography & Vital Statistics-Demography – its concept,Vital events of life & its impact on demography, Significance and recording of vital statistics, Census & its impact on health policy,

Epidemiology: Principles of Epidemiology, Natural History of disease, Methods of Epidemiological studies, Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

1. Rehabilitation: Definition, Types, Rehabilitation Team.

2. Introduction to Community Based Rehabilitation: Definition, Historical review, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR,Role of each member of CBR team, Models of CBR.
3. W.H.O. `s policies-about rural health care-concept of primary / tertiary health centers-district hospitals etc-Role of P.T. -
4. Disability: Definition of Impairment, Handicap and Disability, Disability Process, Difference between impairment, handicap and disability, Causes of disability, Types of disability, Prevention of disability, Disability Evaluation.

5. Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies- National level and International NGO's, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockfeller, Ford foundation, CARE, REDCROSS.
6. National District Level Rehabilitation Programme: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker
7. Modifications in physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL.

8. Extension services and mobile units: Introduction, Need, Camp approach.

9. Geriatrics - Role of Physiotherapy in Hospital based care, Half-way homes, Residential homes, Meals on wheels etc. Home for the aged, Institution based Geriatric Rehabilitation. Few conditions: - Alzheimer's disease, Dementia, Parkinson's disease, Incontinence, Iatrogenic drug reactions, etc. Ethics of Geriatric Rehabilitation.
10. Industrial Health & Ergonomics-Occupational Hazards in the industrial area overuse/fatigue injuries, ergonomic evaluation of work place- mechanical stresses per hierarchy–
11. Health and Disease: Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being.
12. Mental Health: Characteristics of a mentally healthy person, Types of mental illness, Prevention and Management through Physiotherapy.
13. Physiotherapy in Obstetrics, Paediatrics and Geriatrics:, Antenatal, Intranatal and post natal care, Care of children.
14. Occupational Health: Prevention of occupational diseases. Prevention practice: a holistic perspective for physiotherapy. Physiotherapist role for a healthy community
15. Marketing health and wellness.
16. Role of family on individual's health, effects of sickness and disability on other members of family.
17. Social factors in disease and health, Social Problems of diabled and role of social worker.
18. Introduction to Bio-Engineering; Classification of Orthoses and prostheses; Introduction to surgical anatomy and various pathological deviations with respect to brace fitting, Biomechanical principles of orthotic and prosthetic application, Rationale of prescribing Prosthetic and Orthotic devices, Types of Prosthetic and Orthotic devices: Spinal, Lower limb, and Upper limb, checkout, usage advice, precautions, and follow-up. Walking aids and wheel chairs: prescription, usage advice, and follow-up.
19. Psychological aspects of orthotic and prosthetic application
20. Occupational Therapy

PRACTICAL: This will consist of Field visits to urban and rural PHC's, Visits to regional rehabilitation training center, Regular mobile camps, Disability surveys in villages, Disability screening, Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardio-respiratory, paediatric, gynecological and geriatric problems in community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials.

1. Demonstration of methods of using orthotics & prosthetics devices.
2. Methods of organization of community-based rehabilitation centres.
3. Visit of different rehabilitation centres and preparing a report of the visit & viva

voce of the aforesaid report.

4. Fabrication & Designing of upper extremity, lower extremity and spinal orthosis, indications and check out;
5. Fabrication & Designing of upper extremity and lower extremity prostheses, indications and check out; prescription and designing of footwear and modifications;

   Fabrication & Designing and construction of adaptive devices.

INTRODUCTION TO QUALITY AND PATIENT SAFETY
BPT311

1. Quality assurance and management- The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance programs in the health system.
   a. Concepts of Quality of Care, Quality Improvement Approaches, Standards and Norms, Quality Improvement Tools, Introduction to NABH guidelines

2. Basics of emergency care and life support skills-
   Basic life support (BLS) is the foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. Topics to be covered under the subject are as follows:
   a. Vital signs and primary assessment
   b. Basic emergency care – first aid and triage
   c. Ventilations including use of bag-valve-masks (BVMs)
   d. Choking, rescue breathing methods
   e. One- and Two-rescuer CPR
   f. Using an AED (Automated external defibrillator).
   g. Managing an emergency including moving a patient

   At the end of this topic, focus should be to teach the students to perform the maneuvers in the simulation lab and to test their skills with focus on airways management and chest compressions. At the end of the foundation course, each student should be able to perform and execute/operate on the above-mentioned modalities.

3. Biomedical waste management and environment safety- The aim of this section will be to help prevent harm to workers, property, the environment and the

general public. Topics to be covered under the subject are as follows:

a. Definition of Biomedical Waste
b. Waste minimization
c. BMW – Segregation, collection, transportation, treatment and disposal (including color coding) Liquid BMW, Radioactive waste, Metals/Chemicals/Drug waste
d. BMW Management & methods of disinfection
e. Modern technology for handling BMW
f. Use of Personal protective equipment (PPE)
g. Monitoring & controlling of cross infection (Protective devices)

4. Infection prevention and control - The objective of this section will be to provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes. Concepts taught should include–
   a. Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)],
   b. Prevention & control of common healthcare associated infections,
   c. Components of an effective infection control program, and
   d. Guidelines (NABH and JCI) for Hospital Infection Control

PROFESSIONALISM AND VALUES

BPT-312

The module on professionalism will deliver the concept of what it means to be a professional and how the physiotherapy profession is different from a usual vocation. It also explains how relevant professionalism is in terms of the healthcare system and how it affects the overall patient environment.

1. Professional values - Integrity, Objectivity, Professional competence and due care, Confidentiality. Core values - Accountability, Altruism, Compassion/ caring, excellence, integrity, professional duties, social responsibility.
2. Personal values – ethical or moral values
3. Attitude and behavior – professional behavior, treating people equally
4. Code of conduct, professional accountability and responsibility, misconduct
5. Differences between professions and importance of team efforts
6. Cultural issues in the healthcare environment
7. Entry level healthcare practitioner, direct access, autonomy in profession, practitioner of practice and evidence-based practice.

The five roles of the Physiotherapist-

1. The Physiotherapist as Patient/Client manager

   Evaluation and diagnosis, Diagnosis as clinical decision making, Prognosis, Discharge planning and discontinuance of care, Discontinuance of care, Outcomes, Clinical decision making, Referral relationships, Interpersonal relationships, Ethical and legal issues, Informed consent, Managed care and fidelity.

2. The Physiotherapist as Consultant

   Physiotherapy consultation, Building a consulting business, The consulting process, The skills of a good consultant, Trust in the consultant/client relationship, Ethical and legal issues in consultation, Components of a consulting agreement.

3. The Physiotherapist as Critical Inquirer
   a. History of critical inquiry, Evidence-based practice, Outcomes research
   b. Whose responsibility is research?, Roles of the staff physiotherapist in critical inquiry, Collaboration in clinical research, Ethical and legal issues in critical inquiry.

4. The Physiotherapist as Administrator

   History of physiotherapy administration, Contemporary physiotherapy administration, Patient/client management, First-line management, Mid level managers and chief executive officers, Leadership, Ethical and legal issues.

5. The Physiotherapist as Educator

   History of physiotherapy education, Contemporary educational roles of the physiotherapist, Teaching opportunities in continuing education, Academic teaching opportunities, Theories of teaching and learning in professional education, Ethical and legal issues in physiotherapy education.

