SHRI GURU RAM RAI UNIVERSITY
School of Paramedical & Allied Health Sciences

Academic Programme Guide

(W.E.F 2024)

BACHELOR OF PHYSIOTHERAPY

SHRI GURU RAM RAI UNIVERSITY DEHRADUN (UTTARAKHAND)

REGULATION OF THE UNIVERSITY FOR THE AWARD OF THE DEGREE OF BACHELOR OF PHYSIOTHERAPY

- An exercise of the powers conferred by section of the SGRR University Act, the Academic Council/BOS of the Shri Guru Ram Rai University, Dehradun, Uttarakhand hereby makes the following regulations.

- The curriculum of regulation is based on Ministry of Health and Family Welfare, Allied Health Section 2017.

SHORT TITLE AND COMMENCEMENT

i) These regulations shall be called **"THE REGULATIONS FOR THE BACHELOR OF PHYSIOTHERAPY OF THE SHRI GURU RAM RAI UNIVERSITY , DEHRADUN, UTTARAKHAND"**

ii) They shall come into force from the 2024 academic session.

iii) The regulations framed are subject to modification from time to time by the Standing Academic Board of the University.

GENERAL CONSIDERATIONS AND TEACHING APPROACH

1. Graduate Allied Health Science Curriculum is oriented towards training students to help the responsibilities of physician of first contact who is capable of looking after the preventive, promotive, curative and rehabilitative aspects of medicine.

2. With wide range of career opportunities available today, an Allied Health Science graduate has a wide choice of career opportunities. The training through broad based and flexible should aim to provide an educational experience of the essentials required for health care in our country.

3. To undertake the responsibilities of service situations which is changing condition and of various types. It is essential to provide adequate placement training tailored to the needs of such services as to enable the Allied Health Science graduates to become effective instruments of implementation of those requirements. To avail of opportunities and be able to conduct professional requirement the graduate shall endeavour to have acquired basic training in different aspects of Physiotherapy.

4. The importance of the community aspects of health care and of rural health care service is to be recognized including rehabilitation. This aspect of education and training of Allied Health Science graduates should be adequately recognized in the years and adequate exposure to such experience should be available throughout all phases of education and training. This has to be further emphasized and intensified by providing exposures to field practice areas and training during the internship period. The aim of the period of training during internship is to enable the fresh graduates to function efficiently under such settings.

5. As such all the basic concepts of modern scientific medical education allied with allied health sciences are to be adequately dealt with particularly the clinical area and Physiotherapy.

6. There must be enough experience to be provided for self-learning. The methods and techniques that would ensure this must become a part of teaching-learning process.

7. The Allied Health Science graduate of modern scientific medicines shall endeavour to become capable of functioning independently in both urban and rural environment. He/She shall endeavour to give emphasis on fundamental aspects of the subjects taught and on common problems on health and disease.

8. The importance of social factors in relation to the problem of health disease should receive proper emphasis throughout the course and to achieve this purpose, the educational process should also be community based particularly for physiotherapy.

9. Adequate emphasis is to be place on cultivating logical and logical and scientific habits of thought, clarity of expression and independence of judgment, ability to collect and analyze information and to correlate them.

10. The educational process should be placed in Laboratory/Practical background as and evolving process and not merely as an acquisition of a large number of disjointed facts without a proper perspective.

11. Lectures alone are generally not adequate as a method of training and are a poor means of transferring/acquiring information and even less effective at skill development and in generating the appropriate attitudes. Every effort should be made to encourage the use of active methods related to demonstration and on firsthand experience; Students will be encouraged to learn in small groups through peer interactions so as to gain maximal experience. While the curriculum objectives often refer to areas of knowledge or science, they are best taught in a setting of clinical relevant and hands on experience for students who assimilate and make this knowledge a part of their own working skills and knowledge about diagnosis.

12. The Allied Health Science graduate medical education in clinical subjects should be based primarily on outpatient teaching, other medical and surgical departments and within the community including peripheral health care institutions. The outpatient departments should be suitably planned to provide training to graduates in small groups and demonstration subjects of all the appropriate techniques. Clinics should be organized in small groups of preferably not more than 10 students so that a teacher can give personal attention to each student with a view to improve his skill and competence in handling of the patients & methods of diagnosis & treatment.

13. Proper records of the work should be maintained which will form the basis for the student internal assessment and should be available to the inspectors/examiners at the time of inspection/ examination of the college.

14. Maximal efforts have to be made to encourage integrated teaching between traditional subjects areas using a problem based learning approach starting with clinical and exploring the relevance of various pre-clinical disciplines in both understanding and resolution of the problem. Every attempt be made to de-emphasize compartmentalization of disciplines so as to achieve both horizontal and vertical integration in different phases.

15. Faculty members should avail of modern educational technology while teaching the students and to attain this objective.

16. To derive maximum advantage out of this, the vacation period to students in one calendar year should not exceed one month, during 4 years of Bachelor of Allied of Physiotherapy.

OBJECTIVES OF PHYSIOTHERAPY GRADUATE TRAINING PROGRAMME:

NATIONAL GOALS: At the end of undergraduate program, the Allied Health Science student shall endeavour to be able to:

a) Recognize 'health for all' as national goal and health right of all citizens and by undergoing training for Allied Health Science Profession fulfil his/her social obligation towards realization of this goal; learn every aspect of National policies of health and devote himself/herself to its practical implementation.

b) To help to achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of diseases particularly with Physiotherapy.

c) Develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living; particularly in the field of rehabilitation.

d) Become exemplary citizen by observation of medical ethics and medical & Physiotherapy ethics and professional obligations, so as to respond to national aspirations.

INSTITUTIONAL GOALS:

In consonance with the national goals each Allied Health Science Institution should evolve institutional goals to define the kind of trained manpower (or professional) they intend to produce. The undergraduate students coming out of an Allied Health Science institute should:

a) Be competent in therapeutic techniques of common health problems of the individual and the community, associated with or concerned with Physiotherapy commensurate with his/her position as a member of the health team at the primary, Secondary or tertiary levels, using his/her clinical/technical skills based on history, physical examination and relevant investigation techniques and as per the advice of the attending physician.

b) Be competent to practice preventive, promotive, curative and rehabilitative medicine in respect to the all the applicable and encountered health problems physiotherapy.

c) To help to appreciate rationale for different therapeutic modalities pertaining to the subjects of Physiotherapy.

d) To be able to appreciate the socio-psychological, cultural economic and environmental factors affecting health and develop human attitude towards the patients in discharging one's professional responsibilities (Physiotherapy).

e) Possess the attitude for continued self-learning and to seek further expertise or to pursue research in any chosen area of Physiotherapy.

f) Acquire basic management skills in the area of human resources, materials and resource management related to health care delivery.

g) Be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures (Physiotherapy); in community rehabilitation.

h) Be able to work as a leading partner in health care teams and acquire proficiency in communication skills;

i) Be competent to work in variety of health care settings.

j) Have personal characteristics and attitude required for professional life such as personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals

OUTLINE ABOUT THE GRADUATE PHYSIOTHERAPY PROGRAMME

- It is recognized that the physician of today is over worked professionally. It is also recognized that many of the functions of the physician can be performed by auxiliaries, given suitable training and the auxiliary worker has been defined as one" who has just less than full professional qualifications in a particular field/subject and is supervised by qualified professional worker". (W.H.O.).

- The W.H.O. no longer uses the term "Paramedical" for various health's profession allied with medicine (WHO-1984-Health for all Ser, No, 9)

- A part from the **"Doctors"** the group of manpower which is very essentially required to effectively deliver the Health Care Services in the field of Medicare-are collectively called as "Allied Health "(Paramedical) Manpower. The Science, which deals this subject, is called as the "Allied Health Sciences" (W.H.O.).

- The dearth for allied Health Sciences manpower and is lucrative job opportunities are existing vary widely, not only in India but also Overseas Countries. Almost all the trained & duly qualified Allied Health Science professionals are absorbed by the foreign countries.

The BOS follows the norms of Ministry of Health and Family Welfare (Allied Health Section 2017)

PREAMBLE:

The Bachelor of Physiotherapy (BPT) undergraduate degree course is a 4-year and 6 months (8 semesters & 6 months internship) fulltime program. The program is generic in nature and has a component of additional learning of one area leading to another area with choice based study in the final year to focus the career development based on his/her interest. The program focuses on overall development of the student including language and soft skill, emergency care and professional ethics. Psychosomatic aspects of training are a component through all the areas.

NOMENCLATURE:

The course will be referred to as Bachelor of Physiotherapy (BPT)

PROGRAM OUTCOMES:

1. Clinical Care

Using a patient/family-centered approach and best evidence, each student will organize and implement the preventive, investigative and management plans; and will offer appropriate follow-up services.Program objectives should enable the students to:

- Apply the Principales of basicscience and evidence-based practice.
- Use relevant investigations as needed.
- Identify the indications for basic medical procedures and perform them in an appropriatemanner.
- Provide care to patients – efficiently and in a cost-effective way – in a range of settings, andmaintain foremost the interests of individual patients.
- Identify theinfluence of biological, psychosocial, economic, and spiritual factors on patients' well-being and act in an appropriate manner.
- Incorporate Strategieforcertainemergency care, healthpromotion and disease prévention with their patients.

2. Communication

The student will learn how to communicate with patients/clients, care-givers, other health professionals and other members of the community effectively and appropriately. Communication is a fundamental requirement in the provision of health care services. Program objectives should enable the students to:

- Provide sufficient information to ensure that the patient/client can participate as actively as possible and respond appropriately to the information.
- Clearly discuss the diagnosis with the patient, and decide appropriate treatment plans in a sensitive manner that is in the patient's and societies best interests.
- Explain the proposed healthcare service – its nature, purpose, possible positive and adverse consequences, its limitations, and reasonable alternatives wherever they exist.

- Use effective communication skills to gather data and share information including attentive listening, open-ended inquiry, empathy and clarification to ensure understanding.
- Appropriately communicate with, and provide relevant information to, other stakeholders including members of the healthcare team.
- Use communication effectively and flexibly in a manner that is appropriate for the reader or listener.
- Explore and consider the patient's ideas, beliefs and expectations during interactions with them, along with varying factors such as age, ethnicity, culture and socioeconomic background.
- Develop efficient techniques for all forms of written and verbal communication including accurate and timely record keeping.
- Assess their own communication skills, develop self-awareness and be able to improve their relationships with others.
- Possess skills to counsel for lifestyle changes and advocate health promotion.

3. Membership of a multi disciplinary health team

The student will put a high value on effective communication within the team, including transparency about aims, decisions, uncertainty and mistakes. Team-based health care is the provision of health services to individuals, families, and/or their communities by at least two health providers who work collaboratively to accomplish shared goals within and across settings to achieve coordinated, high-quality care. Program objectiveswill aim at making the students being able to:

- Recognize, clearly articulate, understand and support shared goals in the team that reflect patient and family priorities.
- Possess distinct roles within the team; to have clear expectations for each member's functions, responsibilities, and accountabilities, which in turn optimizes the team's efficiency and makes it possible for them to use division of labor advantageously, and accomplish more than the sum of its parts.
- Develop mutual trust within the team to create strong norms of reciprocity and greater opportunities for shared achievement.
- Communicate effectively so that the team prioritizes and continuously refines its communication channels creating an environment of general and specific understanding.
- Recognize measurable processes and outcomes, so that the individual and team can agree on and implement reliable and timely feedback on successes and failures in both the team's functioning and the achievement of their goals. These can then be used to track and improve performance immediately and over time.

4. Ethics and accountability

Students will understand core concepts of clinical ethics and law so that they may apply these to their practice as physicians. Program objectives should enable the students to:

- Describe and apply the basic concepts of clinical ethics to actual cases and situations

- Recognize the need to make health care resources available to patients fairly, equitably and withoutbais, discrimination or un due influence
- Demonstrate an understanding and application of basic legal concepts to the practice of physiotherapy
- Employ professional account ability for the initiation, maintenance and termination of patient-provider relationships
- Demonstrate respect for each patient's individual rights of autonomy, privacy, and confidentiality

5. Commitment to professional excellence

The student will execute professionalism to reflect in his/her thought and action a range of attributes and characteristics that include technical competence, appearance, image, confidence level, empathy, compassion, understanding, patience, manners, verbal and nonverbal communication, discriminatory and non-judgmental attitude, and appropriate physical contact to ensure safe, effective and expected delivery of healthcare. Program objectives will aim at making the students being able to:

- Demonstrate distinctive, meritorious and high-quality practice that leads to excellence and that depicts commitment to competence, standards, ethical principles and values, within the legal boundaries of practice.
- Demonstrate the quality of being answerable for all actions and omissions to all, including service users, peers, employers, standard-setting/regulatory bodies or oneself
- Demonstrate humanity in the course of everyday practice by virtue of having respect (and dignity), compassion, empathy, honor and integrity
- Ensure that self-interest does not influence actions or omissions, and demonstrate regards for service-users and colleagues

6. Leadership and mentorship

The student must take on a leadership role where needed in order to ensure clinical productivity and patient satisfaction. They must be able to respond in an autonomous and confident manner to planned and uncertain situations, and should be able to manage themselves and others effectively. They must create and maximize opportunities for the improvement of the health seeking experience and delivery of health care services. Program objectives should enable the students to:

- Act as agents of change and be leaders in quality improvement and service development, so that they contribute and enhance people's wellbeing and their health care experience
- Systematically evaluate care; ensure the use of these findings to help improve people's experience and care outcomes, and to shape clinical treatmentprotocols and services
- Identify priorities and effectively manage time and resources to ensure themaintenance or enhancement of the quality of care.
- Recognize and be self-aware of the effect their own values, principles and assumptions may have on their practice. They must take charge of their own personal and professional development and should learn from experience (through supervision, feedback, reflection and evaluation)
- Facilitate themselves and others in the development of their competence, by using a range of professional and personal development skills

- Work independently and in teams. They must be able to take a leadership role to coordinate, delegate and supervise physiotherapy care safely, manage risk and remain accountable for the care given; actively involve and respect others' contributions to integrated person-centered care; yet work in an effective manner across professional and agency boundaries. They must know when and how to communicate with patients and refer them to other professionals and agencies, to respect the choices of service users and others, to promote shared decision-making, to deliver positive outcomes, and to coordinate smooth and effective transition within and between services and agencies.

7. Social Accountability and Responsibility

The students will recognize that allied and health care professionals need to be advocates with in the health care system, to judiciously manage resources and to acknowledge their social accountability. They have a mandate to serve the community, region and the nation and will hence direct all research and service activities towards addressing their priority health concerns. Program objectives should enable the students to:

- Demonstrate knowledge of the determinants of health at local, regional and national levels and respond to the population needs
- Establish and promote innovative practice patterns by providing evidence-based care and testing new models of practice that will translate the results of research into practice, and thus meet individual and community needs in a more effective manner
- Develop a shared vision of an evolving and sustainable health care system for the future by working in collaboration with and reinforcing partnerships with other stakeholders, including academic health centers, governments, communities and other relevant professional and non-professional organizations.
- Advocate for the services and resources needed for optimal patient care

8. Scientific attitude and Scholarship

Program objectives should enable the students to:

- Engage in ongoing self-assessment and structure their continuing professional education to address the specific needs of the population
- Practice evidence-based practice by applying Principles of scientific methods
- Take responsibility for their educational experiences
- Acquire basic skills such as presentation skills, giving feedback,patienteducation and the design and dissémination of research knowledge; for their application to teaching encounters

9. Life long learning

Program objectives will aim at making the students being able to:

- Performobjectiveself-assessment of their knowledge and skills; learn and refineexisting skills; and acquire new skills.
- Apply newly gained knowledge or skills to patient care.
- Enhance their personal and professional growth and learning by constant introspection and utilizing experiences.
- Search (including through electronic means), and critically evaluate medical literature to enable its application to patient care.

- Develop a researchquestion and be familiar with basic, clinical and translationalresearch in its application to patient care.
- Identify and select an appropriate, professionally rewarding and personally fulfilling career pathway.

Programme outcome (POs) BACHELOR OF PHYSIOTHERAPY

CODE	PROGRAMME OUTCOME
PO1	Clinical Care
PO2	Communication
PO3	Membership of a multidisciplinary health team
PO4	Ethics and accountability
PO5	Commitment to professional excellence
PO6	Leadership and mentorship
PO7	Social Accountability and Responsibility
PO8	Scientific attitude and Scholarship
PO9	Lifelong learning

2. ELIGIBILITY FOR ADMISSION

A Candidate seeking admission to Bachelor of Physiotherapy (hereinafter called B.P.T) Course, must have pass 10+2 examination from a recognized Board/Council/University with Chemistry, Physics, Biology and English with 50% marks in PCB OR Diploma in Physiotherapy conducted by a recognized Board/Council/University OR Medical College, or Such other qualifications as prescribed by the University from time to time.

OR

Any candidate who has passed the Plus Two of the Higher Secondary Board of Examinations in any state recognized as equivalent to the Plus Two of the Higher Secondary Board in with not less than 50%-marks in aggregate is eligible for admission.

3. PROGRAMME DURATION

The duration of Bachelor of Physiotherapy (BPT) programme shall be of four academic years (8 semesters) and six months of Compulsory Rotatory Internship. It includes a 6 months (24 weeks) internship leading to degree that equips the student with analytical and hands-on skills. Each academic year shall comprise of two semester viz. Odd and Even semesters. Odd semesters shall be from July/August to December and Even Semesters shall be from January to May/June.