CLINICAL EDUCATION

BPT-313

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD

2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU

BPT SEVENTH SEMESTER

PHYSIOTHERAPY IN ORTHOPEDICS-I

BPT-401

Course No.	Title	Total Hour	Hours / week	Credit	IA Mark	SE Mark	Total Mark
BPT 401	**PHYSIOTHERAPY IN ORTHOPEDICS-I**	**144 (80 T + 64 P)**	**4**	**4**	**20 (T) + 20 (P)**	**80 (T) + 80 (P)**	**200**

COURSE DESCRIPTION- The subject serves to integrate the knowledge gained by the students in orthopedics and traumatology with skills to apply these in clinical situations of dysfunction and musculoskeletal pathology.

COURSE OBJECTIVE- The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to do functional diagnosis and identify disabilities due to musculoskeletal dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore musculoskeletal function.

COURSE OUTCOMES-

CO1: To understand traumatology of Upper and lower limb fractures, with their treatment protocols.

CO2: Assess the patients with musculoskeletal conditions.

CO3: To understand the pathophysiology of various inflammatory and infective

conditions of musculoskeletal system with its treatment protocol.
CO4: To understand PT evaluation of Orthopedics conditions.
CO5: To understand PT management of Orthopedics conditions.

PT functional diagnosis and assessment for orthopedic conditions – SOAP format, Subjective-history taking, informed consent, personal, past, medical and socio-economic history, chief complaints, history of present illness. Pain assessment - intensity, character, aggravating and relieving factors, site and location. Objective - on observation - body built swelling, muscle atrophy, deformities, posture and gait, on palpation- tenderness- grades, muscle spasm, swelling- methods of swelling assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances. On examination – ROM – active and passive, resisted isometric tests, limb length - apparent, true and segmental, girth measurement, muscle length testing - tightness, contracture and flexibility, manual muscle testing, peripheral neurological examination - dermatomes, myotomes and reflexes, special tests and functional tests, prescription of home program, Documentation of case records, and follow up.

Fractures - types, classification, signs and symptoms, complications, Fracture healing – factors affecting fracture healing, Principles of fracture management - reduction - open and closed, immobilization - sling, cast, brace, slab, traction - manual, mechanical, skin, skeletal, lumbar and Cervical traction, external fixation, functional cast bracing, PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and malunion, RSD, myositis ossificans, AVN, pressure sores etc. Physiotherapy assessment in fracture cases, Aims of PT management in fracture cases - short- and long-term goals, Principles of PT management in fractures – Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period.

1. Specific fractures and dislocations: PT assessment and management of upper limb fractures and dislocations, PT assessment and management of lower limb fractures and dislocations including pelvis, PT assessment and management spinal fractures.
2. Selection and application of physiotherapeutic techniques, maneuver's, modalities for preventive, curative and rehabilitative means in all conditions.
3. Principles of various schools of thought in manual therapy (Briefly Maitland and Mckenzie).
4. Degenerative and inflammatory conditions: Definition, signs and symptoms, clinical features, pathophysiology, radiological features, deformities, medical, surgical management, describe the PT assessment and management and home program for the following conditions – Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritis shoulder.
5. Infective conditions: Definition, signs and symptoms, clinical features,

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pathophysiology, radiological features, medical, surgical management, Describe PT assessment and management for following conditions – Osteomyelitis – acute and chronic, Septic arthritis, pyogenic arthritis, TB spine and major joints- knee and hip.

6. Define; review the postural abnormalities of spinal column, clinical features, and deformities, medical and surgical management, Describe PT assessment and management and home program.
7. Deformities: Review in detail the causes, signs and symptoms, radiological features, medical and surgical management, Describe the PT assessment and management of the following conditions: Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities, Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum.
8. Cerebral palsy: Definition, etiology, classification, clinical features, complications, deformities, medical and surgical management and home program with special emphasis on carrying techniques, PT management after surgical corrections.
9. Poliomyelitis: Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management, PT assessment and management after surgical corrections and reconstructive surgeries- emphasis on tendon transfer and home program.
10. Leprosy: Definition, cause, clinical features, medical and surgical management, PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and post operatively.
11. Amputations: Definition, levels, indications, types, 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.
12. Effects of spinal traction, types of traction, modes of application, indications for spinal traction, contraindications, precautions, limitations of traction.
13. Osteoporosis- causes, predisposing factors, investigations and treatment.
14. Orthopedic 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, excision arthroplasty with implant, inter positional arthroplasty and Total replacement;Tendon transplant, Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Reattachment of limbs, External fixators, Synovectomy.

PRACTICAL- Practical shall be conducted for all the relevant topics discussed in theory in the following forms: 1. Bedside case presentations and case discussions 2. Lab sessions consist of evaluation and assessment methods on student models, treatment techniques and practice sessions

PHYSIOTHERAPY IN NEUROLOGY & NEUROSURGICAL CONDITION-I

BPT-402

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT 402	PHYSIOTHERAPY IN NEUROLOGY -I	144 (80 T + 64 P)	4	4	20 (T) + 20 (P)	80 (T) + 80 (P)	200

SUBJECT DESCRIPTION- The subject serves to integrate the knowledge gained by the students in neurology and neurosurgery with skills to apply these in clinical situations of dysfunction and neurological pathology.

COURSE OBJECTIVE- The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to do functional diagnosis and identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

COURSE OUTCOMES-

CO1: Be able to develop psychomotor skills to implement timely and appropriate physiotherapy assessment tools/techniques to ensure a holistic approach to patient evaluation in order to prioritize patient's problems.

CO2: Be able to select timely physiotherapeutic interventions to reduce morbidity and physiotherapy management strategies, suitable for the patients' problems and indicator conditions based on the best available evidence.

CO3: Implement appropriate neuro-physiotherapeutic approaches

CO4: Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society and co-professionals, to promote individual and community health.

CO5: Implement electrotherapeutic modalities, joint and soft tissue mobilizations and ergonomic advice for neuromuscular.

1. Neurological Functional diagnosis and Assessment: Required materials for examination, Chief complaints, History taking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function –

Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment, Motor Examination– Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes–Developmental reflexes, deep tendon reflexes, Superficial reflexes, Sensory examination– Superficial, Deep and Cortical sensations, Special tests– Romberg's, Kernig's sign, Brudenzki sign, Tinels's sign, Slump test, Lehermitte's sign, Bell's Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc, Balance examination, coordination examination, Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis), Functional Analysis, 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, Differential diagnosis.

2. Neuro physiological Techniques – Concepts, Principles, Techniques, Effects of following 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.
3. Paediatric Neurology: Paediatric Examination, Developmental milestones, developmental reflexes, Neurodevelopmental screening tests, Evaluation & Management- History, Observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, cranial nerve examination, Motor & Sensory examination, Reflex testing,differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Chorea, Spina bifida, and syringomyelia.

PRACTICAL: Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consist of evaluation and assessment methods on student models, treatment techniques and practice sessions.

PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS-I

BPT-403

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT 403	PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS -I	144 (80 T + 64 P)	4	4	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION- The student must be able to reassess the patient as necessary, to monitor the patient in regard to treatment, to monitor the patient's vital signs, student must know emergency drugs indication and contra-indication, care in intensive care unit (ICU) and to provide appropriate interventions to the patient.