The duration of Bachelors of Physiotherapy course shall be extended over a period of four and a half continuous years on a full-time basis followed by 966 hrs of mandatory internship.

BPT-1ST SEMESTER	0-6 Months
BPT-2ND SEMESTER	7-12 Months
BPT-3RD SEMESTER	13-18 Months
BPT-4TH SEMESTER	19-24 Months
BPT-5th SEMESTER	25-30 Months
BPT-6th SEMESTER	31-36 Months
BPT-7th SEMESTER	37-42 Months
BPT-8th SEMESTER	43-48 Months

BPT-9th SEMESTER	Internship (6 months)

4. PEDAGOGICAL ASPECTS

The structural layout of the program and its course requires that each course be divided in lecture, tutorial and clinical sessions. Duration of each session will be 1 hour.

Lecture session: Lectures are delivered by traditional – chalk board method, supplemented by modern Information Communication technology (ICT) methods, Smart class. The students are encouraged to ask questions and involve in group discussion to the extent allowed by the teacher. In some subjects where case study-based methodology is adopted, the lectures are supplemented by discussions on case studies.

Tutorial sessions: The tutorial sessions where relevant and applicable are conducted with small groups of students interacting with the teachers, solving application oriented analytical problems. The tutorial sessions are very interactive and inculcate problem solving skills in the students.

Clinical session: During clinical session the students work on prescribed list of experiments and do what they have learnt in the lecture/tutorial session

5. PROGRAMME STRUCTURE

SEMESTER	**CREDITS**
1st SEMESTER	22
2nd SEMESTER	22
3rd SEMESTER	23
4th SEMESTER	21
5th SEMESTER	20
6th SEMESTER	20
7th SEMESTER	23
8th SEMESTER	21
Total -	**172**

Programme Structure of BPT Program:

1st Semester:

1st Semester				
S. No.	**Course Code**	**Name of the Course**	**Course Category**	**Credits**
1	BPT-101	Human Anatomy-I	CC	4
2	BPT-102	Human Physiology-I	CC	4
3	BPT-103	Biochemistry	FC	4
4	BPT-104	Sociology	GE	2
5	BPT-105	Introduction to Healthcare Delivery System in India	SEC	2
6	BPT-106	English Communication	AECC	1
7	YOGDC 101	Foundation of Yoga	AECC	1
8	BPT-108P	Human Anatomy-I Practical	CC	2
9	BPT-109P	Human Physiology-I Practical	CC	2
Total Credits (1st Semester)				22

CC (Core Courses), FC (Foundation Course, SEC (Skill Enhancing Courses), AECC (Ability Enhancement Compulsory Courses)

2nd Semester:

2nd Semester				
S. No.	**Course Code**	**Name of the Course**	**Course Category**	**Credits**
1	BPT-201	Human Anatomy-II (Including Applied Anatomy)	CC	4
2	BPT-202	Human Physiology-II(Including Applied Physiology)	CC	4
3	BPT-203	General and Clinical psychology	FC	4
4	BPT-204	Basic Principles of Biomechanics	FC	3
5	BPT-205	Medical Terminology & Record Keeping	SEC	1
6	BPT-206	Basic computer and information science	AECC	1
7	BPT-207	Human anatomy -II Practical	CC	2
8	BPT-208P	Human Physiology-II Practical	CC	2
9	BPT-209P	Basic Principles of Biomechanics -Practical	FC	1
Total Credits (2nd Semester)				**22**

3rd Semester

3rd Semester				
S. No.	**Course Code**	**Name of the Course**	**Course Category**	**Credits**
1	BPT-301	Exercise Therapy-I	CC	4
2	BPT-302	Electrotherapy-I	CC	4
3	BPT-303	Biomechanics and Kinesiology-I	CC	4
4	BPT-304	Microbiology	FC	2
5	BPT-305	Pharmacology	FC	3
6	BPT-306	Introduction to quality and safety practices	SEC	1
7	BPT-307P	Exercise Therapy-I Practical	CC	1
8	BPT-308P	Electrotherapy-I Practical	CC	1
9	BPT-309P	Biomechanics and Kinesiology-I Practical	CC	1
10	BP- EVS	Environmental Science	AECC	2
Total Credits (3rd Semester)				**23**

4th Semester

4th Semester				
S. No.	**Course Code**	**Name of the Course**	**Course Category**	**Credits**
1	BPT-401	Exercise therapy-II	CC	4
2	BPT-402	Electrotherapy-II	CC	4
3	BPT-403	Biomechanics and Kinesiology-II	CC	4
4	BPT-404	Pathology	FC	2
5	BPT-405	Medical/Physiotherapy Law and ethics	SEC	1
6	BPT-406P	Exercise therapy-II Practical	CC	2
7	BPT-407P	Electrotherapy-II Practical	CC	2
8	BPT-408P	Biomechanics and Kinesiology-II practical	CC	2
Total Credits (4th Semester)				**21**

5th Semester

5th Semester				
S. No.	**Course Code**	**Name of the Course**	**Course category**	**Credits**
1	BPT-501	Clinical Orthopedics & Traumatology	CC	4
2	BPT-502	Clinical Neurology and Neurosurgery	CC	4
3	BPT-503	General Medicine and Surgery Including Paediatrics, Burns & Plastic Surgery and Obstetrics & Gynaecology	CC	4
5	BPT-504	Community medicine	FC	3
6	BPT-505	Professionalism and values	SEC	1
8.	BPT-506P	Clinical Orthopaedics and Traumatology -Practical	CC	2
9.	BPT-507P	Clinical Neurology and Neurosurgery -Practical	CC	2
Total Credits (5th Semester)				**20**

6th Semester

6th Semester				
S. No.	**Course Code**	**Name of the Course**	**Course Category**	**Credits**
1	BPT-601	Physiotherapy in Orthopaedics and Traumatology-I	CC	4
2	BPT-602	Physiotherapy in Neurology and Neurosurgery-I	CC	4
3	BPT-603	Physiotherapy in General Medicine &surgery including burns and plastic surgery	CC	2
4	BPT-604	PT in paediatrics and Obstetrics and Gynaecology	CC	3
5	BPT-605	Diagnostic imaging for physiotherapist	FC	2
6	BPT-606P	PT in Orthopaedics and Traumatology-Practical	CC	2
7	BPT-607P	PT in Neurology and Neurosurgery -Practical	CC	2
8	BPT-608P	PT in paediatrics and Obstetrics & Gynaecology - Practical	CC	1
Total Credits (6th Semester)				**20**

7th Semester

7th Semester				
S. No.	**Course Code**	**Name of the Course**	**Course Category**	**Credits**
1	BPT-701	Physiotherapy in Orthopaedics and Traumatology-II	CC	3
2	BPT-702	Physiotherapy in Neurology and Neurosurgery-II	CC	3
3	BPT-703	Clinical Cardiovascular & pulmonary systems	CC	4
4	BPT-704	Biostatistics and research methodology	FC	3
5	BPT-705	Health Promotion and Fitness	SEC	1
6	BPT-706	Case Presentation Assessment and Discussion	DSEC	4
7	BPT-707P	PT In Orthopaedics and Traumatology-II Practical	CC	2
8.	BPT-708P	PT In Neurology and Neurosurgery –II Practical	CC	2
9	BPT-709P	Clinical Cardiovascular & pulmonary System - Practical	CC	1
Total Credits (7th Semester)				**23**

8th Semester

8th Semester				
S. No.	**Course Code**	**Name of the Course**	**Course category**	**Credits**
1	BPT-801	Physiotherapy in Cardiovascular and Pulmonary System	CC	4
2	BPT-802	Physiotherapy In Community Rehabilitation	FC	3
3	BPT-803	Manual Therapy A Physiotherapy In Sports B	DSEC	4
4	BPT-804	Project Work	PP	4
5	BPT-805	Clinical Reasoning and Evidence Based Physiotherapy/Community Service/Awareness Campaign	AECC	4
6	BPT-806P	PT In Cardiovascular and Pulmonary System-Practical	CC	2
Total Credits (8th Semester)				**21**

INTERNSHIP (9TH SEMESTER)

ASSESSMENT OF INTERNSHIP

- After successful completion of 8th semester of BPT (Bachelor of Physiotherapy) the candidate shall do 6 months of compulsory Rotatory Internship in Shri Mahant Indiresh Hospital (SGRRU)

- 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 minimum 8 hours per day.

- The Internship should be rotatory and cover clinical branches concerned with Physiotherapy such as Orthopaedics, Cardiothoracic including ICU, Neurology, Pediatrics, General Medicine, General Surgery, Obstetrics and Gynecology both at the inpatient and outpatient services. On completion of all postings, the duly completed logbooks will be submitted to the Head of program/In charge to be considered as having successfully completed the internship program.
- No candidate shall be awarded degree certificate without successfully completing six months of Internship.

Minimum 966 hours (calculated based on 7 hours per day, if 180 working days in six month span).

The internship will be considered to be completed only on successful presentation of the project case study in front of the board, appointed for this purpose. In case the case study is found unsatisfactory the internship period can be extended maximum up to two month, left to the discretion of the H.O.D In such case the extended duration of internship has to be completed in the college O.P.D. only.

RULES FOR INTERNSHIP

I. The interns maintain the record of work which is to be verified and certified by the Sr. Physiotherapist under whom he/she works. A part from scrutiny of the record of the project, assessment and evaluation of training shall be undertaken by an objective approach using situation test in knowledge, skills and attitude during and the end of training. Based on the record of work/case study/logbook and date of evaluation the Director /HOD /Principal shall issue "Certificate of Satisfactory Completion" of training following which the University shall award the BPT degree or declare the candidate eligible for the same.

II. Satisfactory completion shall be determined on the basis of following:

(a) Proficiency of knowledge required each lab technique.

(b) The competency in skill expected to manage each lab technique.
   - Competency for self performance.
   - Of having assistant in procedures.
   - Of having observe responsibility, punctuality and work up of lab technique.

(c) Satisfactory submission of log book based on clinical work.

(d) Capacity to work in a team.

(e) Initiating, participation in discussions, research aptitude.

Compulsory rotatory internship can be in following clinical areas:-

Curriculum Outline Ninth Semester

S.No.	Course Title	Departments/Areas	Duration
1.	**Internship**	Musculoskeletal Physiotherapy	**1 Month**
		Neurological & Neurosurgical Physiotherapy	**1 Month**
		Cardiopulmonary & CTVS Physiotherapy	**1 Month**
		Sports Physiotherapy & Community Physiotherapy	**15 Days**
		Obstetrics, gynecological & Medicine Physiotherapy	**1 Month**
		Surgery & Burns and Plastic Surgery	**15 Days**
		Pediatrics Physiotherapy	**1 Month**

INTERNSHIP – Minimum 966 hours (calculated based on 7 hours per day, if 180 working days in six-month span)

Each candidate is allowed maximum of 6 casual Leaves during entire internship program.

In case of any exigencies during which the candidate remains absent for a period more than 6 CL He/she have to work for two days during which the candidate has remained absent.

6. ASSESEMENT AND EVALUATION

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 subjects in the semester should be 50% marks in aggregate in theory/practical.

CRITERIA FOR PASSING UNIVERSITY EXAMINATION

To pass the University Examination,
1. A candidate must pass in two heads of passing i.e. Theory and Practical separately at the same time.
2. In the Theory Examination the Candidate must obtain 50 % of the total Marks to pass theory examination irrespective of the parts.
3. To pass in practical exam, candidate must obtain 50% of total marks to pass practical exam.
4. A candidate must obtain an aggregate of 50 % to pass in the respective subject(s).

The evaluation will be continuous and the weightage of various components are as given as below.
For theory courses:

For Theory Courses and practical	
Sessional Tests (ST's) (sessional 1+sessional2)	40
End semester Examination	60
Total	100

Table 2: Evaluation Components for theory and practical Evaluation

The medium of examination is English.

7. RULES FOR ATTENDANCE

A candidate has to secure minimum-

1. 75% attendance in theoretical
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 indisposition etc.

8. EXAMINATION REGULATIONS:

(a) Attendance: The student admitted to this course will attend regular classes. In order to be eligible for appearing in the final examination at the end of an academic session, a candidate should have minimum of 75% attendance in each of the subjects (Theory and Practical). Any students having less than 75% attendance in each subjects (theory and practical separately) in a semester will not be allowed to appear in the end semester examination.

(b) SESSIONAL EXAM : There shall be two compulsory sessional examinations.

(c) UNIVERSITY EXAMINATION: As per the rules university examination norms.

End semester Practical Examination: 100 Marks

S. No.	**Distribution of Practical**	**Marks**
1	Spotting /OSPE	10 marks
2	Experiment/ Case	20 marks
3	Table viva	10 marks
4	Practical Manual	10 marks
5	Grand viva voce	10 marks
6	Internal mark	40 marks
TOTAL MARKS (External +Internal**)**		**100 marks**

EXAMINATIONS AND ASSESSMENT

1. The examination for the BPT degree will consist of both formative and summative pattern: Written assignment as required or stipulated by the teacher, Clinical, oral, and practical examinations as the case maybe.

2. For the course subjects, two internal assessment examinations (one periodical & one preliminary examination) shall be conducted by the faculty at specified intervals.

3. For the Supervised Clinical/Practical Training of the respective semester, student should complete the assignments, records, journals, case submissions, case presentations, as applicable per subject.

8. GRADING SYSTEM

As per the University norms.

10. PROGRAMME OUTCOME

SEMESTER	**CREDITS**
1st SEMESTER	22
2nd SEMESTER	22
3rd SEMESTER	23
4th SEMESTER	21
5th SEMESTER	20
6th SEMESTER	20
7th SEMESTER	23
8th SEMESTER	21
Total -	**172**

School of Paramedical & Allied Health Sciences
Name of the Department- Physiotherapy
Bachelor of Physiotherapy (BPT)
Board of Study (BOS) Semester wise, Syllabus 2024
Curriculum Outline 1st Semester (0-6months)

S. No.	Course Code	Course Titles	Course Category	Evaluation Scheme			Contact Hours / Week			Credits			
				External	Internal	Total	Theory	Practical	Total	L	T	P	Total Credits
1	BPT-101	Human Anatomy-1	CC	60	40	100	04	-	04	03	01	-	04
2	BPT-102	Human Physiology-1	CC	60	40	100	04	-	04	03	01	-	04
3	BPT-103	Biochemistry	FC	60	40	100	04	-	04	03	01	-	04
4	BPT-104	Sociology	GE	60	40	100	02	-	02	01	01	-	02
5	BPT-105	Introduction to Healthcare Delivery System in India	SEC	60	40	100	02	-	02	01	01	-	02
6	BPT-106	English communication	AECC	60	40	100	01	-	01	01		-	01
7	YOGDC101	Foundation of Yoga	AECC	60	40	100	01	-	01	01	-	-	01
8	BPT-108P	Human Anatomy-1 Practical	CC	60	40	100	-	04	04	-	-	02	02
9	BPT-109P	Human Physiology-1 Practical	CC	60	40	100	-	04	04	-	-	02	02
		Total		510	360	900	18	08	26	13	5	4	22

CC (Core Courses), FC (Foundation Course, SEC (Skill Enhancing Courses), AECC (Ability Enhancement Compulsory Courses)

Curriculum Outline 2nd Semester (7-12 months)

S.No.	Course Code	Course Titles	Course Category	Evaluation Scheme			Contact Hours / Week			Credits			
				External	Internal	Total	Theory	Practical	Total	L	T	P	Total Credits
1.	BPT-201	Human Anatomy-II (Including Applied Anatomy)	CC	60	40	100	04	-	04	03	01	-	04
2.	BPT-202	Human Physiology –II (Including Applied Physiology)	CC	60	40	100	04	-	04	03	01	-	04
3.	BPT-203	General and Clinical Psychology	FC	60	40	100	04	-	04	03	01	-	04
4.	BPT-204	Basic principles of Biomechanics	FC	60	40	100	03	-	03	02	01	-	03
5.	BPT-205	Medical terminology and record keeping	SEC	60	40	100	01	-	01	01	-	-	01
6.	BPT-206	Basic computer and information science	AECC	60	40	100	01	01	02	01	-	-	01
7.	BPT-207P	Human Anatomy-II Practical	CC	60	40	100	-	04	04	-	-	02	02
8.	BPT-208P	Human Physiology-II Practical	CC	60	40	100	-	04	04	-	-	02	02
9.	BPT-209P	Basic principles of Biomechanics-Practical	FC	60	40	100	-	02	-	-		01	01
		Total		**540**	**360**	**900**	**17**	**11**	**28**	**13**	**04**	**05**	**22**

CC (Core Courses), FC (Foundation Course, SEC (Skill Enhancing Courses), AECC (Ability Enhancement Compulsory Courses)

Curriculum Outline 3rd Semester (13-18 months)

S.No.	Course Code	Course Titles	Course Category	Evaluation Scheme			Contact Hours / Week			Credits			
				External	Internal	Total	Theory	Practical	Total	L	T	P	Total Credits
1.	BPT-301	Exercise Therapy-I	CC	60	40	100	04	-	04	03	01	-	04
2.	BPT-302	Electrotherapy-I	CC	60	40	100	04	-	04	03	01	-	04
3.	BPT-303	Biomechanics and kinesiology-I	CC	60	40	100	04	-	04	03	01	-	04
4.	BPT-304	Microbiology	FC	60	40	100	02	-	02	02	-	-	02
5.	BPT-305	Pharmacology	FC	60	40	100	03	-	03	03	-	-	03
6.	BPT-306	Introduction to quality and safety practices	SEC	60	40	100	01	-	01	01	-	-	01
7.	BPT-307P	Exercise Therapy-I Practical	CC	60	40	100	-	04	04	-	-	02	01
8.	BPT-308P	Electrotherapy-I Practical	CC	60	40	100	-	04	04	-	-	02	01
9.	BPT-309P	Biomechanics and kinesiology-I Practical	CC	60	40	100	-	04	04	-	-	02	01
10.	BP-EVS	Environmental Science	AECC	-	-	-	-	-	-	02	-	-	02
		Total		**540**	**360**	**900**	**18**	**12**	**30**	**17**	**03**	**06**	**23**

CC (Core Courses), FC (Foundation Course, SEC (Skill Enhancing Courses), AECC (Ability Enhancement Compulsory Courses)

Curriculum Outline 4th Semester (19-24 months)

S. No.	Course Code	Course Titles	Course Category	Evaluation Scheme			Contact Hours / Week			Credits			
				External	Internal	Total	Theory	Practical	Total	L	T	P	Total Credits
1.	BPT-401	Exercise Therapy-II	CC	60	40	100	04	-	04	03	01	-	04
2.	BPT-402	Electrotherapy-II	CC	60	40	100	04	-	04	03	01	-	04
3.	BPT-403	Biomechanics and kinesiology-II	CC	60	40	100	04	-	04	03	01	-	04
4.	BPT-404	Pathology	FC	60	40	100	02	-	02	02	-	-	02
5.	BPT-405	Medical/Physiotherapy Law & Ethics	SEC	60	40	100	01	-	01	01	-	-	01
6.	BPT-406P	Exercise Therapy-II Practical	CC	60	40	100	-	04	04	-	-	02	02
7.	BPT-407P	Electrotherapy-II Practical	CC	60	40	100	-	04	04	-	-	02	02
8.	BPT-408P	Biomechanics and kinesiology-II Practical	CC	60	40	100	-	12	04	-	-	02	02
		Total		**480**	**320**	**800**	**15**	**06**	**27**	**12**	**03**	**06**	**21**

CC (Core Courses), FC (Foundation Course, SEC (Skill Enhancing Courses), AECC (Ability Enhancement Compulsory Courses)

Curriculum Outline Fifth Semester (25-30 months)

S.No.	Course Code	Course Titles	Course Category	Evaluation Scheme			Contact Hours / Week			Credits			
				External	Internal	Total	Theory	Practical	Total	L	T	P	Total Credits
1.	BPT-501	Clinical Orthopedics& Traumatology	CC	60	40	100	04	-	04	03	01	-	04
2.	BPT-502	Clinical Neurology & Neurosurgery-	CC	60	40	100	04	-	04	03	01	-	04
3.	BPT-503	General Medicine & Surgery including Pediatrics, burns and plastic surgery & Obstetrics and Gynecology	CC	60	40	100	04	-	04	03	01	-	04
4.	BPT-504	Community Medicine	FC	60	40	100	03	-	03	02	01	-	03
5.	BPT-505	Professionalism and values	SEC	60	40	100	01	-	01	01	-	-	01
6.	BPT-506P	Clinical Orthopedics& Traumatology - Practical	CC	60	40	100	-	04	04	-	-	02	02
7.	BPT-507P	Clinical Neurology & Neurosurgery- Practical	CC	60	40	100	-	04	04	-	-	02	02
		Total		**420**	**280**	**700**	**16**	**08**	**24**	**12**	**4**	**4**	**20**

CC (Core Courses), FC (Foundation Course, SEC (Skill Enhancing Courses), AECC (Ability Enhancement Compulsory Courses)

Curriculum Outline Sixth (6) Semester (31-36 months)

S.No.	Course Code	Course Titles	Course Category	Evaluation Scheme			Contact Hours / Week			Credits			
				External	Internal	Total	Theory	Practical	Total	L	T	P	Total Credits
1.	BPT-601	Physiotherapy in Orthopedics & Traumatology-I	CC	60	40	100	04	-	04	03	01	-	04
2.	BPT-602	Physiotherapy in Neurology & Neurosurgery-I	CC	60	40	100	04	-	04	03	01	-	04
3.	BPT-603	PT In General Medicine & Surgery including burns and plastic surgery	CC	60	40	100	02	-	02	01	01	-	02
4.	BPT-604	PT in Pediatrics and Obstetrics & Gynecology	CC	60	40	100	03	-	03	02	01	-	03
5.	BPT-605	Diagnostic imaging for Physiotherapist	FC	60	40	100	01	02	03	01	-	01	02
6.	BPT-606P	PT in Orthopaedics & Traumatology-Practical	CC	60	40	100	-	04	04	-	-	02	02
7.	BPT-607P	PT in Neurology & Neurosurgery-Practical	CC	60	40	100	-	04	04	-	-	02	02
8.	BPT-608P	PT in Pediatrics and Obstetrics& Gynecology	CC	60	40	100	-	02	02	-	-	01	01
		Total		**480**	**320**	**800**	**14**	**12**	**26**	**10**	**04**	**06**	**20**

CC (Core Courses), FC (Foundation Course, SEC (Skill Enhancing Courses), AECC (Ability Enhancement Compulsory Courses)

Curriculum Outline Seventh Semester (37-42 months)

CC (Core Courses), FC (Foundation Course, SEC (Skill Enhancing Courses), AECC- Ability Enhancement Compulsory Course, DSEC (Discipline Specific Elective Course)

S.No.	Course Code	Course Titles	Course Category	Evaluation Scheme			Contact Hours/Week			Credits			
				Theory	Practical	Total	Theory	Practical	Total	L	T	P	Total Credits
1.	BPT-701	Physiotherapy in Orthopedics & Traumatology-II	CC	60	40	100	03	-	03	02	01	-	03
2.	BPT-702	Physiotherapy in Neurology & Neurosurgery-II	CC	60	40	100	03	-	03	02	01	-	03
3.	BPT-703	Clinical Cardiovascular & pulmonary systems	CC	60	40	100	04	-	04	03	01	-	04
4.	BPT-704	Biostatistics & Research Methodology	FC	60	40	100	02	-	02	03	-	-	03
5.	BPT-705	Health Promotion and Fitness	SEC	60	40	100	01	-	01	01	-	-	01
6.	BPT-706	Case presentation, Assesment and discussions	DSEC	-	-	-	-	08	08	-	-	04	04
7.	BPT-707P	PT in Orthopedics & Traumatology-Practical	CC	60	40	100	-	04	04	-	-	02	02
8.	BPT-708P	PT in Neurology & Neurosurgery-II	CC	60	40	100	-	04	04	-	-	02	02
9.	BPT-709P	Clinical Cardiovascular & pulmonary systems- Practical	CC	60	40	100	-	02	02	-	-	01	01
		Total		**480**	**320**	**800**	**13**	**14**	**27**	**10**	**03**	**9**	**23**

Curriculum Outline Eight Semester (43-48 months)

S.No.	Course Code	Course Titles	Course Category	Evaluation Scheme			Contact Hours/Week			Credits			
				Theory	Practical	Total	Theory	Practical	Total	L	T	P	Total Credits
1.	BPT-801	Physiotherapy in Cardiovascular and pulmonary system	CC	60	40	100	04	-	04	03	01	-	04
2.	BPT-802	Physiotherapy in Community Rehabilitation	CC	60	40	100	03	-	04	02	01	-	03
3.	BPT-803A	Physiotherapy in Manual Therapy	DSEC	60	40	100	02	02	04	01	01	02	04
4.	BPT-803B	Physiotherapy in Sports physiotherapy											
5.	BPT-804	Project work	PP	-	200	200	-	08	08	-	-	04	04
6.	BPT-805	Clinical reasoning & Evidence based physiotherapy/ Community Service/ Awareness Campaign	AECC	-	-	-	-	08	08	-	-	04	04
7.	BPT-806P	PT in Cardiovascular and pulmonary system- Practical	CC	60	40	100	-	04	04	-	-	02	02
		Total		**240**	**360**	**600**	**9**	**22**	**32**	**06**	**03**	**12**	**21**

CC (Core Courses), FC (Foundation Course, SEC (Skill Enhancing Courses), AECC (Ability Enhancement Compulsory Courses), DSEC (Discipline Specific Elective Course), PP- Professional Practice

Curriculum Outline Ninth Semester

S.No.	Course Title	Departments/Areas	Duration
1.	**Internship**	Musculoskeletal Physiotherapy	**1 Month**
		Neurological & Neurosurgical Physiotherapy	**1 Month**
		Cardiopulmonary & CTVS Physiotherapy	**1 Month**
		Sports Physiotherapy & Community Physiotherapy	**15 Days**
		Obstetrics, gynecological & Medicine Physiotherapy	**1 Month**
		Surgery & Burns and Plastic Surgery	**15 Days**
		Pediatrics Physiotherapy	**1 Month**

INTERNSHIP – Minimum 966 hours (calculated based on 7 hours per day, if 180 working days in six-month span)

1ST SEMESTER

BPT101: HUMAN ANATOMY-I

L- Lecture, T- Tutorial, P- Practical

Programme name	**BPT**
Programme Code	**M101**
Course name	**Human Anatomy-I**
Course code	**BPT-101**
SEMESTER	**1st Semester (0- 6Months)**
L-T-P	**3-1-2**

SUBJECT DESCRIPTION - 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.

Code No.	Course Outcome
101.1	Identify and describe anatomical aspects of muscles, bone and joints.
101.2	Knowledge of various surface landmarks.
101.3	To introduce and familiarize students with the concept of human anatomy
101.4	Identify and describe components of Head & Neck.
101.5	To make them learn about embryology, histology, anatomy of abdomen & thorax
101.6	Identify and describe central nervous and peripheral nervous system.

Course Content-

1. General Anatomy: 6hrs

- Introduction: Scope of Anatomy, organization of tissue, organs and systems, Anatomical position of the body, axis and planes sub divisions.
- Structure of skin.
- Muscles – Classification & description of the structure, fasciae and tendon aponeurosis.
- Bones – skeleton and it's subdivisions, Classification, development, parts and blood supply of bones.
- Joints – Definition, classification, movements of different joints.

2. Embryology 6hrs

a. Ovum, Spermatozoa, fertilization and formation of the Germ layers and their derivations.
b. Development of skin, Fascia, blood vessels, lymphatic,
c. Development of bones, axial and appendicular skeleton and muscles,
d. Neural tube, brain vessels and spinal cord, e. Development of brain and brain stem structures.

3. Regional Anatomy 12hrs

Thorax:

a. 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.
b. **Respiratory system** - Outline of respiratory passages: Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on bronchopulmonary segments.
c. **Diaphragm:** Origin, insertion, nerve supply and action, openings in the diaphragm. Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action.

4. Abdomen: 10 hrs

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

5. Pelvis: 10hrs

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

6. Endocrine System: 10hrs

- Position, shape, size, function, blood supply and nerve supply of the following glands: Hypothalamus and Pituitary Gland, Thyroid gland, Parathyroid gland, Adrenal Glands, Pancreatic islets, Ovaries and Testes, Pineal Gland, Thymus.

7. Head and Neck: 6hrs

- **Osteology:** Mandible and bones of the skull.
- **Soft parts**: Muscles of the face and neck and their nerve and blood supply-extra ocular muscles, triangles of the neck.
- Gross anatomy of eyeball, nose, ears and tongue.

Textbook

1. Williams & Warwick, Gray's Anatomy-Churchill Livingstone.
2. Inderbir Singh, Textbook of Anatomy with colour Atlas-Vol. 1, 2, 3 Jaypee Brothers
3. B.D. Chaurasia, Human Anatomy-Volume 1, 2, 3 CBS Publishers & Distributors.
4. Mcminn's Last's Anatomy-Regional and applied, Churchill Livingstone.

Mapping-

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

Course Outcome Code	**Program Outcomes**								
BPT101	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3	2	1		1	2		1	
CO2	2	1		1	2		2		1
CO 3	3		0	1		2	1	2	
CO 4	3	1	1	1		2	2	1	
CO 5	2	1		1		1	1		2
CO 6	3		1		1		1	1	

Programme name	**BPT**
Programme Code	**M101**
Course name	**Human Physiology -I**
Course code	**BPT-102**
SEMESTER	**1st Semester (0- 6Months)**
L-T-P	**3-1-2**

BPT102: HUMAN PHYSIOLOGY - I

L- Lecture, T- Tutorial, P- Practical

SUBJECT DESCRIPTION: The course in Physiology over the first year is designed to give the student an in-depth knowledge of fundamental reactions of living organisms, particularly in the human body. The major topics covered include the following: the cell; primary tissue; connective tissue; skin; muscle; nervous tissue; blood; lymphoid tissues; respiration; blood vessels; circulation; cardiac cycle; systemic circulation; gastrointestinal tract; kidneys; uterus; urinary tract; pregnancy; endocrine system.

Code No.	**Course Outcome**

102.1	Acquire the knowledge of the relative contribution of each organ system in maintenance of the Homeostasis.
102.2	Knowledge of general physiology of cell, blood, nerve and muscle.
102.3	Describe nerve and muscle physiology.
102.4	Describe and discuss the physiological functions of respiratory, cardiovascular, renal, reproductive, digestive and endocrine system.
102.5	Able to explain physiological basis of special senses functions.

Course Content-

1. General Physiology and Hematology: 8 hrs

- The cell & cell organelles – structure & functions
- Homeostasis, biofeedback mechanisms
- Transport across cell membrane
- Outline of membrane potential & action potential

2. Blood: 12 hrs

- Composition and functions of blood
- Red blood cell – morphology, formation, normal count, functions, physiological and pathological variation
- White blood cell – morphology, classification, properties, functions, physiological & pathological
- Haemoglobin –basic chemistry, fate and functions.
- Immunity – definition, classification, concept of antigen & antibody
- Haemostasis – steps, role of platelets
- Blood groups – A,B,O,AB and Rh system

3. Cardiovascular System: 14 hrs

- General organization and properties of cardiac muscle
- Origin and conduction of cardiac impulse
- Cardiac cycle and heart sounds
- Normal ECG
- Cardiac output- normal values, physiological variations, factors affecting cardiac out- put and regulation
- Blood pressure – normal values, measurement, determinants, short term and long term regulation
- Pressure and volume changes during cardiac cycle.

4. Respiratory System: 14 hrs

- General organization of respiratory system
- Mechanics of respiration – Inspiratory and expiratory muscles, intrapleural pressure, lung & thoracic compliance, surfactant, lung volumes & capacities.
- Diffusion of gases
- Transport of respiratory gases
- Regulation of respiration
- Outline of hypoxia (types & physiological changes.
- Acclimatization to high altitude

- Dead space, Ventilation/ perfusion ratio
- Maximum breathing capacity & breathing reserve.

5. Endocrine System: 10 hrs

- Introduction - General organization of endocrine gland
- Releasing hormones from hypothalamus
- Anterior & Posterior pituitary hormones – physiological actions, regulation & disorders
- Thyroid Hormones – physiological actions, regulation &disorders
- Parathyroid Hormones — physiological actions, regulation& disorders
- Adrenal cortex & medulla– physiological actions, regulation& disorders
- Pancreatic hormones – physiological actions, regulation& disorders
- Mechanism of hormone action.

6. Digestive System: 6 hrs

- General organization
- Mastication and deglutition
- Saliva – composition, functions and regulation of salivary secretion
- Gastric secretion – composition, mechanism, phases of secretion, regulation and functions.
- Outline of gastric emptying and peristalsis
- Pancreatic secretion – composition, regulation and functions.
- Liver and gall bladder – composition and functions of bile.

TEXTBOOKS:

1. Text book on Medical Physiology-By Guyton
2. Text book of physiology for physiotherapy – Prof. A. K Jain
3. Concise Medical Physiology – Sujit K. Chowdhuri
4. Samson & Wrights Applied physiology
5. Essentials of medical physiology- K. Sembulingam.
6. Principles of Anatomy & Physiology – Tortor

Mapping-

Course Outcome Code	**Program Outcomes**								
BPT-102	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	3	2	1		1	2		1	
CO 2	2	1	1	1	2		2		1
CO 3	2		0	1		2	1	2	
CO 4	3	1	1	1	1	2	2	1	
CO 5	2	1		1		1	1		2

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT103: BIOCHEMISTRY

Programme name	**BPT**
Programme Code	**M101**
Course name	**BIOCHEMISTRY**
Course code	**BPT-103**
SEMESTER	**1st Semester (0- 6Months)**
L-T-P	**3-1-0**

L- Lecture, T- Tutorial, P- Practical

Code No.	Course Outcome
103.1	Be able to describe structures & functions of cell in brief.
103.2	Be able to describe function and chemistry of lipids, carbohydrates, proteins, vitamins and minerals.
103.3	Be able to discuss nutritional aspects of carbohydrates, lipids, proteins & vitamins & their metabolism.
103.4	Define enzymes; discuss in brief,factors affecting enzyme activity

103.5	Acquire knowledge in brief about the Clinical biochemistry, with special reference to Liver & renal function test, Blood study for Lipid profile, and electrolyte balance.