COURSE OUTCOMES-

CO1: Interpretation of different invasive and non-invasive diagnostic investigation to make proper assessment in various respiratory and cardiovascular dysfunction

CO2: Develops the skills to execute different Physiotherapy techniques used in treatment of Cardio-respiratory dysfunctions.

CO3: To select strategies for cure, care & prevention; adopt restorative & rehabilitative measures for maximum possible functional independence of a patient at home, work place & in community.

CO4: Be able to execute the effective Physiotherapeutic measures with appropriate clinical reasoning to improve pulmonary function.

CO5: To design & execute effective tailored cardiopulmonary rehabilitation programme.

THEORY-

1. Anatomical and Physiological differences between the Adult and Pediatric lung.
2. Bedside assessment of the patient- Adult & Pediatric.
3. Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG, Hematological and Biochemical Tests.
4. Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neuro physiological Facilitation of Respiration, Mechanical aids – Incentive Spirometry, CPAP, IPPB.
5. Physiotherapy techniques to decrease the work of breathing – Measures to

optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids– IPPB, CPAP, BiPAP.

6. Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion,Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning.
7. Drug therapy– Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulizers.
8. Neonatal and Pediatric Physiotherapy– Chest physiotherapy for children, the neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit.

PHYSIOTHERAPY IN SPORTS-I
BPT-404

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT 404	PHYSIOTHERAPY IN SPORTS-I	144 (80 T + 64 P)	4	4	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION-

COURSE OBJECTIVE- Be able to identify, discuss & analyze, the Musculo skeletal dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations and arrive at appropriate functional diagnosis with clinical reasoning for fitness training & rehabilitation.

COURSE OUTCOMES-

CO1: Understand the psychosocial factors, environmental factors & individual factors affecting
the performance.

CO2: Use the anatomical rationale for the clinical tests used in differential diagnosis.

CO3: Be able to identify, discuss & analyse, the various cardio-respiratory function & co-relate the
same with the provisional diagnosis, for fitness training & rehabilitation.

CO4: Lay down rehabilitation protocol for sports specific injuries focusing an early

rehabilitation to injuries. Identify the causes prone for injury & prevent them.
CO5: Guide participants for a confident sports activity & rehabilitation to attain maximal achievement and to understand the role of Sports physiotherapist in the team

1. Pre-exercise evaluation
2. Principles of injury prevention.
3. Principles of training & Rehabilitation in sports injuries.

4. Physiological effects of exercise on body systems - Muscular system, Endocrine system, Cardio-respiratory system, Nervous system

5. Sports injuries
Shoulder – instability, rotator cuff injury, biceps tendonitis and rupture, pectoralis major rupture, scapular dyskinesis and acromio-clavicular joint injuries, Elbow – tennis elbow, golfer's elbow, Wrist and hand – carpal tunnel syndrome, gamekeeper's thumb.

6. Doping

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

RESEARCH METHODOLOGY & BIOSTATISTICS

BPT-405

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT 405	RESEARCH METHODOLOGY & BIOSTATISTICS	50	1	1	20	80	100

COURSE OBJECTIVE-
The objective of this module is to help the students understand the basic principles of research and methods. Applied to draw inferences from the research findings.

COURSE OUTCOMES-
CO1: Understand the importance of research in the relative field. Understand the basic concepts and methods of research.
CO2: Interpret differences in data distributions via visual displays. Calculate standard

normal scores and resulting probabilities

CO3: Calculate and interpret confidence intervals for population means and proportions. Interpret and explain a p-value.

CO4: Perform a two-sample t-test and interpret the results; calculate a 95% confidence interval for the difference in population means.

CO5: Select an appropriate test for comparing two populations on a continuous measure, when the two-sample t-test is not appropriate. Understand and interpret results from Analysis of Variance (ANOVA), a technique used to compare means amongst more than two independent populations.

RESEARCH METHODOLOGY

1. 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, Problems encountered by researchers in India.
2. Research problem: Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem
3. Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design
4. Sampling Design: Criteria for selecting sampling procedure, Implications for sample design, steps in sampling design, characteristics of good sample design, Different types of sample design
5. Measurement & scaling techniques: Measurement in research - Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification, important scaling techniques.
6. Methods of data collection: collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules.
7. Sampling fundamentals, need for sampling & some fundamental definitions, important sampling distributions.
8. Processing & analysis of data: Processing operations, problems in processing, Types of analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship.
9. Testing of hypothesis: What is hypothesis? Basic concepts concerning testing of hypothesis, Procedure of hypothesis testing, measuring the power of hypothesis test, Tests of hypothesis, limitations of the tests of hypothesis
10. Computer technology: Introduction to Computers, computer application in research, computers & researcher.
11. Format of scientific documents (Structure of protocols, formats reporting in scientific journals, systematic reviews and meta-analysis).
12. Research Ethics and Brief introduction to Clinical trials registry.

BIOSTATISTICS

1. Introduction: Meaning, definition, characteristics of statistics, Importance of the study of statistics, Branches of statistics, Statistics and health science including physiotherapy, parameters and Estimates, Descriptive and inferential statistics, Variables and their types, Measurement scales.
2. Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve.
3. Measure of Central Tendency: Need for measures of central Tendency, Definition and calculation of mean – ungrouped and grouped, Meaning, interpretation and calculation of median ungrouped and grouped, Meaning and calculation of mode, Comparison of the mean, median and mode, Guidelines for the use of various measures of central tendency.
4. Probability and Standard Distributions: Meaning of probability of standard distribution, the binomial distribution, the normal distribution, Divergence from normality – skewness, kurtosis.
5. Sampling techniques: Need for sampling – Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling designs errors, Sampling variation and tests of significance.
6. Analysis of variance & covariance: Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Covariance (ANACOVA).

EVALUATION METHODS AND OUTCOME MEASURES
BPT-406

Implement methods to assess individual and collective outcomes of patients/clients with disorders of the musculoskeletal, neuromuscular, cardiovascular, pulmonary and integumentary systems using valid and reliable measures that take into account the setting in which patients/clients receive services, the variables of cultural competence, and the effect of societal factors.

CLINICAL REASONING AND EVIDENCE BASED PHYSIOTHERAPY PRACTICE-
BPT-407

1. Introduction to Evidence Based Practice: Definitions, Evidence Based Practice
2. Concepts of Evidence based Physiotherapy: Awareness, Consultation, Judgement, and Creativity.
3. Development of Evidence based knowledge, The Individual Professional, Professionals with in a discipline, and Professionals across disciplines
4. Evidence Based Practitioner: The Reflective Practitioner, The E Model, Using the E Model
5. Finding the Evidence: Measuring outcomes in Evidence Based Practice, Measuring

Health Outcomes, Measuring clinical outcomes, Inferential statistics and Causation

6. Searching for the Evidence: Asking Questions, Identifying different sources of evidence, Electronic Bibliographic databases and World Wide Web, Conducting a literature search. Step by-step search for evidence

7. Assessing the Evidence: Evaluating the evidence; Levels of evidence in research using quantitative methods, Levels of evidence classification system, Outcome Measurement, Biostatistics, The critical review of research using qualitative methods.

8.Systematically reviewing the evidence: Stages of systematic reviews, Meta-analysis, The Cochrane collaboration

9. Economic evaluation of the evidence: Types of economic evaluation, conducting economic evaluation, critically reviewing economic evaluation, locating economic evaluation in the literature.