Course Content-

1. Cell Biology: 6 hrs

- Introduction, Cell structure, Cell membrane structure and function, various types of absorption. Intracellular organelles and their functions, briefly on cytoskeleton.

2. Carbohydrates: 4 hrs

- Definition, general classification with examples, Glycosidic bond
- Structures, composition, sources, properties and functions of Monosaccharide's, Disaccharides, Oligosaccharides and Polysaccharides.

3. Lipid Metabolism (Location & reactions) - 6hrs

- Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids
- Lipogenesis (Synthesis of fatty acid)
- Ketone bodies
- Cholesterol metabolism: synthesis, degradation, cholesterol transport (Overview)
- Hypercholesterolemia (Overview), Fatty liver (Overview).

4. Amino-acid Chemistry: 4 hrs

- Amino acid chemistry: Definition, Classification, Peptide bonds
- Peptides: Definition, biologically important peptides.
- Protein chemistry: Definition, Classification, Functions of proteins.

5. Enzymes: 4 hrs

- Definition, Active site, Cofactor (Coenzyme, Activator), Proenzyme. Classification with examples, Factors effecting enzyme activity, Enzyme inhibition and significance, Isoenzymes, Diagnostic enzymology (clinical significance of enzymes).

6. **Nucleotide and Nucleic acid Chemistry: 6 hrs**

- Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in body.
- Nucleic acid (DNA and RNA) chemistry: Difference between DNA and RNA, Structure of DNA (Watson and Crick model), Functions of DNA. Structure and functions of tRNA, rRNA, Mrna.

7. Carbohydrate Metabolism: 6 hrs

- Introduction, Glycolysis – Aerobic, Anaerobic Citric acid cycle, Substrate level phosphorylation.
- Glycogen metabolism – Glycogenesis, Glycogenolysis, Metabolic disorders glycogen, Gluconeogenesis, Cori cycle
- Hormonal regulation of glucose, Glycosuria, Diabetes mellitus.

8. Lipid Metabolism: 6 hrs

- Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids -oxidation of fatty acids,
- Lipogenesis - Denovo synthesis of fatty acids, chain elongation, desaturation, triacylglycerol synthesis, fat metabolism in adipose tissues

9. Ketone body metabolism: **6 hrs**

- Ketone body formation (Ketogenesis), utilization (ketolysis), ketosis, Rothera's test. d. Cholesterol metabolism: synthesis, degradation, cholesterol transport

10.Amino acid and Protein Metabolism: **6 hrs**

- Catabolism of amino acids - Introduction, transamination, deamination, Fate of ammonia, transport of ammonia, Urea cycle

11.Vitamins: **4 hrs**

- Definition, classification according to solubility; Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity

12. Water balance: **3 hrs**

- Water distribution in the body, Body water, water turnover, Regulation of water balance: role of ADH and thirst centre.

13. Electrolyte balance: **3 hrs**

- Osmolarity. Distribution of electrolytes; Electrolyte balance: Role of aldosterone, rennin angiotensin system and ANF.

TEXTBOOK

1. Satyanarayan Biochemistry Aug 2013
2. Vasudevan DM, Sreekumari S, Vaidyanathan K. Textbook of biochemistry for medical students. JP Medical Ltd; 2013
3. Naik P. Essentials of Biochemistry (for Medical Students). JP Medical Ltd; 2011.

Wood EJ. Harper's biochemistry 24th edition

Mapping-

Course Outcome Code	**Program Outcomes**								
BPT102	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	3	1	1		1	2		1	
CO 2	1		1	1	2	1	1		1
CO 3	2	1		2			1	2	
CO 4	2	1	1	1	1	1		1	
CO 5	2			1	2	1	1		2

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT104: SOCIOLOGY

Programme name	**BPT**
Programme Code	**M101**
Course name	**Sociology**
Course code	**BPT-104**
SEMESTER	**1st Semester (0- 6Months)**
L-T-P	**1-1-0**

L- Lecture, T- Tutorial, P- Practical

SUBJECT DESCRIPTION - Sociology will introduce student to the basic sociology concepts, principles and social process, social institutions in relation to the individual, family and community and the various social factors affecting the family in rural and urban communities in India will be studied.

Code No.	**Course Outcome**
104.1	Be able to describe basic sociology concepts and principles.
104.2	Be able to describe social processes.
104.3	Be able to discuss social institutions in relation to the individual, family and community.

104.4	Discuss social factors affecting the health in family and community in urban and rural India.
104.5	Acquire knowledge about social problems of disabled, social security and the role of social worker.

Course Content-

1. Introduction: 12hrs

- Definitions of sociology, Sociology as a science of society, uses of the study of sociology, application of knowledge of sociology in physiotherapy.
- Socialization: Meaning of socialization, influence of social factor on personality, socialization in hospitals, and socialization in the rehabilitation of patients.
- Social Groups: Concept of social groups, influence of formal and informal groups on health and sickness, the role of primary groups and secondary groups in the hospital and rehabilitation settings.

2. Family: 12 hrs

- Influence of family on human personality, discussion of changes in the functions of a family. Influence of the family on the individual's health, family and nutrition, the effects of sickness on family, and psychosomatic disease
- Social Problems of The Disabled: Consequences of the following social problems in relation to sickness and disability; remedies to prevent these problems. Population explosion Poverty and unemployment:
- Beggary, Juvenile, Delinquency, Prostitution, Alcoholism, Problems of women in employment **Caste System**: Features of the modern caste system and its trends.

3. **Social Worker**: Medical social worker **2 hrs**

4. Social Change: **6 hrs**

Meaning of social change, Factors of social change, human adoption and social change, social change and stress, social change and deviance, social change and health programmes, the role of social planning in the improvement of health and in rehabilitation.

TEXTBOOK

1. Bid D. (2006). Sociology for Physiotherapists. Jaypee Brothers, New Delhi
2. Sachdeva and Vidyabushan: Introduction to the study of Sociology.
3. K. Parks Textbook of Preventive & Social Medicine.
4. Textbook of Preventive & Social Medicine – P.K. Mahajan & M.C. Gupta

Mapping-

Course Outcome Code	**Program Outcomes**								
BPT104	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	3	1	1		1	2		1	
CO 2	1		1	1	1	1	2		1
CO 3	2	1					1	2	
CO 4	1	1	1	1	1	1		2	
CO 5	2			1	2	1	1		2

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT105: INTRODUCTION TO NATIONAL HEALTHCARE DELIVERY SYSTEM IN INDIA

Programme name	**BPT**
Programme code	**M101**
Course name	**Introduction To National Healthcare Delivery System In India**
Course code	**BPT-105**
SEMESTER	**1st Semester (0-6 Months)**
L-T-P	**1-1-0**

L-Lecture T-Tutorial P-Practical C-Credit

SUBJECT DESCRIPTION: The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world.

Code No.	**Course Outcome**
105.1	Be able to describe Indian health delivery system.
105.2	Be able to discuss national health programme in India.
105.3	Acquires knowledge about concept, methodology of demographics and epidemiology.
105.4	Acquire knowledge of epidemiology of communicable and non communicable diseases.

Course Content-

1. **Introduction to healthcare delivery system** 8 **Hrs**
   i. Healthcare delivery system in India at primary, secondary and tertiary care
   ii. Community participation in healthcare delivery system
   iii. Health system in developed countries.
   iv. Private Sector
   v. National Health Mission
   vi. National Health Policy
   vii. 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. **4 Hrs**
3. **Introduction to AYUSH system of medicine** 4**Hrs**
   i. Introduction to Ayurveda.
   ii. Naturopathy
   iii. Unani
   iv. Siddha
   v. Homeopathy
   vi. Need for integration of various system of medicine
4. **Health scenario of India- past, present and future. 6Hrs**
5. **Demography & Vital Statistics-** 6**Hrs**
   i. Demography – its concept
   ii. Vital events of life & its impact on demography
   iii. Significance and recording of vital statistics
   iv. Census & its impact on health policy
6. **Epidemiology** 8**Hrs**
   i. Principles of Epidemiology
   ii. Natural History of disease
   iii. Methods of Epidemiological studies
   iv. Epidemiology of communicable & non-communicable diseases, disease transmission, host defence immunizing agents, cold chain, immunization, disease monitoring and surveillance.

Text Books-

1. "National Health Programs of India: National Policies and Legislations related to Health" by J.K. Banthia and B.S. Garg
2. "Health Care System in India" by S. L. Goel
3. "Textbook of Community Medicine" by Rajvir Bhalwar

4. "Public Health in India" edited by Monica Das Gupta, Manju Rani, and Purnima Menon
5. "Public Health in India" edited by Monica Das Gupta, Manju Rani, and Purnima Menon
6. "Healthcare in India: Current State and Key Imperatives" by M.S. Rana

Mapping-

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 106: ENGLISH COMMUNICATION

Programme name	**BPT**
Programme code	**M101**
Course name	**English Communication**
Course code	**BPT-106**
SEMESTER	**1st Semester (0-6 Months)**
L-T-P	**1-0-0**

L-Lecture T-Tutorial P-Practical C-Credit

Course outcome Code	**Programme outcome**								
BPT105	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	2		1	1		1	1	1	
CO 2	2		2	1	1		2		
CO 3	1		1		2	1	2		1
CO 4	3		2		1	2	1		1

Code No.	**Course Outcome**
106.1	Be able to describe basic grammar and its usage.
106.2	Be able to acquire verbal and writing communication skills.
106.3	Understand characteristics of health communication and types and process.
106.4	Discuss therapeutic communications and teaching and learning communication methods.
106.5	Knows barriers of communication and how to overcome

Course Content-

1. Basics of Grammar: 4 hrs

- Vocabulary Synonyms, Antonyms, Prefix and Suffix, Homonyms, Analogies and Portmanteau words.
- Active, Passive, Direct and Indirect speech, Prepositions, Conjunctions, and Euphemisms.

2. Writing Skills: 4 hrs

- Letter Writing, Email, Report, Case Study, Memos, Collecting patient data, Paragraph writing, etc.

3. Reading: 4 hrs

- What is efficient and fast reading, Awareness of existing reading habits, Tested techniques for improving speed, Improving concentration and comprehension through systematic study.

4. Communication: 4 hrs

- Communication process, Types of communication (Verbal and Non-Verbal), Elements of communication, Barriers to communication and how to overcome them, Nuances for communicating with patients and their attenders in hospitals.

5. Speaking: 4 hrs

- Importance of speaking efficiently (Conversation, Discussions, Pronunciation), Therapeutic communication, Emotion vs Sympathy.

6. Listening: 4 hrs

- Importance of listening, Types of active listening, Barriers to listening.

TEXTBOOKS:

- Technical Communication by Meenakshi Raman and Sangeeta Sharma.
- English for Physiotherapy by Joanna Ciecierska
- 'Strengthen your English' by Bhaskaran S. PIT Corder, Oxford University Press
- 'Living English Structure' by w. Stannard Allen. Publisher: LONGMAN (1974)
- English Communication: Theory and Practice by Manoj Kumar Garg
- 'An Intensive Course in English: Remedial Workbook'. by C.D. Sidhu, Orient BlackSwan
- Effective Communication and Soft Skills by Nitin Bhatnagar Pearson Education India, 2011

Mapping-

Course Outcome Code	**Program Outcomes**								
BPT106	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	1	1	1		1	2		1	
CO 2	1		1	1		1	2		1
CO 3	2	1					1	2	
CO 4	1	1	1	1	1	1		2	
CO 5	2			1	2	1	1		2

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT107: FOUNDATION OF YOGA

Programme name	**BPT**
Programme code	**M101**
Course name	**Foundation of Yoga**
Course code	**YOGDC101**
SEMESTER	**1st Semester (0-6 Months)**
L-T-P	**1-0-0**

L-Lecture T-Tutorial P-Practical C-Credit

SUBJECT DESCRIPTION: Students of the UG course will have an understanding about origin, history and development of Yoga. They will have an idea about the insights of Indian philosophy and Astika & Nastika darshanas. Introduction about Yoga according to various yogic texts.

Code No.	Course Outcome
101.1	Define origin, history and development of Yoga.
101.2	Understand Indian philosophy and Astika & Nastika Darshanas.
101.3	Explain Yoga according to various yogic texts.
101.4	Give an introduction Gyan Yoga, Bhakti Yoga, Karm Yoga, Hath Yoga and Raj Yoga
101.5	Reviewing the autobiography of Yogis.

101.6	Directing the foundation of Yoga in deferent Yogic texts.

Course Contents

Unit-1: General Introduction to Yoga **6 hrs**

- Brief introduction to origin of Yoga, Psychological aspects (Rishis understanding of the mind) leading to origin of Yoga.
- Hindu Mythological concepts about origin of Yoga. History and Development of Yoga. Etymology and Definitions of Yoga.
- Aim and Objectives of Yoga, Misconceptions about Yoga. Principles of Yoga Parampara, Yoga Practices for Health and Harmony.

Unit-2: General introduction to Indian Philosophy **10 hrs**

- Nature of Yoga in Vedas. Nature of Yoga in Gita and Ramayana.
- Nature of Yoga in Tantra.
- Nature of Yoga in Yoga Vasistha and Narada Bhakti Sutra.

Unit-3: Various Systems of Yoga **4 hrs**

- Brief introduction to Gyanyoga and Bhaktiyoga.
- Brief introduction to Kramayoga and Rajyoga.
- Brief introduction to Hathyoga and Mantrayoga.

Unit-4: Introduction of Yogis **4 hrs**

- Ancient - Mahrishi Patanjali, Adi Shankracharya.
- Medieval - Kabeerdas, Soordas.
- Modern - Swami Vivekanand, Shri Aravind.
- Contemporary – Shri Shyama Charan Lahidi, Swami Shivananda.

Text Books:

- Lal Basant Kumar: Contemporary Indian Philosophy, Motilal Banarsidas Publishers Pvt. Ltd, Delhi, 2013.
- Dasgupta S.N.: History of Indian Philosophy, Motilal Banarsidas, Delhi, 2012.
- Singh S.P.: History of Yoga, PHISPC, Centre for Studies in Civilizations, 2010.
- Singh S.P. & Yogi Mukesh: Foundation of Yoga, Standard Publication, New Delhi, 2010.
- Yoga Tatva: Dr. Bijendra Singh, Dr. Savita P. Patil & Dr. Anil Thapliyal.

Reference Books:

- Agarwal M.M.: Six systems of Indian Philosophy, Chowkhambha Vidya Bhawan, varanai, 2010.
- Swami Bhuteshananda: Nararad Bhakti Sutra, Advaita Ashrama Publication- Dept. Kolkata, II Edition, 2009.
- Hiriyanna M.: Outlines of Indian Philosophy, Motilal Banarsidas, Delhi, 2009.
- Hiriyanna M.: Essentials of Indian Philosophy, Motilal Banarsidas, Delhi, 2008.
- Radhakrishnan S.: Indian Philosophy, Oxford University, U.K. (Vol. I&II) II Edition, 2008.
- Max Muller K. M.: The six system of Indian Philosophy, Chukhambha, Sanskritseries, Varanasi, 6th Edition, 2008.
- Kumar Kamakhya: Super Science of Yoga.

Mapping-

Course Outcome Code	**Program Outcomes**								
YOGDC101	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**
CO-1	2	2	2	1	2	1	1	1	2
CO-2	2	1	2	2	2	-	2	2	2
CO-3	3	2	2	2	2	1	2	2	2
CO-4	2	2	2	1	2	-	1	1	2
CO-5	3	2	2	2	2	1	2	2	2
CO-6	2	2	2	1	2	-	1	1	2

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT108P: HUMAN ANATOMY PRACTICAL

PRACTICAL **64HRS**

- Demonstration of Major organs through models and permanent slides.
- Identification and description of all anatomical structures with help of models, charts, CD Rooms etc.
- Demonstration of parts of circulatory system from models.
- Demonstration of parts of respiratory system from models.
- Demonstration of digestive system from models.
- Surface making of lung pleura fissures and lobes of lungs heart abdominal viscera and important nerves and blood vessels.
- Demonstration of movements of important joints
- Identification of body prominences on inspection and palpation in the body especially of extremities.
- Points of Palpation of Nerves & Arteries.
- Palpation of muscles

TEXTBOOKS:

1. Williams & Warwick, Gray's Anatomy-Churchill Livingstone.
2. Inderbir Singh, Textbook of Anatomy with colour Atlas-Vol. 1, 2, 3 Jaypee Brothers
3. B.D. Chaurasia, Human Anatomy-Volume 1, 2, 3 CBS Publishers & Distributors.
4. Mcminn's Last's Anatomy-Regional and applied, Churchill Livingstone

BPT109P: HUMAN PHYSIOLOGY PRACTICAL

PRACTICAL **64 HRS**

1. Haematology:

- Study of Microscope and its uses
- Determination of RBC count
- Estimation of haemoglobin .

2. Haematology:

- Determination of WBC count
- Differential leukocyte count .

3. Haematology:

- Calculation of blood indices
- Determination of blood groups
- Determination of clotting time
- Determination of bleeding time

Determination of ESR

TEXTBOOKS:

- Essentials of medical physiology- K. Sembulingam.
- Text book on Medical Physiology-By Guyton
- Text book of physiology for physiotherapy – Prof. A. K Jain
- Concise Medical Physiology – Sujit K. Chowdhuri Determination of PCV

2nd SEMESTER

BPT201: HUMAN ANATOMY- II

L-Lecture, T-Tutorial, P-Practical

Programme name	**BPT**
Programme code	**M101**
Course name	**Human anatomy-II**
Course code	**BPT-201**
SEMESTER	**2nd Semester (7-12 Months)**

Code No.	Course Outcome
201.1	Recall anatomical terms (groove, tuberosity), body position, axes, classify connective tissues, describe bones, define joints, and identify muscles' characteristics.
201.2	Acquire knowledge upper extremity bones, detail soft tissue anatomy, describe upper limb joint structures, and describe hand architecture, fostering comprehensive anatomical knowledge.
201.3	Able understand the anatomy of the upper and lower limbs, anatomy of head and neck and brain
201.4	BE able to understand lower limb bones, detail soft tissue anatomy, and describe lower extremity joints, fostering a comprehensive understanding of anatomical structures.
201.5	Be able to understand vertebrae and ribs, explain trunk soft tissue anatomy, and comprehend pelvic girdle and floor muscle structure for anatomical proficiency
201.6	Acquire knowledge central nervous system organization, analyze pyramidal and extrapyramidal systems, and comprehend crucial neurovascular aspects for neurological understanding and integration

SUBJECT DESCRIPTION- 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 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 Content-

1. Musculoskeletal Anatomy –

a. Lower Extremity **20hrs**

i. Osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metartarsals 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.

b. Trunk Pelvis: 10hrs

i. Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs.
ii. Soft tissue: Pre and Para vertebral muscles, anterior abdominal wall muscles, Inter-vertebral disc. iii. Pelvic girdle and muscles of the pelvic floor.

2. Upper Extremity 20hrs

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 fore arm, back of fore arm, palm, dorsum of hand, muscles, nerves, blood vessels and lymphatic drainage of upper extremity.
iii. Joints: Shoulder girdle, shoulder joint, elbow joints, radio ulnar joint, wrist joint and joints of the hand.
iv. Hand: Arches of hand, skin of the palm and dorsum of hand

3. Neuro Anatomy – **14hrs**

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. Peripheral nerve
iv. Neuromuscular junction
v. Sensory end organs
vi. Central Nervous System
vii. Spinal segments and areas
viii. Brain Stem
ix. Cerebellum x. Inferior colliculi
x. Superior Colliculi
xi. Thalamus
xii. Hypothalamus

xiii. Corpus striatum

xiv. Cerebral hemisphere

xv. Lateral ventricles

xvi. Blood supply to brain

xvii. Basal Ganglia

xviii. The pyramidal system

xix. Pons, medulla, extra pyramidal systems

xx. Anatomical integration.

TEXTBOOKS:

1. B.D.Chaurasia, Human Anatomy Volume 1.2.3, CBS Publishers and Distributors, sixth Edition
2. Last's Anatomy-Regional and Applied, Churchill Livingstone.
3. Mcminn's et al-A Colour Atlas of Human Anatomy, Mosby.
4. Inderbir Singh, A Textbook on Human Neuro Anatomy, Jaypee Brothers.
5. Textbook of Human Osteology by Inderbir Singh
6. Principles of Anatomy And Physiology 14th Ed G. Tortora and Bryan
7. Gray's Anatomy by Henry Gray

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT-201	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	2	1	1		2	1	1	2	
CO 2	2	1	1	2	1		2		1
CO 3	2	1		2		1	1		
CO 4	2	2	1		1	1	1		1
CO 5	3	1	2		2	2			
CO 6	3	2		1	1		1	1	2

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT-202: HUMAN PHYSIOLOGY-II

L-Lecture, T-Tutorial, P-Practical

Programme name	**BPT**
Programme code	**M101**
Course name	**Human Physiology-II**
Course code	**BPT-202**
SEMESTER	**2nd Semester (7-12 Months)**
L-T-P	**3-1-2**

SUBJECT DESCRIPTION- 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.

Code No.	Course Outcome
202.1	Comprehend kidney's structure, functions, urine formation processes, micturition physiology, and interpret plasma clearance tests for renal assessment.
202.2	Define body temperature, explain regulation mechanisms, differentiate hypothermia/hyperthermia, and describe skin's role in temperature regulation.
202.3	Comprehend central/peripheral nervous systems, synapse anatomy, neuron structure, spinal cord, autonomic system functions, and brain roles.
202.4	Understand the general organization and functions of special senses, including vision, hearing, taste, and smell.

Course Content-

1. Renal System: 8hrs

i. General introduction, structure and functions of kidney
ii. Formation of urine- filtration, re-absorption and secretion
iii. Physiology of micturition
iv. Renal circulation
v. Plasma clearance test

2 Body Temperature regulations: 8hr

i. Normal body temperature & its regulation
ii. Hypothermia, hyperthermia
iii. Skin-structure and functions

3. Functional Anatomy of Reproductive System: 10hrs

i. Puberty, changes in males and females, menarche, menopause
ii. Spermatogenesis - stages and regulation, physiological actions of testosterone
iii. Menstrual cycle and ovarian cycles – phases and hormonal regulation, ovulation
iv. Physiology of pregnancy
v. Lactation – initiation, maintenance and control
vi. Functions of placenta

4. General Organization of Nervous System: 5hrs

a. Organization of CNS:
b. Central and peripheral nervous system. Functions of nervous system. Synapse: Functional anatomy, classification, synaptic transmission, properties of nerve fibers

5. Neuron: **5hrs**

i. Structure of neuron, nerve impulse, myelinated and non-myelinated nerve. Brief account of resting membrane potential, action potential and conduction of nerve impulse. Function of important structure and spinal cord, type of nerves according to function, Autonomic nervous system- organization & function. Neuro-muscle transmission. Various parts of nervous system, C.S.F., Functions of muscle spindle and motor tracts including reflexes, cutaneous receptors, joint receptors, sensory pathways. Ascending reticular formation, EEG, functions of cerebellum, basal ganglia, thalamus & hypothalamus, vestibular apparatus and functions.

6. Special senses: **5hrs**

i. General organization & functions (vision, hearing, taste & smell).

APPLIED PHYSIOLOGY- **22hrs**

1. Pulmonary Functions

i. Properties of gases, Mechanics of respiration, Diffusion capacity, special features of pulmonary circulation and their application.
ii. Respiratory adjustments in exercises.
iii. Artificial respiration d. Breath sounds.

2. Cardio vascular Functions

i. Blood flow through arteries, arterioles, capillaries, veins and venuoles.
ii. Circulation of Lymph, Oedema
iii. Factors affecting cardiac output.
iv. Circulatory adjustment in exercise and in postural and gravitational changes,
v. Patho-physiology of fainting and heart failure.

3. Muscles and Nervous System Functions

i. Peripheral nervous system, neuromuscular transmission, Types of nerve fibers.
ii. Action potential, Strength-duration curve, ECG, EMG, VEP, NCV
iii. Degeneration and regeneration of nerve, Reactions of denervations.
iv. Synaptic transmission, Stretch reflex- Mechanism and factors affecting it.
v. Posture, Balance and Equilibrium/Coordination of voluntary movement.
vi. Voluntary motor action, clonus, Rigidity, incoordination.
vii. Special senses- Vision, taste, hearing, vestibular, Olfaction
viii. Sympathetic and Parasympathetic regulation, Thermoregulation**.**

4. Blood functions

i. Thalassemia Syndrome, Hemophilia
ii. Anemia, Leukocytosis
iii. Bone marrow transplant

5. Metabolic Functions

i. Diabetes Mellitus, Physiological basis of Peptic Ulcer, Jaundice, GIT disorders and Dietary fiber, Thyroid functions, Vitamins deficiency.

TEXTBOOKS:

1. Text book on Medical Physiology-By Guyton
2. Text book of physiology for physiotherapy – Prof. A. K Jain
3. Concise Medical Physiology – Sujit K. Chowdhuri

4. Samson & Wrights Applied physiology
5. Textbook of Medical Physiology – Indu Khurana

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT-202	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3	1	3	2	1	2		1	
CO2	2		1		1	1		1	1
CO3	3	1		2		2	1		
CO4	2	1	1		1	1			

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT-203: GENERAL AND CLINICAL PSYCHOLOGY

Programme name	**BPT**
Programme code	**M101**
Course name	**General & Clinical Psychology**

Course code	**BPT-203**
SEMESTER	**2nd Semester (7-12 Months)**
L-T-P	**3-1-0**

L-Lecture, T-Tutorial, P-Practical

SUBJECT DESCRIPTION- Human Psychology involves the study of various behavioral patterns of individuals, theories of development, normal and abnormal aspects of motor, social, emotional and language development, communication and interaction skills appropriate to various age groups.

Code No.	Course Outcome
203.1	Able to explain term Psychology & Its Importance in Health Delivery System, Explain Psychological Maturation during Human Development & Growth & Alterations during Aging Process.
203.2	Be able to know the Importance of Psychological Status of the Person in Health & Disease; Environmental & Emotional Influence on the Mind & Personality.
203.3	Explain the learning process and its theory.
203.4	Apply Skills Required for Good Interpersonal Communication

Course Content-

1 Introduction to Psychology 6hrs

i. Schools: Structuralism, functionalism, behaviorism, Psychoanalysis.
ii. Methods: Introspection, observation, inventory and experimental method.
iii. Psychology and physiotherapy

2 Growth and Development 6hrs

i. Life span: Different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age).
ii. Heredity and environment: role of heredity and environment in physical and psychological development, "Nature v/s Nurture controversy".

3. Sensation, attention and perception 5hrs

i. Sensation: Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium and visceral sense
ii. Attention: Types of attention, Determinants of attention (subjective determinants and objective determinants).
iii. Perception: Gestalt principles of organization of perception

4. Motivation 5hrs

i. Motivation cycle (need, drive, incentive, reward).
ii. Classification of motives.
iii. Abraham Maslow's theory of need hierarchy

5. Emotions **8hrs**

i. Meaning and definition
ii. Theories of emotion.

6. Intelligence **8hrs**

i. Meaning and definition
ii. Theories of intelligence

7. Learning **8hrs**

i. Definition and characteristics.
ii. Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory.

8. Personality **8hrs**

i. Meaning and characteristics
ii. Approaches to personality: type & trait, behaviorist, psychoanalytic and humanistic approach.

TEXTBOOK:

1. Ciccarelli, S. K., & Meyer, G. E. (2010). Psychology: South Asian ed. New Delhi: Pearson Education.
2. Ramalingam& Bid (2009). Psychology for Physiotherapists. Jaypee Brothers, New Delhi.
3. Morgan et al (2003). Introduction to Psychology. New Delhi: Tata McGrawhill.
4. Feldman. R. H. (1996). Understanding Psychology. New Delhi: Tata McGrawhill.
5. Atkinson (1996). Dictionary of Psychology.

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT203	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3	1	3	2	1	2		1	
CO2	2		1		1	1		1	1
CO3	3	1		2		2	1		
CO4	2	1	1		1	1			

6. 3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT-204: BASIC PRINICIPLES OF BIOMECHANICS

Programme name	**BPT**

Programme code	**M101**
Course name	**Basic principle of biomechanics**
Course code	**BPT-204**
SEMESTER	**2nd Semester (7-12 Months)**
L-T-P	**2-1-1**

L-Lecture, T-Tutorial, P-Practical

SUBJECT DESCRIPTION- Biomechanics involves the study of basic concepts of human movement, and application of various biomechanical principles in the evaluation and treatment of disorders of musculoskeletal system. Students are taught to understand the various quantitative and qualitative methods of movement. Mechanical principles of various treatment methods are studied. Study of posture and gait are also included.

Code No.	Course Outcome
204.1	Demonstrate the motion and its relation to external and internal environmental factors.
204.2	Understand the system of lever, its classes and co-relation with human body movements.
204.3	Describe the surface of various joints and movements on it as well as structure and function of muscular system.
204.4	Analyze the structure & functions of Thorax and Chest wall
204.5	Evaluate general and specific features of temporo-mandibular joint

Course Content-

1. Basic Concepts in Biomechanics: Kinematics and Kinetics: 4hrs

i. Types of Motion; Location of Motion; Direction of Motion; Magnitude of Motion; Definition of Forces; Force of Gravity; Reaction forces; Equilibrium; Objects in Motion; Force of friction; Concurrent force systems; Parallel force system; Work; Moment arm of force; Force components; Equilibrium of levers.

2. Joint structure and Function: 15hrs

i. Joint design; Materials used in human joints; General properties of connective tissues; Human joint design; Joint function; Joint motion

ii. General effects of disease, injury and immobilization.

3. Muscle structure and function: 15hrs

i. Mobility and stability functions of muscles; Elements of muscle structure; Muscle function; Effects of immobilization, injury and aging.

4. Biomechanics of the Thorax and Chest wall: **10hrs**

i. General structure and function; Rib cage and the muscles associated with the rib cage; Ventilatory motions: its coordination and integration; Developmental aspects of structure and function

ii. Changes in normal structure and functional relation to pregnancy, scoliosis and COPD

5. The Temporo-mandibular Joint: 4hrs

i. General features, structure, function and dysfunction

TEXTBOOKS:

1. Joint Structure and Function- Cynthia Norkins &Pamela Lavengie
2. Clinical Kinesiology – Brunnstroms.
3. Fundamentals of biomechanics- Nihatozkaya Margareta Nordindin
4. Fundamentals of biomechanics- Duane Knudson

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT202	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3	1	3	2	1	2		1	
CO2	2		1		1	1		1	1
CO3	3	1		2		2	1		
CO4	2	1	1		1	1			
CO5	2		1		1	1		1	

1. 3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT-205: MEDICAL TERMINOLOGY AND RECORD KEEPING

Programme name	**BPT**

Programme code	**M101**
Course name	**Medical terminology & record keeping**
Course code	**BPT-205**
SEMESTER	**2nd Semester (7-12 Months)**
L-T-P	**1-0-0**

L-Lecture, T-Tutorial, P-Practical

SUBJECT DESCRIPTION- This course introduces the elements of 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.

Course Content- **16hrs**

Code No.	Course Outcome
205.1	To introduce and familiarize students with medical words through knowledge of roots, prefixes, and suffix.

i. Derivation of medical terms.

ii. Define word roots, prefixes, and suffixes.

iii. Conventions for combined morphemes and the formation of plurals.

iv. Basic medical terms in health care and physiotherapy.

v. Form medical terms utilizing roots, suffixes, prefixes, and combining roots. 6. Interpret basic medical abbreviations/symbols.

vi. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.

vii. Interpret medical records/reports.

viii. Data entry and management on electronic health record system.

TEXTBOOKS:-Oxford Medical Dictionary

Mapping-

Course Outcome Code	Programme Outcome								
BPT205	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3	1	3	2	1	2		1	

1. 3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT-206: BASIC COMPUTER AND INFORMATION SCIENCE

Programme name	**BPT**
Proframme code	**M101**

Course name	**Basic computer and information science**
Course code	**BPT-206**
SEMESTER	**2nd Semester (7-12 Months)**
L-T-P	**1-0-0**

L-Lecture, T-Tutorial, P-Practical

SUBJECT DESCRIPTION- The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation.

Code No.	Course Outcome
206.1	Demonstrate computer networks, about the application of internet and clinical setting
206.2	Understanding of computer hardware and software
206.3	Apply use of MS Word, Excel, Power-point and other operating system.
206.4	Apply logical skills to programming in a variety of languages.

Course Content-

1. Introduction to computer: **4hrs**

i. Introduction: characteristics of computer, block diagram of computer, generations of computer, computer languages
ii. Input output devices: Input devices (keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices (monitors, pointers, plotters, screen image projector, voice response systems).
iii. Processor and memory: The Central Processing Unit (CPU), main memory.
iv. Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices

2. Introduction of windows: **2hrs**

i. History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.)

3. Introduction to MS-Word: **2hrs**

i. 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.

4. Introduction to Excel: **2hrs**

i. Introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.

5. Introduction to power-point: **1hrs**

i. Introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graph.

6. Introduction of Operating System: **1hrs**

i. Introduction, operating system concepts, types of operating system

7. Computer networks: 2hrs

i. Introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.

8. Internet and its Applications: 1hrs

i. Definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet

9. Application of Computers in clinical settings: 1hrs

PRACTICALS:

- Demonstration of basic hardware of the computers and laptops
- Learning to use MS office: MS word, MS PowerPoint, MS Excel
- To install different software
- Data entry efficiency

TEXTBOOKS:

- Information technology by Anshuman Sharma (Lakhanpal Publisher)
- Computer Fundamentals (Concepts. Systems and applications) by P. K. Sinha (University of Tokyo, Japan) BPB Publication

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT206	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	2	2		1	3		1		2
CO2	3		2			1		1	1
CO3	2	1		2	1			3	
CO4	1		1		2		1	1	

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT207P: HUMAN ANATOMY-II PRACTICAL

PRACTICAL 64HRS

- Identification of the bones of the upper extremity, side determination, parts, attachment of the muscles, nerves and vessels relation to bone.
- Identification of the bones of the lower extremity, side determination, parts, attachment of the muscles and relation of nerves and vessels to bone.

Upper extremity including surface Anatomy.

- Demonstration of the muscles of the upper extremity, movements in joints, identification of body prominences on inspection and by palpation, points of palpation of nerves and arteries.

Lower extremity including surface Anatomy.