10.Using the evidence: Building evidence in practice; Critically Appraised Topics (CATs), CAT format, Using CATs, Drawbacks of CATs

11.Practice guidelines, algorithms, and clinical pathways: Recent trends in health care, Clinical Practice Guidelines (CPG), Algorithms, Clinical pathways, Legal implications in clinical pathways and CPG, Comparison of CPGs, Algorithms and Clinical Pathways

12.Communicating evidence to clients, managers and funders: Effectively communicating evidence, Evidence based communication in the face of uncertainty; Evidence based communication opportunities in everyday practice. Research dissemination and transfer of knowledge: Models of research transfer, Concrete research transfer strategies, Evidence based policy

CLINICAL EDUCATION

BPT-408

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU

BPT EIGHTH SEMESTER

PHYSIOTHERAPY IN ORTHOPEDICS-II

BPT-409

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT 409	PHYSIOTHERAPY IN ORTHOPEDICS - II	144 (80 T + 64 P)	4	4	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION- The subject serves to integrate the knowledge gained by the students in orthopedics and traumatology with skills to apply these in clinical situations of dysfunction and musculoskeletal pathology.

COURSE OBJECTIVE- The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to do functional diagnosis and identify disabilities due to musculoskeletal dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore musculoskeletal function.

COURSE OUTCOMES-

CO1: To understand traumatology of upper and lower limb fractures, with their treatment protocols.
CO2: Assess the patients with musculoskeletal conditions.
CO3: To understand the pathophysiology of various inflammatory and infective conditions of musculoskeletal system with its treatment protocol.
CO4: To understand PT evaluation of Orthopedics conditions.
CO5: To understand PT management of Orthopedics conditions.

1. Amputations: Definition, levels, indications, types, 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.

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2. Spinal conditions: Review the causes, signs and symptoms, investigations, radiological features, neurological signs. PT assessment, aims, and management and home program of the following conditions: Cervical spondylosis, Lumbar spondylosis, Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina bifida occulta.
3. Effects of spinal traction, types of traction, modes of application, indications for spinal traction, contraindications, precautions, limitations of traction.
4. Osteoporosis- causes, predisposing factors, investigations and treatment.
5. Orthopedic 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, 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.
6. Shoulder joint: Shoulder instabilities, TOS, RSD, Impingement syndrome - conservative and post-operative PT management. Total shoulder replacement and Hemi replacement. - Postoperative PT management. AC joint injuries – rehabilitation, Rotator cuff tears- conservative and surgical repair, Subacromial decompression- Post operative PT management.
    6. Elbow and forearm: Excision of radial head - Post operative PT management. Total elbow arthroplasty-Post operative PT management.
    7. Wrist and Hand: Total wrist arthroplasty, Repair of ruptured extensor tendons, Carpal tunnel syndrome, Flexor and extensor tendon lacerations-Post operative PT management.
    8. Hip: Joint surgeries - hemi and Total hip replacement - Post operative PT management Tendonitis and bursitis - Management.
    9. 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. TKR- rehabilitation protocol, Patellar tendon ruptures and Patellectomy- rehabilitation.

10. Ankle and foot: Ankle instability, Ligamentous tears- Postoperative management.
11. Applied Yoga in orthopedic conditions.

PRACTICAL- Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consist of evaluation and assessment methods on student models, treatment techniques and practice sessions.

PHYSIOTHERAPY IN NEUROLOGY & NEUROSURGICAL CONDITION-II

BPT-410

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT 410	PHYSIOTHERAPY IN NEUROLOGY II	144 (80 T + 64 P)	4	4	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION- The subject serves to integrate the knowledge gained by the students in neurology and neurosurgery with skills to apply these in clinical situations of dysfunction and neurological pathology.

COURSE OBJECTIVE- The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to do functional diagnosis and identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

COURSE OUTCOMES-

CO1: Be able to develop psychomotor skills to implement timely and appropriate physiotherapy assessment tools/techniques to ensure a holistic approach to patient evaluation in order to prioritize patient's problems.

CO2: Be able to select timely physiotherapeutic interventions to reduce morbidity and physiotherapy management strategies, suitable for the patients' problems and indicator conditions based on the best available evidence.

CO3: Implement appropriate neuro-physiotherapeutic approaches
CO4: Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society and co-professionals, to promote individual and community health.
CO5: Implement electrotherapeutic modalities, joint and soft tissue mobilizations and ergonomic advice for neuromuscular.

1. Evaluation and Management of Brain and Spinal Cord Disorders : History, Observation, Palpation, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neuro physiological approaches & Modalities in Cerebrovascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Amyotrophic lateral sclerosis and Multiple sclerosis.
2. Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders : History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neuro physiological approaches & Modalities in Ataxia, Sensory Ataxia, Parkinson's disease, 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.
3. Evaluation and Management of Peripheral Nerve Injuries and Disorders: History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neuro physiological approaches & Modalities in 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 Pudendal nerve palsy.

4. Assessment and management of Neurological gaits: Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following 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.
5. Pre and post-surgical assessment and treatment following conditions-Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson's disease, Chorea, Hemiballism, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis, Arteriovenous malformations, and Spina bifida.
6. Vertigo-Assessment and Management.
7. Applied Yoga in Neurological conditions.

PRACTICAL: Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consist of evaluation and assessment methods on student models, treatment techniques and practice sessions.

PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS-II

BPT-411

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT 411	PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS-II	144 (80 T + 64 P)	4	4	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION- The student must be able to reassess the patient as necessary, to monitor the patient in regard to treatment, to monitor the patient's vital signs, student must know emergency drugs indication and contra-indication, care in intensive care unit (ICU) and to provide appropriate interventions to the patient.

COURSE OUTCOMES-

CO1: Interpretation of different invasive and non-invasive diagnostic investigation to make proper assessment in various respiratory and cardiovascular dysfunction

CO2: Develops the skills to execute different Physiotherapy techniques used in treatment of Cardio-respiratory dysfunctions.

CO3: To select strategies for cure, care & prevention; adopt restorative & rehabilitative measures for maximum possible functional independence of a patient at home, work place & in community.

CO4: Be able to execute the effective Physiotherapeutic measures with appropriate clinical reasoning to improve pulmonary function.

CO5: To design & execute effective tailored cardiopulmonary rehabilitation programme.

THEORY-

1. Physiotherapy in Obstructive lung conditions.
2. Physiotherapy in Restrictive lung conditions.
3. Management of breathlessness.
4. Pulmonary Rehabilitation.
5. Physiotherapy following Lung surgeries
6. Respiratory failure– Oxygen Therapy and Mechanical Ventilation.
7. Introduction to ICU : ICU monitoring – Apparatus, Airways and Tubes used in the ICU - Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU. assessment and management of ICU acquired weakness and anxiety.
8. Physiotherapy management following cardiac surgeries.
9. Cardiac Rehabilitation.
10. Physiotherapy management following PVD.
11. Thoraxic Surgeries- Management of Pulmonary Restorative

Dysfunction following surgical procedures on Abdomen and Thorax.

12. Home program and education of family members in patient care.
13. Applied Yoga in Cardio-respiratory conditions

PRACTICAL:

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consist of evaluation and assessment methods on student models, treatment techniques and practice sessions.

PHYSIOTHERAPY IN SPORTS-II
BPT-412

Course No.	Title	Total Hour	Hours/ week	Credit	IA Mark	SE Mark	Total Mark
BPT 412	PHYSIOTHERAPY IN SPORTS-II	144 (80 T + 64 P)	4	4	20 (T) + 20 (P)	80 (T) + 80 (P)	200

COURSE DESCRIPTION- The subject serves to integrate the knowledge gained by the students in biomechanics with physiotherapy skills to apply these in clinical situations of sports injuries.