- Demonstration of the muscles of the lower extremity, movements in joints, identification of body prominences on inspection and by palpation, points of palpation of nerves and arteries. Demonstration of the Head & Neck and Spinal cord & Brain including surface Anatomy

Identification of the bones of the vertebral column (cervical, lumbar, sacral and coccygeal) parts, attachment of the muscles and relation of nerves and vessels to bone

TEXTBOOKS:

1. Mcminn's et al-A Colour Atlas of Human Anatomy, Mosby.
2. Cunningham Manual of Practical Anatomy Vol. I, II, III, Churchill Livingstone.
3. Gray's Anatomy by Susan Standring
4. Di fiore's Atlas of Histology
5. Netter's atlas of Human Anatomy
6. Textbook of Human Osteology: Inderbir Singh

BPT208P: HUMAN PHYSIOLOGY-II PRACTICAL

PRACTICAL **64HRS**

Clinical examination of arterial pulse.

- Determination of arterial blood pressure
- Clinical examination of respiratory system.
- Clinical examination of higher functions.
- Clinical examination of sensory system.
- Clinical examination of motor system
- Clinical examination of Cranial Nerves

TEXTBOOKS:

1. Text book on Medical Physiology-By Guyton
2. Text book of physiology for physiotherapy – Prof. A. K Jain
3. Samson& Wrights Applied physiology

BPT209P: BASIC PRINCIPLES OF BIOMECHANICS- PRACTICAL

PRACTICAL **16hrs**

- Types of Motion
- Direction of Motion
- Forces
- Mobility and stability functions of muscles
- General structure and function
- Temporo-mandibular Joint function

TEXTBOOKS:

1. Joint Structure and Function- Cynthia Norkins &Pamela Lavengie
2. Clinical Kinesiology – Brunnstroms.
3. Fundamentals of biomechanics- Nihatozkaya Margareta Nordindin
4. Fundamentals of biomechanics- Duane Knudson

3rd SEMESTER

BPT 301: EXERCISE THERAPEUTICS – I

Programme name	**BPT**
Programme Code	**M101**
Course name	**Exercise Therapeutics-I**
Course code	**BPT-301**
Semester	**3rd Semester (13-18 Months)**
L-T-P	**3-1-2**

L-Lecture, T-Tutorial, P-Practical

SUBJECT DESCRIPTION - In this course, the students will learn the principles and effects of exercise as a therapeutic modality and will learn the techniques in the restoration of physical functions.

Code No.	COURSE OUTCOME
301.1	Able to describe Exercise physiology.
301.2	Explain principles of exercise techniques.
301.3	Able to identify indications, contraindications of exercise techniques.
301.4	Demonstrate manual techniques and exercises.
301.5	Evaluate and formulation of exercise programs for management of Musculoskeletal, neurological, cardiovascular and special groups like geriatric, women and pediatric.

Course Content-

1. Introduction to Exercise Therapy- 6hrs

The aims of Exercise Therapy, The techniques of Exercise Therapy, Approach to patient's problems, Assessment of patient's condition – Measurements of Vital parameters, Starting Positions – Fundamental positions & derived Positions, Planning of Treatment

2. Methods of Testing 12Hrs

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. 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.
ii. Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf limb length
iii. Measurement of Limb Length: true limb length, apparent limb length, segmental limb length
iv. Static power Test
v. Dynamic power Test

vi. Endurance test

vii. Speed test

viii. Tests for Co-ordination

ix. Tests for sensation

x. Pulmonary Function tests

xi. Measurement of the angle of Pelvic Inclination

3. Relaxation: 10 Hrs

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: General, Local, Jacobson's, Mitchel's, additional methods.

4. Passive Movements 10Hrs

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.

5. Active Movements 8 Hrs

a. Definition of strength, power & work, endurance, muscle actions.

b. Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction &relaxation, muscle fibre type, motor unit, force gradation.

c. Causes of decreased muscle performance

d. Physiologic adaptation to training: Strength & Power, Endurance.

e. Types of active movements

6. Free exercise 6hrs

Classification, principles, techniques, indications, contraindications, effects and uses

7. Active Assisted Exercise 6hrs

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

8. Types of resisted exercises 6 Hrs

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.

THERAPEUTIC MASSAGE

THEORY **4 Hrs**

1. History and Classification of Massage Technique
2. Principles, Indications and Contraindications
3. Technique of Massage Manipulations
4. Physiological and Therapeutic Uses of Specific Manipulations

Text Books:

1. Progressive resisted exercises – by Margaret Hollis,
2. Therapeutic Exercise by Carolyn Kisner
3. PNF – Knott and Voss
4. Principles of Exercise therapy – Dena M. Gardiner
5. Muscle testing by Daniel Kendall

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT301	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	2	1	1		2	1	1	2	
CO 2	2	1	1	2	1		2		1
CO 3	2	1		2		1	1		
CO 4	2	2	1		1	1	1		1
CO 5	3	1	2		2	2			

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 302: ELECTROTHERAPY-I

Programme name	**BPT**
Programme Code	**M101**

Course name	**Electrotherapy-I**
Course code	**BPT-302**
Semester	**3rd Semester (13-18 Months)**
L-T-P	**3-1-2**

L-Lecture, T-Tutorial, P-Practical

SUBJECT DESCRIPTION – To understand the concept and basic principles to know electrotherapy equipments is given under this topic. The student will be taught about physics related to electrotherapy and application on human body tissues.

Code No.	COURSE OUTCOME
302.1	Able to describe basic laws and components of currents, transformers, EMF, resistance, Ohm's law.
302.2	Knowledge of thermal and chemical effects of current. Electric shock and its prevention.
302.3	Able to Define principles of magnetism, eddy currents.
302.4	Describe and discuss therapeutic and physiological effects of heat and ice therapy and methods of application with respect to indications and contraindications of each.

Course Content-

1. Physical principles **16hrs**

a. Electricity: Definition and types. Therapeutic uses. Basic physics of construction. Working

b. Importance of currents in treatment.

c. Static Electricity: Production of electric charge. Characteristic of a charged body.

d. Characteristics of lines of forces. Potential energy and factors on which it depends. Potential difference and EMF.

e. Current Electricity: Units of Electricity: farad, Volt, Ampere, Coulomb, Watt

f. Condensers: Definition, principle, Types- construction and working, capacity & uses.

g. Magnetism: Definition. Properties of magnets. Electromagnetic induction. Transmission by contact. Magnetic field and magnetic forces. Magnetic effects of an electric field.

h. Conductors, Insulators, Potential difference, Resistance and intensity

i. Ohm's law and its application to DC and AC currents. Fuse: construction, working and application.

j. Transmission of electrical energy through solids, liquids, gases and vacuum.

k. Rectifying Devices-Thermionic valves, Semiconductors, Transistors, Amplifiers, transducer and Oscillator circuits.

l. Transformer: Definition, Types, Principle, Construction, Eddy current, working uses

m. Chokes: Principle, Construction and working, Uses

2. Effects of Current Electricity 16Hrs

a. Chemical effects-ions and electrolytes, 69onization, Production of an EMF by chemical actions.

b. Ionization: Principles, effects of various technique of medical ionization.

c. Electromagnetic Induction.

d. Electromagnetic spectrum.

3. Low frequency currents 16hrs

a. Basic types of currents: Direct Current, Alternating current

b. Types of currents used in Therapeutics: Modified DC, Modified AC

c. Faradic Currents: Definition, Modifications, Techniques of Application of Individual, Muscle and Group Muscle stimulation, Physiological & Therapeutic effects of Faradic Current, Precautions, Indications & Contra-Indications, Dangers.

d. Galvanic Currents: 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.

e. **TENS:** Define TENS, Types of TENS, Conventional TENS, and Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS. Types of Electrodes & Placement of Electrodes, Dosage parameters, Physiological & Therapeutic effects, Indications & Contraindications.

f. Sinusoidal, Dydanamic and HVPGS, Iontophoresis and microcurrents

g. **Pain**: Define Pain, Theories of Pain (Outline only), Pain Gate Control theory in detail.

4. Medium Frequency Currents 16hrs

a. **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.
b. Russian Currents
c. Rebox Type Currents

Text Books:

1. Clayton's Electro Therapy-3rd, 9th & 10th ed,
2. Electro therapy Explained – by Low &Reed
3. Electro Therapy – by Kahn
4. Therapeutic Electricity – by Sydney Litch
5. Principles and Practice of Electro Therapy –by Joseph Kahn

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT302	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	3	1	1		2	1	1	2	
CO 2	2	1	1	2	1		2		1
CO 3	3	1		2		1	1		
CO 4	2	2	1		1	1	1		1

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 303: BIOMECHANICS AND KINESIOLOGY-I

Programme name	**BPT**
Programme Code	**M101**
Course name	**Biomechanics And Kinesiology-I**
Course code	**BPT-303**
Semester	**3rd Semester (13-18 Months)**
L-T-P	**3-1-2**

L-Lecture, T-Tutorial, P-Practical

Code No.	COURSE OUTCOME
303.1	Explain the basic concepts of biomechanics, axis & planes.
303.2	Describe anatomy, kinetics and kinematics of various joint motions.
303.3	Describe & discuss normal and abnormal biomechanics of posture and gait.
303.4	Able to describe and discuss muscle functional mechanics

Course Content-

1. **Biomechanics of the vertebral column - 15 hrs**

   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

2. **Biomechanics of the shoulder joint 20hrs**

   a. The shoulder complex: Structure and components of the shoulder complex including the articulating surfaces, capsular attachments and ligaments and movement of the following joints : Sternoclavicular, a cromioclavicular, Scapulo thoracic and glenohumeral joint.

   b. Function of the shoulder complex including dyanamic stability of the glenohumeral joint, Scapulohumeral rhythm and scapulothoracic and Glenohumeral contributions.

3. Biomechanics of Elbow joint 15hrs

a. The elbow complex: Structure and function of the elbow joint – humeroulnar and humeroradial articulations, superior and inferior radioulnar joints.

b. Mobility and stability of the elbow complex and its relationship to hand and wrist the effects of immobilization and injury

c. Effect of injury and the resistance to longitudinal compression.

4.Biomechanics of wrist joint **14hrs**

a. 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.

b. Functional position of the wrist and hand.

Text Books:

1. Joint Structure and Function- Cynthia Norkins & Pamela Lavengie
2. Clinical Kinesiology–Brunnstroms.
3. Fundamentals of biomechanics- Nihatozkaya, Margaret anordin
4. Fundamentals of biomechanics- Duaneknudson

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT303	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	2	1	1		2	1	1	2	
CO 2	3		1		1		2		1
CO 3	2	1		2		1	1		
CO 4	1	2	1		1	1	1		1

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 304: MICROBIOLOGY

Programme name	**BPT**
Programme Code	**M101**
Course name	**Microbiology**
Course code	**BPT-304**
Semester	**3rd Semester (13-18 Months)**
L-T-P	**2-0-0**

L-Lecture, T-Tutorial, P-Practical

Code No.	COURSE OUTCOME
304.1	Explain Definitions, normal flora, routes of infection, sterilization, and antimicrobials.
304.2	Describe Immunology, human immunity.
304.3	Describe & discuss bacteriology, virology & mycology.
304.4	Able to describe and discuss clinical microbiology.

Course Content-

a. General Microbiology – Introduction & scope 6Hrs

i. Definitions: infections, parasite, host, vector, fomite, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate.

ii. Normal flora of the human body.

iii. Routes of infection and spread; endogenous and exogenous infections; source at reservoir of infections.

iv. Bacterial cell. Morphology limited to recognizing bacteria in clinical samples Shape, motility and arrangement. Structures, which are virulence, associated.

v. Physiology: Essentials of bacterial growth requirements.

vi. Sterilization, disinfection and universal precautions in relation to patient care and disease prevention. Definition of asepsis, sterilization, disinfection.

vii. Antimicrobials: Mode of action, interpretation of susceptibility tests, resistance spectrum of activity.

a. Immunology - 6 hrs

i. Basic principles of immunity immunobiology: lymphoid organs and tissues. Antigen, Antibodies, antigen and antibody reactions with relevance to pathogenesis and serological diagnosis.

ii. Humoral immunity and its role in immunity Cell mediated immunity and its role in immunity. Imunology of hypersensitivity, Measuring immune functions.

b. Bacteriology - 6hrs

i. To be considered under the following headings

ii. Morphology, classification according to pathogenicity, mode of transmission, methods of prevention, collection and transport of samples for laboratory diagnosis, interpretation of laboratory reports.

iii. Staphylococci, Streptococci and Pneumococci.

iv. Mycobacteria: Tuberculosis, M.leprae, atypical mycobacteria, Enterobacteriaceae,

v. Vibrois: V. cholerae and other medically important vibrios, Campylobacters and Helicobacters, Pseudomonas.

vi. Bacillus anthracis, Sporing and non-sporing anaerobes: Clostridia, Bacteroides and Fusobacteria.

c. General Virology - 6 hrs

i. General properties: Basic structure and broad classification of viruses. Pathogenesis and pathology of viral infections. Immunity and prophylaxis of viral diseases. Principles of laboratory diagnosis of viral diseases. List of commonly used antiviral agents.

d. Mycology - 6 hrs

i. General properties of fungi. Classification based on disease :superficial, subcutaneous, deep mycosel opportunistic infections including Mycotoxins, systemic mycoses. General principles of fungal diagnosis, Rapid diagnosis. Method of collection of samples. Antifungal agents.

e. Clinical/Applied Microbiology - 2 Hrs

i. Streptococcal infections: Rheumatic fever and Rheumatic heart disease, Meningitis.

ii. Tuberculosis,

iii. Pyrexia of unknown origin, leprosy,

iv. Sexually transmitted diseases, Poliomyelitis,

v. Hepatitis,

vi. Acute-respiratory infections, Central nervous System infections, Urinary tract infections,

vii. Pelvic inflammatory disease, Wound infection, Opportunistic infections, HlV infection,

viii. Malaria, Filariasis, Zoonotic diseases.

Text book:

1. Textbooks of Microbiology – by R. Ananthnarayan& C. K. JayramPanikar

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT304	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	2	1	1		2	1	1	2	
CO 2	3		1		1		2		1
CO 3	2	1		2		1	1		
CO 4	1	2	1		1	1	1		1

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 305: PHARMACOLOGY

Programme name	**BPT**
Programme Code	**M101**
Course name	**Pharmacology**
Course code	**BPT-305**
Semester	**3rd Semester (13-18 Months)**
L-T-P	**3-0-0**

L-Lecture, T-Tutorial, P-Practical

SUBJECT 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.

Code No.	COURSE OUTCOME
305.1	Describe Pharmacological effects of commonly used drugs by patients referred for Physiotherapy.
305.2	List their adverse reactions, precautions to be taken, contraindications and route of administration.
305.3	Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice-versa.
305.4	Indicate the use of analgesics & anti-inflammatory agents with movement disorders.
306.5	Awareness of other essential and commonly used drugs by patients -The bases for their use as well as serious adverse reactions.

Course Content-

1. General Pharmacology – 6 hrs

Introduction, Definitions, 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 – 6 Hrs

a. General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System

b. Cholinergic and Anti-Cholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants.

3. Cardiovascular Pharmacology – 6 hrs

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, Antithrombotics, Anticoagulants and Thrombolytics Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers, Cerebral Ischemia Peripheral Vascular Disease.

2. Neuro pharmacology – 5 hrs

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

3. Disorders of Movement – 5 hrs

a. Drugs used in Treatment of Parkinson ’s disease

b. Antiepileptic Drugs

c. Spasticity and Skeletal Muscle Relaxants

6. Inflammatory/Immune Diseases - 5 hrs

a. Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Nonaspirin NSAIDs, drug Interactins 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 - 5 hrs
Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemic

8. Geriatrics – Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension. **5 Hrs**

9 Chemotherapy General principles of chemotherapy. 5 hrs

a. Sulfonamides &Fluoroquinolones.
b. Beta – Lactam antibiotics – I (Penicillins)
c. Beta – Lactam antibiotics – II (Cephalosporins)
d. Macrolides & aminoglycides
e. Tetracyclines & chloramphenicol (Broad spectrum antibiotics)

Text Books:

1. Essentials of Medical Pharmacology – K. D. Tripathi
2. Pharmacology and Pharmaco therapeutics – R.S. Satoskar
3. Pharmacology by Gaddum

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT305	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	2	1	1		2	1	1	2	
CO 2	3		1		1		2		1
CO 3	2	1		2		1	1		
CO 4	1	2	1		1	1	1		1
CO 5	3		1	1		2		1	

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 306: INTRODUCTION TO QUALITY AND PATIENT SAFETY

Programme name	**BPT**
Programme Code	**M101**
Course name	**Introduction to Quality and Patient safety**
Course code	**BPT-306**
Semester	**3rd Semester (13-18 Months)**
L-T-P	**1-0-0**

Code No.	**COURSE OUTCOME**
306.1	Understand the basic concepts of quality and patient safety.
306.2	Understand infection prevention control, biomedical waste management.
306.3	Awareness of disaster preparedness and management.
306.4	Demonstrate the skills in basics of emergency care and life support skills.

L-Lecture, T-Tutorial, P-Practical

Course Content-

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 program in the health system. **3 hrs**

    1. Concepts of Quality of Care
    2. Quality Improvement Approaches
    3. Standards and Norms
    4. Quality Improvement Tools
    5. Introduction to NABH guidelines

    At the end of this topic, focus should be to teach the students to perform the maneuvers in 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.

2. **Antibiotic Resistance-** **2Hrs**

1. History of Antibiotics
2. How Resistance Happens and Spreads
3. Types of resistance- Intrinsic, Acquired, Passive
4. Trends in Drug Resistance
5. Actions to Fight Resistance
6. Bacterial persistence
7. Antibiotic sensitivity
8. Consequences of antibiotic resistance
9. Antimicrobial Stewardship- Barriers and opportunities, Tools and models in hospitals

3. **Disaster preparedness and management**- The objective of this section will be to provide knowledge on the principles of on-site disaster management. Concepts to be taught should include- **3Hrs**

1. Fundamentals of emergency management,
2. Psychological impact management,
3. Resource management,
4. Preparedness and risk reduction,
5. Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms.

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT306	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO 1	1	1			2		1	2	
CO 2	3		1		1		2		1
CO 3	1	1		2		1	1		
CO 4	2		1		1	1	1		1

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT-307P :EXERCISE THERAPY-I PRACTICAL

PRACTICAL **64 Hrs**

1. Different test methods
2. Demonstrate relaxation techniques.
3. Demonstrate to apply the technique of passive movements
4. Demonstrate various techniques of Active movements
5. Demonstrate massage technique application according to body parts.

Text Books:

6. Progressive resisted exercises – by Margaret Hollis,
7. Therapeutic Exercise by Carolyn Kisner
8. PNF – Knott and Voss
9. Principles of Exercise therapy – Dena M. Gardiner
10. Muscle testing by Daniel Kendall

BPT-308P: ELECTROTHERAPY-I PRACTICAL

PRACTICAL **64 Hrs**

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. Winding up procedure after any electrotherapy treatment method.

Equipment care -

1. Checking of equipments
2. Arrangement of exercise therapy and electro therapy equipment.
3. Calibration of equipment
4. Purchase, billing, document of equipment.
5. Safety handling of equipments.

BPT 309P: BIOMECHANICS AND KINESIOLOGY-I PRACTICAL

PRACTICAL **64 Hrs**

- Shall be conducted for various joint movements and analysis of the same.
- Demonstration may also be given as how to assess various joints of upper limb.
- 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.

Text Books:

1. Joint Structure and Function- Cynthia Norkins &Pamela Lavengie
2. Clinical Kinesiology–Brunnstroms.
3. Fundamentals of biomechanics- nihatozkaya, margaretanordin
4. Fundamentals of biomechanics- duaneknudson

4th SEMESTER

BPT 401: EXERCISE THERAPEUTICS – II

Programme name	**BPT**
Programme Code	**M101**
Course name	**Exercise Therapeutics-II**
Course code	**BPT-401**
SEMESTER	**4th Semester (19-24 Months)**
L-T-P	**3-1-2**

L- Lecture, T- Tutorial, P- Practical

SUBJECT DESCRIPTION- After the course on exercise therapy student will be able to understand the different types of exercise for the benefit of patient in different situations and conditions both in health and disease or disorder.

Code NO.	COURSE OUTCOME
401.1	Able to describe Exercise physiology.
401.2	Explain principles of exercise techniques.
401.3	Able to identify indications, contraindications of exercise techniques.
401.4	Demonstrate manual techniques and exercises.
401.5	Evaluate and formulation of exercise programmes for management of Musculoskeletal, neurological, cardiovascular and special groups like geriatric, women and paediatric.

Course Content-

1. Specific exercise regimens **6Hrs**

a. Isotonic: de-Lormes, Oxford, MacQueen, Circuit weight training

b. Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle

c. Isometrics Isokinetic regimens

2. Proprioceptive Neuromuscular Facilitation **6Hrs**

a. Definitions & goals

b. Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb

c. Procedure: components of PNF

d. Techniques of facilitation

e. Mobility: Contract relax, Hold relax, Rhythmic initiation

f. Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization Stability: Alternating isometric, rhythmic stabilization

g. Skill: timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal.

3. Suspension Therapy 4Hrs

a. Definition, principles, equipments & accessories, Indications & contraindications, Benefits of suspension therapy

b. Types of suspension therapy :axial, vertical, pendular Techniques of suspension therapy for upper limb Techniques of suspension therapy for lower limb

4. Functional Re-education 6Hrs

Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lower limb and Upper limb activities.

5. Aerobic Exercise Definition and key terms 6Hrs

Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.

6. Stretching 6Hrs

Definition of terms related to stretching; Tissue response towards immobilization and elongation, Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures, Precautions and contraindications of stretching, Techniques of stretching.

7. Manual Therapy & Peripheral Joint Mobilization 6Hrs

a. Schools of Manual Therapy, Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn, Mulligan

b. Biomechanical basis for mobilization, Effects of joint mobilsation, Indications and contraindications, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.

8. Balance-Definition 4Hrs

a. Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output

b. Components of balance (sensory, musculoskeletal, biomechanical)

c. Causes of impaired balance, Examination & evaluation of impaired balance, Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types Balance retraining.

9. Co-ordination Exercise **4Hrs**

a. Anatomy & Physiology of cerebellum with its pathways Definitions: Co-ordination, Inco-ordination

b. Causes for Inco-ordination, Test for co-ordination: equilibrium test, non-equilibrium test Principles of co-ordination exercise.

c. Frenkel's Exercise: uses of Frenkel's exercise technique of Frenkel's exercise, progression, home exercise.

10. Posture **4Hrs**

a. Definition, Active and Inactive Postures, Postural Mechanism, Patterns of Posture, Principles of re-education: corrective methods and techniques, Patient education.

11. Walking Aids **4Hrs**

a. Types: Crutches, Canes, Frames; Principles and training with walking aids.

12. Hydrotherapy Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Use of special equipment, techniques, Effects and uses, merits and demerits **4Hrs**

13. Individual and Group Exercises

Advantages and Disadvantages, Organization of Group exercises, Recreational Activities and Sports **4Hrs**

Text Books:

1. Principles of Exercise Therapy – Dena Gardiner
2. Massage, manipulation & traction- Sydney Litch
3. Therapeutic Exercise Colby Kisner
4. Massage- Hollis
5. Suspension Therapy in Rehabilitation-Margaret Hollis

6. Biomechanics- Cynthia Norkins
7. Hydrotherapy - Duffield
8. Measurement of joint motion - Cynthia Norkins

Mapping-

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

Course Outcome Code	**Program Outcomes**								
BPT-401	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3		1		2	1		2	
CO2	1								
CO3	3	2		3					
CO4	2	2			3	2			
CO5	3	3			3	3	3		3

BPT 402: ELECTROTHERAPY-II

Programme name	**BPT**
Programme Code	**M101**
Course name	**Electrotherapy-II**
Course code	**BPT-402**
SEMESTER	**4th Semester (19-24 Months)**
L- T-P	**3-1-2**

L- Lecture, T- Tutorial, P-Practical

SUBJECT DESCRIPTION – To understand the concept and basic principles to know electrotherapy equipments is given under this topic. The student will be taught about physics related to electrotherapy and application on human body tissue

Code NO.	COURSE OUTCOME
402.1	Knowledge of thermal and chemical effects of current. Electric shock and its prevention.
402.2	Able to Define principles of magnetism, eddy currents.
402.3	Define & interpret the electro diagnostic methods.
402.4	Describe & discuss principles, methods of application, therapeutic and physiological effects of electrotherapeutic modalities.
402.5	Describe and discuss therapeutic and physiological effects of heat and ice therapy and methods of application with respect to indications and contraindications of each.

Course Content-

1. Electrical Supply **14hrs**

a. Brief outline of main supply of electric current

b. Dangers-short circuit, electric shocks: Micro/ Macro shocks

c. Precaution-safety devices, earthing, fuses etc.

d. First aid and initial management of electric shock

e. Burns: electrical & chemical burns, prevention and management

2.Various Agents **14Hrs**

a. Thermal agents: Physical Principles of cold, Superficial and deep heat.

b. Ultrasound: Physical Principles of Sound

c. Electro- magnetic Radiation: Physical Principles and their Relevance to Physiotherapy Practice

d. Electric Currents: Physical Principles and their Relevance to Physiotherapy

3.Electro diagnosis 12hrs

a. 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.

b. Nerve conduction velocity studies

c. EMG

d. Biofeedback

4.Thermo & Action therapy (High Frequency Currents)
16hrs

a. **SWD:** Define short wave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications & Contraindications, Dangers, Dosage parameters.

b. **Pulsed Electro Magnetic Energy:** Principles, Production & Parameters of PEME, Uses of **PEME.**

c. **Micro Wave Diathermy:** Define Microwave, Wave length & Frequency, Production of MW, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications & Contraindications, Dangers of MWD.

d. **Ultrasound:** Define Ultrasound, Frequency, Piezo Electric 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. Phonophoresis: Define Phonophoresis, Methods of application, commonly used drugs, Uses. Dosages of US

e. IRR: Define IRR, wavelength & parameters, Types of IR generators, Production of IR, Physiological & Therapeutic effects, Duration & frequency of treatment, Indication & Contraindication.

f. UVR: Define UVR, Types of UVR, 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

g. LASER: Define LASER. Types of LASER. Principles of Production. 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

3. Superficial heating modalities **10hrs**

a. 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.

b. Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications.

c. Moist Heat Therapy: Hydro collator packs–in brief, Methods of applications, Therapeutic uses, Indications & Contraindications.

d. Whirl Pool Bath: Construction, Method of Application, Therapeutic Uses, Indications & Contraindications.

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

Text Books:

1. Clayton's Electro Therapy
2. Electro therapy Explained – by Low &Reed
3. Electro Therapy – by Kahn
4. Therapeutic Electricity-by Sydney Witch

Mapping-

Course Outcome Code	**Programe Outcome**								
BPT-402	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3		1		3	1		2	
CO2	3		2		3			3	
CO3	2	2		3	3				
CO4	3	3			3				
CO5	3	3		3	3			2	3

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 403: BIOMECHANICS AND KINESIOLOGY-II

L-Lecture, T-Tutorial, P-Practical

Programme name	**BPT**
Programme Code	**M101**
Course name	**Biomechanics and Kinesiology-II**
Course code	**BPT-403**
SEMESTER	**4th Semester (19-24 Months)**
L-T-P	**3-1-2**

Code NO	**COURSE OUTCOME**
403.1	Describe anatomy, kinetics and kinematics of hip joint and discuss muscle functional biomechanics.
403.2	Describe anatomy, kinetics and kinematics of knee joint.
403.3	Describe anatomy, kinetics and kinematics of ankle joint and discuss muscle functional biomechanics.
403.4	Describe & discuss normal and abnormal biomechanics of posture and gait and variations between different pathological gait patterns.

Course Content

1.Biomechanics of the hip joint 26hrs

a. The hip complex: structure and function of the hip joint including the articulating surfaces of the pelvis and the femur ,angulations ,joint capsules ,ligaments and muscles.

b. Function of the hip ,rotation between pelvis, lumbar spine and hip pelvic motion ,lumbar pelvic rhythm

c. Pelvic motion in the static erect posture

d. Femoral motion, hip stability and bony abnormalities of the femur.

2.Biomechanics of the knee joint 12 hrs

a. The knee complex: structure and function of the knee joint – tibiofemoral joint and patellofemoral joint; including articulating surfaces ,capsules ligaments and other supporting structures.

b. Structure and Function of the tibiofemoral joint , range of motion ,locking and unlocking of knee joint with bony abnormalities.

4. **Biomechanics of Ankle joint 14hrs**

a. 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.

b. Structure and function of the plantar arches, muscles of the ankle and foot, deviations from normal structure and function – Pes Planus and Pes Cavus.

5. **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, kinematics 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.

12Hrs

Text Books:

1. Joint Structure and Function- Cynthia Norkins &Pamela Lavengie
2. Clinical Kinesiology – Brunnstroms.
3. Fundamentals of biomechanics- nihatozkaya, margaretanordin
4. Fundamentals of biomechanics- duaneknudson

Mapping-

Course Outcome Code	**Programme Code**								
BPT-403	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3								
CO2	3				3				
CO3	3	2			3			2	2
CO4	3	2			3				

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 404: PATHOLOGY

Programme name	**BPT**
Programme Code	**M101**
Course name	**Pathology**
Course code	**BPT-404**
SEMESTER	**4th Semester (19-24 Months)**
L-T-P	**2-0-0**

L-Lecture, T-Tutorial, P-Practical

SUBJECT DESCRIPTION: This subject follows the basic subjects of Anatomy, Physiology and Biochemistry and it forms a vital link between preclinical subjects and clinical subjects. Pathology involves the study of causes and mechanisms of diseases. 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 & 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.

Code NO.	COURSE OUTCOME
404.1	Acquire the knowledge of concepts of cell injury and healing process.
404.2	Knowledge of etiopathogenesis of common infections and non-infectious diseases.
404.3	Acquire the knowledge of concepts of Neoplasia with reference to the Etiology, gross &microscopic features, diagnosis & prognosis in different tissues &organs of the body
404.4	Correlate normal & altered morphology of different organ systems in different diseases needed for understanding disease process & their clinical significance (with special emphasis to Neuro- Musculo-skeletal & cardio-respiratory systems).
404.5	Acquire knowledge of common Immunological disorders & their resultant effects on the human body.
404.6	Understand in brief, about the Haematological diseases & investigations necessary to diagnose them & determine their prognosis.

Course Content-

General Pathology

1. **Introduction to Pathology** **1 Hr**

2. **Cell injuries –** **2 Hrs**

   a. Aetiology and Pathogenesis with a brief recall of important aspects of normal cell structure. Reversible cell injury: Types, Sequential changes, Cellular swellings, vacuolation, Hyaline changes, Mucoid changes. Irreversible cell injury: Types of Necrosis & Gangrene, Autolysis. Pathologic calcification: Dystrophic and Metastatic. Intracellular Accumulations – Fatty changes, Protein accumulations, Glycogen accumulations.

b. Pigments – Melanin / Hemosiderin.

c. Extra cellular accumulations: Amyloidosis – Classification, Pathogenesis, Pathology including special stains.

3. Inflammation and Repair – 2 Hrs

a. Acute inflammation: features, causes, vascular and cellular events.

b. Inflammatory cells and Mediators. Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples.

c. Repair,Wound healing by primary and secondary union, factors promoting and delaying the process.

d. Healing in specific site including bone healing.

4. Immuno pathology – 2 Hrs

a. Immune system: General concepts.

b. Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples. Secondary immunodeficiency including HIV infection. Auto-immune disorders: Basic concepts and classification, SLE.

c. AIDS-Aetiology, Modes of transmission, Diagnostic procedures, handling of infected material and health education.

5. Infectious diseases– 2 Hrs

a. Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis.

b. Bacterial disease: Pyogenic, Diphtheria, Gram negative infection, Bacillary dysentery.

c. Viral diseases: Poliomyelitis, Herpes, Rabies, Measles, Rickttsia, Chlamydial infection, HIV infection.

d. Fungal disease and opportunistic infections.

e. Parasitic diseases: Malaria, Filaria, Amoebiasis, Kala-azar, Cysticercosis, Hydatid cyst.

6. Circulatory Disturbances – 2 Hrs

a. Hyperemia/Ischemia and Haemorrhage Edema: Pathogenesis and types. Chronic venous congestion: Lung, Liver, Spleen, Systemic Pathology Thrombosis and Embolism: Formation, Fate and Effects.

b. Infarction: Types, Common sites.

c. Shock: Pathogenesis, types, morphologic changes.

7. Growth Disturbances and Neoplasia 2 Hrs

a. Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, Metaplasia, Malformation, agenesis, dysplasia.

b. Precancerous lesions.

c. Neoplasia: Definition, classification, Biological behaviour : Benign and Malignant, Carcinoma and Sarcoma.

d. Malignant Neoplasia: Grades and Stages, Local & Distant spread.

e. Carcinogenesis: Environmental carcinogens, chemical, viral, occupational. Heredity and cellular oncogenes and prevention of cancer.

f. Benign & Malignant epithelial tumours E.g. Squamous papilloma, Squamous cell carcinoma, Malignant melanoma. Benign & Malignant mesenchymal tumours E.g.: Fibroma, Lipoma, Neurofibroma, Fibrosarcoma, Liposarcoma, Rhabdo-myosarcoma, Teratoma.

8. Nutritional Disorders – 1Hr

a. Protein energy mal nutrition: Marasmus, Kwashiorkor, and Vitamin deficiency disorders, Classification with specific examples.

9. Genetic Disorders – 1 Hr

a. Basic concepts of genetic disorders and some common examples and congenital malformation.

THEORY – Systemic pathology

10. Hematology – 2 Hrs

a. Constituents of blood and bone marrow, Regulation of hematopoiesis. Anemia: Classification, clinical features & lab diagnosis.

b. Nutritional anemias: Iron deficiency anemia, Folic acid, Vit. B 12 deficiency anemia including pernicious anemia. Hemolytic Anaemias: Classification and Investigations. Hereditary hemolytic anaemias: Thalessemia, Sickle cell anemia, Spherocytosis and Enzyme deficiencies.

c. Acquired hemolytic anaemias

   i. Alloimmune, Autoimmune

   ii. Drug induced, Microangiopathic Pancytopenia – Aplastic anemia.

d. Hemostatic disorders, Vascular and Platelet disorders & lab diagnosis. Coagulopathies –

   i. Inherited

ii. Acquired with lab diagnosis.

e. Leukocytic disorders: Leukocytosis, Leukopenis, Leukemoid reaction.

f. Leukemia: Classification, clinical manifestation, pathology and Diagnosis. Multiple myeloma and disproteinemias.

g. Blood transfusion; Grouping and cross matching, untoward reactions, transmissible infections including HIV & hepatitis, Blood-components & plasma-pheresis.