COURSE OBJECTIVE- Be able to identify, discuss & analyze, the Musculo skeletal dysfunction in terms of Biomechanical, kinesiological and biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations and arrive at appropriate functional diagnosis with clinical reasoning for fitness training & rehabilitation.

COURSE OUTCOMES-

CO1: Understand the psychosocial factors, environmental factors & individual factors affecting the performance.

CO2: Use the anatomical rationale for the clinical tests used in differential diagnosis in sports physiotherapy.

CO3: Be able to identify, discuss & analyze, the various sports injuries & co-relate the mechanism of injury with the provisional diagnosis, for fitness training & rehabilitation.

CO4: Lay down rehabilitation protocol for sports specific injuries focusing an early rehabilitation to injuries. Identify the causes prone for injury & prevent them.
CO5: Guide participants for a confident sports activity & rehabilitation to attain maximal achievement and to understand the role of Sports physiotherapist in the team

1.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, achilles tendonitis & rupture, TA bursitis, ankle sprain, plantar fasciitis, foot injuries.
Head & face – maxill orofacial injuries, helmet compression syndrome.

2. Sports in Special age groups: Female athlete triad, Younger athlete-Musculoskeletal problems, management, children with chronic illness and nutrition. Older Athlete- Physiological changes with aging, benefits, risks of exercise in elderly, exercise prescription guidelines for elderly.
3. Fitness: Key concepts of fitness
   a. Defining & Measuring Fitness
   b. Assessment of Stress with a Survey.
   c. Visualizing Fitness
   d. Screening for Mental and Physical Fitness
   e. Body Mass Index calculations.
4. Fitness training
   - Physical Activities Readiness Questionnaire
   - Physical activities pyramid
   - Exercise programs and evidence – based practice
   - Measurement of fitness components and sports skills - Measurement of muscular Strength, Measurement of muscular endurance, Measurement of flexibility, Determination of exercise endurance.
5. Sports Massage and Dry needling in Athletes.

PRACTICAL
1. Practical demonstration of basic principles of physiotherapy assessment, functional.
2. Assessment and application of sports physiotherapy

3. Students must maintain a logbook. The duly completed logbook should be submitted during practical examination.

RESEARCH PROJECT

BPT-413

The student need to submit a minimum of two case studies based on Evidence based physiotherapy evaluated during the clinical training hours and submit the same to the department at the end of fourth year before final examination. The student shall not be allowed to appear for the final examination without submission of research project.

CRITIQUE ENQUIRY, CASE PRESENTATION AND CASE DISCUSSION

BPT-414

The central goal of the case presentation and discussion is to enable students to create and critique methodologically sophisticated case study research designs in the physiotherapy. This will also will look at the epistemological assumptions, comparative strengths and weaknesses, and proper domain of case study methods and alternative methods, particularly statistical methods and formal modeling, and address ways of combining these methods in a single research project. The seminar then examines field research techniques, including archival research and interviews.

CLINICAL EDUCATION

BPT-415

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC

4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU

INTERNSHIP

The internship time period provides the students the opportunity to continue to develop confidence and increased skill in simulation and treatment delivery. Students will demonstrate competence in beginning, intermediate, and advanced procedures in both areas. Students will participate in advanced and specialized treatment procedures. The student will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The students are expected to work for a minimum 8 hours per day.

1. **Initial Assessment Documentation:** Clinical staff must document the following information:

    a. Initial assessment documented based on SOAP format.
    b. Subjective examination (symptomatic)
    c. Objective examination (measureable, observable)
    d. Action/Analysis (interpretation of current condition/intervention provided)
    e. Plan of action
    f. Written or verbal feedback to the client or other relevant carers
    g. Discharge plan documented
    h. Agreement to treatment plan by patient or "person responsible"

2. **Progress Documentation:** Progress documentation may include the following information:
    a. Any individual intervention should be documented in SOAP format (including response to intervention/s using outcome measures)
    b. Oral consent obtained and documented when there is a significant change in treatment/treatment options/status of patient's health.
    c. Written consent obtained for designated invasive procedures
    d. Change in status or events that may affect discharge plans/goals
    e. Documented consultation with key clinical team members
    f. Skills based outcomes and monitor able indicators for bachelors of physiotherapy

Bachelor of Physiotherapy

Competency Statements

1. Consults with the client to obtain information about his/her health, associated history, previous health interventions, and associated outcomes.
2. Collects assessment data relevant to the client's needs and physiotherapy practice.
3. Be able to conduct the patient evaluation and assessment as per condition.
4. Analyzing Assessment findings & Establish a physiotherapy diagnosis and prognosis.
5. Develops and Recommends an intervention strategy.
6. Be able to prepare the patient (physically and emotionally) and as well as the equipment to be used as per treatment plan
7. Implements intervention.
8. Be able to accurately explain the treatment plans and able to demonstrate and teach self exercises
9. Advise patient on appropriate nutrition, exercises, rest, relaxation other issues
10. Evaluates the effectiveness of interventions.
11. Be able to complete accurate treatment documentation.
12. Develops, builds, and maintains rapport, trust, and ethical professional relationships through effective communication.
13. Establishes and maintains inter professional relationships, which foster effective client-centered collaboration.
14. Understand the principles of continuous quality improvement.
15. Be able to carry out the daily/weekly Quality Control (QC) checks.
16. Be able to review the literature.
17. Be able to suggest implementation of research findings.
18. Be able to suggest / initiate topics for physiotherapy research
19. Be able to Interpret, apply and disseminate information as a member of the physiotherapy team.

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List of Recommended Books for BPT Course (60 seats)

Human Anatomy			
S.N.	Title	Author	No. of copy
1	Textbook of Anatomy Upper Limb & Thorax Vol-1st	Singh, Vishram	21
2	Textbook of Anatomy Abdomen & Lower Limb Vol-2	Singh, Vishram	21
3	Human Anatomy : Lower Limb and Abdomen Vol.2	Chaurasia, B.D.	15
4	Human Anatomy : Head, Neck and Brain Vol.3	Chaurasia, B.D.	15
5	Textbook of Anatomy Head Neck & Brain Vol 3	Singh, Vishram	15
6	Cunningham's Manual of Practical Anatomy Thorax & Abdomen vol 2	Romanes, G.J.	15
7	Hand Book of General Anatomy	Chaurasia, B.D.	14
8	Cunnighams Manual of Practical Anatomy vol 1	Romanes, G.J.	14
9	Cunningham's Manual of Practical Anatomy Head & Neck vol 3	Romanes, G.J.	14
10	Textbook of Anatomy with Colour Atlas Vol.1	Singh, Inderbir	11

11	Text Book of Anatomy with Colour Atlas Vol.2	Singh, Inderbir	11
12	Text Book of Anatomy with Colour Atlas Vol.3	Singh, Inderbir	11
13	General Anatomy	Pal G.P	10
14	Human Anatomy: Regional & Applied - Vol 1	Chaurasia's, B.D.	10
15	Text Book of Human Neuroanatomy	Singh, Inderbir	10
16	McMinn's Color Atlas of Human Anatomy	Abrahams, P.H.	9
17	Clinical Anatomy	Snell, Richards	9
18	Gray's Anatomy for Students	Drake, Richard L.	9
19	Grant's Atlas of Anatomy	Agur, Anne M.R.	8
20	Anatomy and physiology for Physiotherapists	Singh, Inderbir	6
21	Clinical Neuroanatomy for Medical Students	Snell, Richards	6
22	Last's Anatomy : Regional and Applied	Sinnatamby, C.S.	5
23	Human Anatomy : Upper Limb and Thorax Vol.1	Chaurasia, B.D.	5
24	Textbook of Clinical Neuroanatomy	Singh, Vishram	5
25	Text Book of Human Histology	Singh, Inderbir	4
26	Text Book of Human Osteology	Singh, Inderbir	4

27	Essetials of Human Anatomy Vol-1	Datta, A.K	4
28	Essentials of Human Anatomy Head & Neck	Datta, A.K	4
29	Cunnighams Manual of Practical Anatomy	Romanes, G.J.	4
30	Gross Anatomy Workbook	Gandotra,A	4
31	Atlas of Histology	Eroschenko, V.P.	1
32	Human Anatomy Regional Applied	Chaurasia's, B.D.	1
33	Human Embroyology	Singh, Inderbir	1
34	Inderbir Singh' Text Book of Anatomy Upper Limb Thorax Vol 1	Devi, V. Subhadra	1
35	Inderbir Singh' Text Book of Anatomy Lower Limb Abdomen and Pelvis Vol 2	Devi, V. Subhadra	1
36	Inderbir Singh' Text Book of Anatomy Head and Neck Neuroanatomy Vol 3	Devi, V. Subhadra	1
37	Taxt Book of Human Anatomy	Tanton, B.K.	1
38	Principles of Anatomy & Physiology	Tortora, G.J.	1
Human Physiology			
S.N.	Title	Author	No. of copy
1	Comprehensive Textbook of Medical Physiology Vol-1	Pal G.P	15

2	Comprehensive Textbook of Medical Physiology Vol-2	Pal,G.K	15
3	Text book of Physiology Vol-1	Jain, A.K.	15
4	Text book of Physiology Vol 02	Jain, A.K.	15
5	Basic of Medical Physiology	Venkatesh,D	15
6	Essentials of Medical Physiology	Sembulingam, K	15
7	Human Physiology and Biochemistry for Physical Therapy & Occupational Therapy	Jain, A.K.	10
8	Workbook of Practical Physiology	AITBS	10
9	Review of Medical Physiology	Ganong, William.F	3
10	Text Book of Physiology	Ahuja, Veena	1
11	A Text Book of Practical Physiology	Ghai, C.L.	6
12	Medical Physiology	Marya, R.K.	4
13	MCQ In Human Physiology	Tandon O.P.	1
14	Understanding Medical Physiology	Bijlani,R.L.	1
15	Handbook of Human Physiology	Ratan, Vidya	1
16	Manual of Practical Physiology	Jain, A.K.	1
17	Human Anatomy and Physiology	Jain, A.K.	1
18	Practical Physiology (in Hindi)	Suraj Kuamr	5

19	Viva in Human Physiology	Ratan, Vidya	1

Biochemistry			
S.N.	Title	Author	No. of copy
1	Biochemistry	Satyanarayana, U.	24
2	Biochemistry For Physiotherapy And Allied Health Sciences Students	Shetty,B.V	11
3	Introductory Practical Biochemistry	Sawhney, S. K.	9
4	Harper's Illustrated Biochemistry	Murray, Robertk	5
5	Text Book of Biochemistry for Medical Students	Vasudevan, DM	5
6	Outline of Biochemistry	Conn, Eric E.	4
7	A Dictionary of Biochemistry	Sharma, J.L.	4
8	Biochemistry for Students	Malhotra, V.K.	4
9	Fundamentals of Biochemistry	Deb, A.C.	4
10	Text Book of Medical Biochemistry	Chatterje, M.N.	4
11	Text Book of Biochemistry for Paramedical Students	Ramamoorthy, P	1
12	Medical Biochemistry for Physiotherapy Students	Kaur,Harpreet	1
13	Concise Textbook of Biochemistry	Rajagopal, G	1

14	Concepts of Biochemistry for Physiotherapy and Pharmacy	Singh,S.P.	1
Biophysics			
1	Integrated Molecular and Cellular Biophysics	Valerica Raicu	1
2	Synopis of Bio-Physics and Medical Electronics	Teotia, Seema	10
3	Biophysics	Pattabhi, Vasantha	10
4	Physical Biology of the Cell	Rob Phillips	1
5	Intermediate Physics for Medicine & Biology	Russell K Hobbie	1
Psychology			
S.N.	Title	Author	No. of copy
1	Introduction to Psychology	Morgan, Clifford T	10
2	Shorter Oxford Text Book of Psychiatry	Gelder, Michael	10
3	Modern Clinical Psychology	Korchin,S.J	9
4	Sociology For Physiotherapists	Khanna,Purnima	5
5	Introduction to Psychology	Smith,Eward,E.	4
6	Experimentals Physiology	Woodworth,R.S.	4
7	Social Psychology	Macdavid,John W.	4

8	An Introduction to Sociology	Sachdeva, D.R.	4
9	Psychology for Physiotherapists	Ramalingam, A T	2
10	Psychology	Baron,Robert A	1
11	Social Physiology	Baron,Robert A	1
12	Introduction to Psychology	Fernald, LD	1
13	Sociology For Physiotherapists	Bid	1
14	Principles of Sociology	Das, G.	1
15	A Text Book of Sociology for Physiotherapy	Kumari, Neelam	1
Yoga			
1	Yoga and Rehabilitation	Nilima Patel	10
2	Yoga for Health and Wellbeing	BKS Iyengar	10
3	The Heartfulness Way	Kamlesh D Patel	10
4	Principles of Exercise in Physiotherapy	Sivaram,C	10
First Aid & Emergency Care			
S.N.	Title	Author	No. of copy
1	First Aid for Nursing	Indrani,T,K	12
2	First AID and Emergency Care	Harris, N	10

3	Fundamentals of Nursing	Sethi, Dipak	10
4	Manual of First Aid	Gupta,L.C	2
Computers			
S.N.	Title	Author	No. of copy
1	Computer Fundamentals	Sinha, P.K.	9
2	Environmental Science	Agarwal K.C	5
3	Hazardous waste incineration	Brunner R.C	1
4	Marine Pollution	Clark R.S	1
5	Environmental encyclopedia	Cunningham W.P	1
6	Environmental chemistry	Cooper, T.H. Gorhani, E&Hepworth,	1

General Books			
S.N.	Title	Author	No. of copy
1	Abhinav's Dictionary of Physiotherapy	Sharma, Ashwani.	9
2	Dictionary of Physiotherapy	Gupta,Abhishek	4
3	Introduction to Physiotherapy	Suraj Kumar	4
4	Illustrated Oxford Dictionary	D.K	1

Pathology			
S.N.	Title	Author	No. of copy
1	A Text Book of Pathology	Harsh Mohan	30
2	Basic Pathology	Kumar, Vinay	5
3	Robin's and cotran pathologic basis of disease	Kumar, Vinay	4
4	Essential of Pathology	Chaun, H.V.S.	4
5	General and Systematic Pathology	Underwood, J.C.E	1
6	Pathophysiology	Marya, R.K.	1
7	Text Book of Pathology for Allied Health Sciences	Nayak, Ramdas	1
8	T.B. of Medical Laboratory Technology	Godkar .P.B	1
Microbiology			
S.N.	Title	Author	No. of copy
1	Text Book of Microbiology	Panikar, C.K.	19
2	Essential of Microbiology	Chaun, H.V.S.	4
3	Text Book of Microbiology for Physiotherapy	Beveja, C.P	1
4	Jawetz,Melnich,& Adelbergs Medical Microbiology	Brooks, G.F	1

5	Essentials of Medical Microbiology	Sastry, A S	1
Pharmacology			
S.N.	Title	Author	No. of copy
1	Essentials of Medical Pharmacology	Tripathi, K.D.	21
2	A Concise T.B. of Pharmacology	Murugesh, N.	9
3	Text book of Pharmacology for Physiotherapy	Uday Kumar	7
4	Pharmacology & Pharmacotheradeutics	Satoskar, R.S.	4
6	Pharmacology for Physiotherapists	Ramesh,K.V	2
7	Multiple choice quention in Pharmacology	Tripathi, K.D.	2
8	Goodman & Gilman's the Pharmacological basis of Therapeutics	Brunton,L.L	1
9	Textbook of Pharmacology for Dental and Allied Health Sciences	Udaykumar,Padmaja	1
10	Pharmacology for Physiotherapist	Sharma, J.L.	1
Exercise Therapy			
S.N.	Title	Author	No. of copy
1	The Principles of Exercise Therapy	Gardiner,M.D	25

2	Principles of Exercise in Physiotherapy	Sivaram,C	25
3	Exercise Therapy	Suraj Kumar	20
4	Therapeutic Exercise	Kisner, Carolyn	14
5	Muscles Testing and Function	Kendall, F.P	14
6	Practical exercise therapy	Hollis,Margaret	14
7	Principles and practice of Therapeutic Massage	Sinha, A.G	14
8	Text book of Therapeutic exercise	Narayan,Laxmi,S	14
9	Concise Exercise Therapy	Meena, Roshan	10
10	Massage For Therapists	Hollis, Margaret	9
11	Daniels and Worthingtons Muscle Testing	Hislop, Helen.J	6
12	Yogic exercise physiologic & psychic processes	Dutta,Ray	3
13	Exercise Therapy	Gormley John	1
14	Basic Clinical Massage Therapy	Clay, JH	1

Electrotherapy

S.N.	Title	Author	No. of copy
1	Text book of Electrotherapy	Jagmohan Singh	21

2	Essentials of Electrotherapy	Chippala, Purusotham	15
3	Hand book of Practical Electrotherapy	Mitra, Pushpal ,K	15
4	Clayton's Electrotherapy theory and practice	Forster,A	11
5	Electrotherapy	Kitchen,Sheila	11
6	Electrotherapy Explained	Robertson Val	10
7	Essentials of Electrotherapy	Chippala, Purusotham	10
8	Electrotherapy in Rehabilitation	Gersh,M.R	3
9	Fundamentals of Electrotherapy	Nath,Uday	2
10	Therapeutic Modalities	Starkey, Chad	1
11	Basic of Electrotherapy	Khatri, Subhash	1
12	Electrotherapy Simplified	Nanda, Basanta Kumar	1
13	Basic Electronics & Linear Circuits	Bhargava N.N	1

Biomechanics

S.N.	Title	Author	No. of copy
1	Joint Structure and Function	Norkin, Cynthia	28
2	Brunnstrom's Clinical Kinesiology	Smith, Laura K.	9
3	Biomechanics the Nucleus of Physiotherapy	Raj Kumar,R.V	6

4	Textbook of Biomechanics	Koley,S	6
5	Textbook of Kinanthropometry	Koley,S	3
6	Text Book of Kinesiology	Bindal, VD	1
7	Manual of Kinesiological Taping	Jain Piyush	1
8	Principles of Mechanics & Biomechanics	Bell,Frank	1
9	Biomechanics of Human Movement	Adrian, MJ	1
10	Basic Biomechanics	Hall,S.J	1
Orthopaedics			
S.N.	Title	Author	No. of copy
1	Essential Orthopaedics	Maheshwari. J.	25
2	Apley's System of Orthopaedics and Fractures	Solomaon, Louis	20
3	Out line of Orthopaedics	Adams J.C	20
4	Essentials of Orthopaedics for Physiotherapists	Ebnezar,John	10
5	Textbook of Orthopaedics & Traumatology	Natarajan, Mayil Vahanan	10
6	Handbook of Orthopaedics	Panda,UN	5
7	Clinical Orthopedic Examination	McRae, Ronald	4
8	Step by Step Injection techniques in orthopaedics	Ebnezar,John	3

9	Text book of Orthopaedics	Kotwal,Orakash	10
Neurology & Neuro Surgery			
S.N.	Title	Author	No. of copy
1	Neurology and Neurosurgery Illustrated	Lindsay, Kenneth	25
2	Brain & Bannister's Clinical Neurology	Bannister, S.R	10
3	Barr's The Human Nervous System	Kiernan, J.A.	1
General Medicine			
S.N.	Title	Author	No. of copy
1	Davidson's Principles and Practice of Medicine	Boon, Nicholas A	15
2	Essential Pediatrics	Ghai, O.P	9
3	Hutchison's Clinical Methods	Swash, Michael L.	9
4	Medicine for Student	Golawala, Aspi F.	4
5	Hand book of Opthalmology	Chatterjee, B.M	2
6	Textbook of Medicine Vol-1	Das,Krishna	1
7	Textbook of Medivine Vol-2	Das,Krishna	1
8	Clinical Problems in General Medicine & Surgery	Devitt, Peter	1

9	Signs and Syndromes in Dermatology	Inamadar, Arun	1
10	Opthalmology	Padmini, H.R	1
11	Text Book of Community Medicine with Recent Advances	Das, B.C	1

General Surgery

S.N.	Title	Author	No. of copy
1	A Concise Text book of Surgery	Das S	10
2	Howkin and Bourne Shaw's T.B. Of Gynaecology	Padubidri,V.G	9
3	Bailey & Love's Short Practice of Surgery	Russell, RCG	4

Research and Biostatistics

S.N.	Title	Author	No. of copy
1	Research Methodology Methods and Techniques	Kothari, C.R.	10
2	Ethical Issues : Perspectives for the Physiotherapists	Raja, Kavitha	10
3	Synopis of Biostatistics	Singh, Sunita	9
4	Methods in Biostatistics	Mahajan, B.K.	4
5	Research Methodology and Bio-Statistics	Bais, Vinod Kumar	1
6	Clinical Research made Easy	Bhandri,Mohit	1

Ortho Physiotherapy			
S.N.	Title	Author	No. of copy
1	Cash's text book of orthopaedics and rheumatology for physiotherapists	Tidswell,Marian	10
2	Clinical Orthopaedic Rehabilitation	Brotzman,S. Brent	10
3	Essentials of Orthopaedics and applied Physiotherapy	Joshi,Jayant	10
4	Tidy's physiotherapy	Porter,Stuart	9
5	Orthopedic physical assessment	Magee,D.J	5
6	The low back pain hand book	Cole,Herring	3
7	Physical Rehabilitation	O,Sullivan, Susan	2
8	Knee pain and disability	Cailliet,Rene	2
9	Hand pain and impairment	Cailliet,Rene	2
10	Foot and ankle pain	Cailliet,Rene	2
11	Low back pain syndrome	Cailliet,Rene	2
12	Neck and arm pain	Cailliet,Rene	2
13	Shoulder pain	Cailliet,Rene	2
14	Ankylosing Spondylitis	Moll, JMH	1
15	Soft tissue pain and disability	Cailliet,Rene	1

16	Manipulative Physiotherapy Assessment Treatment and Improvisation	Biswas, Amrit	1

Sport Physiotherapy

S.N.	Title	Author	No. of copy
1	Clinical sports medicine	Khan,Karim	10
2	Taping Technique Theory and Practice	Ram,C.S	10
3	Sport Medicine Problems & Practical Management	Sherry, E.	5
4	Exercise Physiology	Mcardle W.D	1

Chest Physiotherapy

S.N.	Title	Author	No. of copy
1	Cash's text book of chest,heart and vascular disorders,for physiotherapists	Downie,P.A	20
2	Cardiorespiratory Physiotherapy Adults	Main,E	15
3	Physiotherapy for respiratory and cardiac problems	Pryor, J.A	5
4	Cardiovascular/Respiratory Physiotherapy	Smith,Mandy	3
5	Pediatric & Neonatal mechanical ventilation	Khilani, Praveen	3
6	Chest X Ray Made Easy	Corne,Jonathan	1

7	Fundamentals of Chest Radiology	Ketai L.H	1
8	Manual of ICU Procedures	Gurjar, Mohan	1
Neuro Physiotherapy			
S.N.	Title	Author	No. of copy
1	Text book of Neuro Physiotherapy	Jain, Shalu	21
2	Neurological Rehabilitation	Carr, J	12
3	Cash's text book of Neurology for physiotherapists	Downie,P.A	12
4	Right in the middle selective trunk	Davies,P.M	9
5	Step to Follow the Comprehensive Treatment of Patient with Hemiplegia	Davies,P.M	9
6	Starting again	Davies,P.M	3
7	Rehabilitation of movement	Pitt-Brooke	1
8	Physiotherapy in Neuro-Conditions	Raj,G.S	1
9	Neurogical physiotherapy	Edwards,Susan	1
10	Physiotherapy in Neurological conditions	Potturi.G.S	1
Physiotherapy in Medical & Surgical Conditions			
1	Cash's text book of general medical and surgical conditions for physiotherapists	Downie,P.A	10

2	Physiotherapy in Medical Condition	Suraj Kumar	10
3	Physiotherapy in obstetrics and gynaecology	Polden,M	10
Community Physiotherapy and Rehabilitation			
S.N.	Title	Author	No. of copy
1	Park's Text book of Preventive and Social Medicine	Park.K	15
2	Community based Rehabilitation of Persons with Disabilities	Pruthvish, S.	14
3	Text book of Rehabilitation	Sunder, S	10
4	Physical Rehabilitation	O,Sullivan, Susan	6
5	Orthotics A comprehensive clinical approach	Edelstein J.E	4
6	Hand Splinting	Wilton, Judith	3
7	Physiotherapy in Community Health and Rehabilitation	Naqvi, Waqar	1
Objective Book for preparation of JOB and MPT			
1	Multiple Choice Questions For Physiotherapist, Jaypee Brothers Medical Publishers Pvt. Ltd	Suraj Kumar	10

List of Physiotherapy Equipments required in Physiotherapy OPD for commencement of BPT Course.

S.No.	Name of Equipment	Quantity
1.	Continuous passive motion	01
2.	Interferential therapy with four electrodes	05
3.	Ultra Sound therapy	05
4.	Short wave / Long wave diathermy	02
5.	Infra Red Lamp	02
6.	Hydro – collator with packs	01
7.	Paraffin wax bath	01
8.	Vacuum therapy	01
9.	Microwave diathermy	01
10.	TENS	03
11.	Lumbar-Cervical traction table	02
12.	Wooden Examination Tables	10
13.	Wooden Movable Racks	10
14.	Diagnostic Muscle-Nerve stimulator	06
15.	Push Pull Dynamometer	01
16.	Cervical Collar	01
17.	Cervical Belts	02
18.	Thoracic Belt / Lumber Belt	01
19.	Lumbar Belt	01
20.	Manual Traction Belt	01
21.	Manual Muscle Tester	01
22.	Blood Pressure Measuring instrument	06
23.	Stethoscope	06
24.	Body Massager	01
25.	Foot Massager	01
26.	Back Leg Chest Dynamometer	01
27.	Body shaper	01
28.	IASTM tools	01
29.	Vacuum cups for cupping therapy	01
30.	Manipulation table	01
31.	LASER unit	01
32.	Portable EMG biofeedback	01
33.	Contrast Bath unit	01
34.	Refrigerator	01

35.	UVR lamp	01
36.	Coordination and Peg boards	10
37.	Bolsters of different sizes	01 each
38.	Wedges of different sizes	01 each
39.	Vestibular Ball	01 each
40.	Floor Mat/Yoga mat	05
41.	Iontophoresis patch and machine	01
42.	tDCS apparatus	01
43.	Large plastic tub for foot bath	01
44.	Skin resistance and treatment trays -plastic	10
45.	CPR Kit	01
46.	AMBU bag	01
47.	Postural drainage/tilt table	01
48.	Suction apparatus	01
49.	Incentive spirometer	01
50.	Sensory examination kit	01
51.	Tunning fork -512 Hz	01

EXERCISE EQUIPMENT

S.No	Name of Equipment	Quantity
1	Quadriceps Table	01
2	Static Cycle	01
3	Rowing Machine	01
4	Parallel Bars	01
5	Postural Mirror	01
6	Shoulder Wheel	01
7	Pulley Exerciser	01
8	Supinator Pronator	01
9	Goniometer	01
10	Weight Cuffs Set	02
11	Dumbles	06
12	Clinical Hammer	01
13	Measuring Tape	01
14	Suspension Frame	01
15	Hand Exerciser	01
16	Weighing Machine	01
17	Axillary Crutches	02 Pair

18	Elbow crutch	01
19	(a) Tripod Stick	01
	(b) Quadripod Stick	01
20	Walker	02
21	Walking Stick	02
22	Rolled Gange	06
23	Examination Table	02
24	Jogger	01
25	Stepper	01

Furniture		
S.No.	Item	Quantity
1	Wooden Beds (High Height) with Mattress	10
2	Wooden Beds (Low Height) with Mattress	3
3	Wooden Stool (with seat)	13
4	Almirah (for equipment accessories)	1
5	Doctor's Table	1
6	Revolving Chair	1
7	Examination Bed (with Shelf)	1
8	X Ray Box	1
9	Patient's Waiting (Three Seater)	2
10	Wooden Movable Racks /Trolley	13
11	Step Stool	10

SAMPLE QUESTION PAPER

Roll No:…….. Paper code : BPT-XXX

Bachelor of Physiotherapy

Year (Main/Suppl.) Examination, 202_

Paper Code– ____

Subject: _____

Time: 3 Hours Maximum Marks: 80

Note: All questions are compulsory, attempt all questions in serial order

A. Long answer type : 3x10=30

1.

2.

3.

B. Short answer type : 5x6=30

1.

2.

3.

4.

5.

C. Very short answer type: 10x2=20

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

कुलपति
अटल बिहारी वाजपेयी चिकित्सा विश्वविद्यालय
उत्तर प्रदेश, लखनऊ