11. Respiratory System 2 Hrs

a. Pneumonia, Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases

12. Cardiovascular Pathology 2 Hrs

a. Congenital Heart disease: A trial septal defect,Ventricular septal defect,Fallot'stetralogy, Patent ductus arteriosus.

b. Endocarditis. Rheumatic Heart disease.

c. Vascular diseases: Atherosclerosis, monckeberg's medial calcification, Aneurysm and Arteritis and tumours of Blood vessels.

d. Ischemic heart Disease: Myocardial infarction. Hypertension and hypertensive heart Disease.

13. Alimentary tract: 2 Hrs

a. Oral Pathology: Ulcers, leukoplakia, Carcinoma, oral cavity diseases and tumour of salivary gland & esophagus and precancerous lesions, Esophagus inflammatory, functional disorders and tumours.

b. Stomach: Gastritis, Ulcer & Tumours.

c. Tumours and tumour like condition of the small and large Intestine: Polyps, carcinoid, carcinoma, Lymphoma.

d. Pancreatitis and pancreatic tumours : i) Exocrine, ii) Endocrine Salivary gland tumours : Mixed, Warthin's.

14. Hepato – biliary pathology. 2 Hrs

a. Jaundice: Types, aetio-pathogenesis and diagnosis. Hepatitis: Acute, Chronic, neonatal.

b. Alcoholic liver disease

c. Cirrhosis: Postnecrotic, Alcoholic, Metabolic and Portal hypertension Liver abscesses; Pyogenic, parasitic and Amoebic. Tumours of Liver

15. Lymphatic System 2 Hrs

a. Diseases of the gall bladder: Cholecystitis, Cholelithiasis, Carcinoma. Lymphadenitis – Nonspecific and granulomatous. Causes of Lymph Node enlargements. Reactive Hyperplasia, Primary Tumours – Hodgkin's and Non hodgkin's Lymphomas, Metastatic Tumours.

b. Causes of Splenic Enlargements.

16. Musculoskeletal System 2 Hrs

a. Osteomyelitis, acute, chronic, tuberculous, mycetoma

b. Metabolic diseases: Rickets/Osteomalacia, osteoporosis, Hyperparathyroidism, Paget's disease.

c. Tumours Classification: Benign, Malignant, Metastatic and synovial sarcoma. Arthritis: Suppurative, Rheumatoid. Osteoarthritis, Gout, Tuberculous.

17. Endocrine pathology 1 hr

a. Diabetes Mellitus: Types, Pathogenesis, Pathology, Laboratory diagnosis Non-neoplastic lesions of Thyroid: Iodine deficiency goiter, autoimmune Thyroiditis, Thyrotoxicosis, myxedema, Hashimoto's thyroiditis.

b. Tumours of Thyroid: Adenoma, Carcinoma: Papillary, Follicular, Medullary, Anaplastic. Adrenal diseases: cortical hyperplasia, atrophy, tuberculosis, tumours of cortex and medulla.

18. Neuro pathology 1 Hrs

a. Inflammations and Infections :TBMeningitis, Pyogenic Meningitis, viralmeningitis and Brain Abscess

b. Tuberculosis, Cysticercosis

c. CNS Tumors, Astrocytoma, Neuroblastoma, Meningioma, Medulloblastoma

19. Dermato pathology 1 Hr

a. Skin tumors: Squamos cell carcinoma, Basal cell carcinoma, Melanoma

Text Books:

1. Text book of Pathology -by Harsh Mohan
2. Pathologic basis of disease by Cotran, Kumar, Robbins
3. A Hand book of medical laboratory technology – V. H. Talib
4. General Pathology – by Bhende

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT404	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	2		1		3				
CO2	3	1			3				
CO3	1		1		2				
CO4	2				3				
CO5	2				2				
CO6	2		1		2				

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT405: MEDICAL/ PHYSIOTHERAPY LAW AND ETHICS

Programme name	**BPT**
Programme Code	**M101**
Course name	**Medical/Physiotherapy Law and Ethics**
Course code	**BPT-405**
SEMESTER	**4th Semester (19-24 Months)**
L-T-P	**1-0-0**

L-Lecture, T-Tutorial, P-Practical

Code NO	COURSE OUTCOME
405.1	Able to describe basic principles of medical ethics.
405.2	Knowledge of medico legal aspects.
405.3	Able to Describe & discuss code of ethics for Physiotherapists.
405.4	Describe and discuss biomedical ethics principles.

Course Content-

1. Medical ethics versus medical law - Definition - Goal - Scope **1Hr**
2. Introduction to Code of conduct 1**Hr**
3. Basic principles of medical ethics – Confidentiality **1Hr**
4. Malpractice and negligence - Rational and irrational drug therapy **1Hr**
5. Autonomy and informed consent - Right of patients **1Hr**
6. Care of the terminally ill- Euthanasia **1Hr**
7. Organ transplantation **1Hr**
8. Medical diagnosis versus physiotherapy diagnosis. **1Hr**
9. Medico legal aspects of medical records–Medico legal case and type-Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects. 1**Hr**
10. Professional Indemnity insurance policy 1**Hr**
11. Development of standardized protocol to avoid near miss or sentinel events **1Hr**
12. Obtaining an informed consent. **1Hr**
13. Biomedical ethical principles **1Hr**
14. Code of ethics for physiotherapists **1Hr**
15. Ethics documents for physiotherapists **1Hr**
16. Laws affecting physiotherapy practice **1Hr**

Mapping-

Course outcome Code	**Programme Outcome**								
BPT-405	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	2			3	1		1		1
CO2	2		1	1	1				1
CO3	1	3	1	3	1		1		
CO4	2	2	1	3	1		1		1

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT406P: EXERCISE THERAPY II -PRACTICAL

PRACTICAL: **64hrs**

The students of exercise therapy are to be trained in Practical Laboratory work for all the topics discussed in theory. The student must be able to evaluate and apply judiciously the different methods of exercise therapy techniques on the patients. They must be able to

1. Demonstrate the technique of measuring using goniometry
2. Demonstrate muscle strength using the principles and technique of MMT
3. Demonstrate the techniques for muscle strengthening based on MMT grading
4. Demonstrate the PNF techniques
5. Demonstrate exercises for training co-ordination – Frenkel's exercise
6. Demonstrate the techniques of massage manipulations
7. Demonstrate techniques for functional re-education
8. Assess and train for using walking aids
9. Demonstrate mobilization of individual joint regions
10. Demonstrate to use the technique of suspension therapy for mobilizing and strengthening joints and muscles
11. Demonstrate the techniques for muscle stretching
12. Assess and evaluate posture and gait
13. Demonstrate techniques of strengthening muscles using resisted exercises
14. Demonstrate techniques for measuring limb length and body circumference.

BPT407P: ELECTRO THERAPY II –PRACTICAL

PRACTICAL **64 Hrs**

1. 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.

2. Demonstrate the technique for patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy.

3. Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.

4. Demonstrate placement of electrodes for various electrotherapy modalities

5. Electrical stimulation for the muscles supplied by the peripheral nerves

6. Faradism under Pressure for UL and LL

7. Plotting of SD curve with chronaxie and rheobase

8. Application of Ultrasound for different regions-various methods of application

9. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy

10. Demonstrate the technique of UVR exposure for various conditions – calculation of test dose

11. Calculation of dosage and technique of application of LASER

12. Technique of treatment and application of Hydrocollator packs, cryotherapy, contrast bath, wax therapy

13. Demonstrate the treatment method using whirl pool bath

14. Winding up procedure after any electrotherapy treatment method.

Equipment care -

1. Checking of equipments
2. Arrangement of exercise therapy and electro therapy equipment.
3. Calibration of equipment
4. Purchase, billing, document of equipment.
5. Safety handling of equipments.
6. Research lab equipment maintenance.

BPT408P: BIOMECHANICS & KINESIOLOGY II -PRACTICAL

PRACTICAL **64 Hrs**

- 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.

5th SEMESTER

BPT 501: CLINICAL ORTHOPEDICS & TRAUMATOLOGY

Programme name	**BPT**
Programme Code	**M101**
Course name	**Clinical Orthopaedics and Traumatology**
Course code	**BPT-501**
SEMESTER	**5th Semester (25-30 Months)**
L-T-P	**3-1-2**

L-Lecture, T-Tutorial, P-Practical

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

Code NO	COURSE OUTCOME
501.1	Able to discuss the Patho-Physiology, clinical manifestations & conservative/Surgical management of various traumatic and musculoskeletal Conditions.
501.2	Attains skill of clinical examination & interpretation of the preoperative and postoperative cases.
501.3	Able to read & interpret salient features of the X-ray of the spine & Extremities pertaining to orthopedic conditions.
501.4	Able to interpret pathological/ biochemical studies pertaining to Orthopaedic Conditions.
501.5	Able to correlate the radiological findings with the clinical findings.

Course Content-

1. Introduction **2Hrs**

a. Introduction to orthopaedics.

b. Clinical examination in an orthopaedic patient.

c. Common investigative procedures.

d. Radiological and Imaging techniques in Orthopaedics.

e. Inflammation and repair, Soft tissue healing.

2. Traumatology **3Hrs**

a. Fracture: definition, types, signs and symptoms.

b. Fracture healing.

c. Complications of fractures.

d. Conservative and surgical approaches.

e. Principles of management – reduction (open/closed, immobilization etc.).

f. Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative).

3. Fractures and Dislocations of Upper Limb 8 Hrs

a. **Fractures of Upper Limb -** causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:

i. Fractures of clavicle and scapula.

ii. Fractures of greater tuberosity and neck of humerus.

iii. Fracture shaft of humerus.

iv. Supra condylar fracture of humerus.

v. Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles.

vi. Side swipe injury of elbow.

vii. Both bone fractures of ulna and radius.

viii. Fracture of forearm – monteggia, galaezzi fracture –dislocation.

ix. Chauffer's fracture.

x. Colle's fracture.

xi. Smith's fracture.

xii. Scaphoid fracture.

xiii. Fracture of the metacarpals.

xiv. Bennett's fracture.

xv. Fracture of the phalanges. (Proximal and middle.)

b. **Dislocations of Upper Limb – 6Hrs**

i. Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates maneuver), surgical management (putti plat, bankart's) etc.

ii. Recurrent dislocation of shoulder.

iii. Posterior dislocation of shoulder–mechanism of injury, clinical features and management.

iv. Posterior dislocation of elbow – mechanism of injury, clinical feature, complications & management.

4. Fracture of Spine 3Hrs

a. Fracture of Cervical Spine - Mechanism of injury, clinical feature, complications (quadriplegia); Management- immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia).

i. Clay shoveller's fracture.

ii. Hangman's fracture.

iii. Fracture odontoid.

iv. Fracture of atlas.

b. Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, and management— conservative and surgical of common fractures around thoracic and lumbar regions.

c. Fracture of coccyx.

d. Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.

5. Fractures and Dislocations of Lower Limb 4Hrs

a. **Fracture of Pelvis and Lower Limb**-causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:

i. Fracture of pelvis.

ii. Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical.

iii. Fractures of trochanters.

iv. Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical.

v. Supracondylar fracture of femur.

vi. Fractures of the condyles of femur.

vii. Fracture patella.

viii. Fractures of tibial condyles.

ix. Both bones fracture of tibia and fibula.

x. Dupuytren's fracture

xi. Maisonneuve's fracture.

xii. Pott's fracture – mechanism of injury, management.

xiii. Bimalleolar fracture

xiv. Trimalleolar fracture

xv. Fracture calcaneum – mechanism of injury, complications and management.

xvi. Fracture of talus.

xvii. Fracture of metatarsals—stress fractures jone's fracture.

xviii. Fracture of phalanges.

b. **Dislocations of Lower Limb**- mechanism of injury, clinical features, complications, management of the following dislocations of lower limb.

i. Anterior dislocation of hip.

ii. Posterior dislocation of hip.

iii. Central dislocation of hip.

iv. Dislocation of patella.

v. Recurrent dislocation of patella.

6. Soft Tissue Injuries - Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. **6Hrs**

c. Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries:

i. Meniscal injuries of knee.

ii. Cruciate injuries of knee.

iii. Medial and lateral collateral injuries of knee.

iv. Lateral ligament of ankle.

v. Wrist sprains.

vi. Strains- quadriceps, hamstrings, calf, biceps, triceps etc.

vii. Contusions- quadriceps, gluteal, calf, deltoid etc.

viii. Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc.

7. Hand Injuries – **4Hrs**

Mechanism of injury, clinical features, and management of the following –

a. Crush injuries.

b. Flexor and extensor injuries.

c. Burn injuries of hand.

8. Amputations - Definition, levels of amputation of both lower and upper limbs, indications, complications. **3Hrs**

9. Traumatic Spinal Cord Injuries - Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia. **3Hrs**

10. Deformities - clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities. **3Hrs**

a. Congenital Deformities –

i. CTEV .

ii. CDH.

iii. Torticollis.

iv. Scoliosis.

v. Flat foot.

vi. Vertical talus.

vii. Hand anomalies- syndactyly, polydactyly and ectrodactly. Arthrogryposis multiplex congenita (amyoplasia congenita).

viii. Limb deficiencies- Amelia and Phocomelia. Klippel feil syndrome. Osteogenesis imperfecta(fragile ossium).

ix. Cervical rib.

b. Acquired Deformities – **3Hrs**

i. Acquired Torticollis. Scoliosis.
Kyphosis.
Lordosis.

ii. Genu varum. Genu valgum. Genu recurvatum Coxa vara.

iii. Pes cavus.

iv. Hallux rigidus.

v. Hallux valgus.

vi. Hammer toe.

vii. Metatarsalgia.

11. Disease of Bones and Joints: Causes, Clinical features, Complications, Management- medical and surgical of the following conditions: **2Hrs**

a. Infective conditions: Osteomyelitis(Acute/chronic). Brodie's abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc.

b. Arthritic conditions: Pyogenic arthritis. Septic arthritis. Syphilytic infection of joints.

c. Bone Tumors: classification, clinical features, management-medical and surgical of the following tumors: Osteoma. Osteosarcoma, Osteochondroma. Enchondroma. Ewing's sarcoma. Gaint cell tumor. Multiple myeloma. Metastatic tumors.

d. Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis.

e. Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia. Osteoporosis.

12. Inflammatory and Degenerative Conditions: causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions: **2Hrs**

a. Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis Gouty arthritis. Psoriatic arthritis. Hemophilic arthritis. Still's disease (juvenile rheumatoid arthritis). Charcot's joints.

b. Connective Tissue Disorders- Systemic Lupus Erythematosis, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)

13. Syndromes: Causes, Clinical features, complications, management- conservative and surgical of the following: **2Hrs**

a. Cervico brachial syndrome. Thoracic outlet syndrome. Vertebro- basilar syndrome. Scalenus syndrome. Costo clavicular syndrome. Levator scapulae syndrome. Piriformis syndrome.

14. Neuromuscular Disorders: Definition, causes, clinical feature, complications, management. (Multidisciplinary approach) medical and surgical of the following conditions: **2Hrs**

a. Cerebral palsy.

b. Poliomyelitis.

c. Spinal Dysraphism.

d. Leprosy.

15. Cervical and Lumbar Pathology: Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following: **2Hrs**

a. Prolapsed interverbral disc (PID),

b. Spinal Canal Stenosis.

c. Spondylosis (cervical and lumbar)

d. Spondylolysis.

e. Spondylolisthesis.

f. Lumbago/ Lumbosacral strain.

g. Sacralisation.

h. Lumbarisation.

i. Coccydynia.

j. Hemivertebra.

16. Orthopedic Surgeries: Indications, Classification, Types, Principles of management of the following Surgeries: **2Hrs**

a. Arthrodesis.

b. Arthroplasty (partial and total replacement).

c. Osteotomy,

d. External fixators.

e. Spinal stabilization surgeries (Harrington's, Luque's, Steffi plating) etc ,

f. Limb re attachments.

17. Regional Conditions: Definition, Clinical features and management of the following regional conditions **2Hrs**

a. **Shoulder:** Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Supraspinatus Tendinitis. Infraspinatus Tendinitis. Bicipital Tendinitis. Subacromial Bursitis.

b. **Elbow:** Tennis Elbow. Golfer'sElbow. 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).

18. Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma**.** **2Hrs**

Text Books:

1. Apley`s textbook of Orthopaedics
2. Outline of Fractures - John Crawford Adams.
3. Outline of Orthopedics.— John Crawford Adams.
4. Text book of Orthopedics.—Maheswari.
5. Textbook of Orthopedics and Traumatology— M.N.Natarajan Apley`s textbook of Orthopaedics
6. Outline of Fractures - John Crawford Adams.

Mapping-

Course Outcome Code	**Programme outcome**								
BPT501	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3	2	2		3				
CO2	3	2		2	3				3
CO3	3				3				
CO4	3				3				
CO5	3				3				3

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 502: CLINICAL NEUROLOGY & NEUROSURGERY

L-Lecture, T-Tutorial, P-Practical

Programme name	**BPT**
Programme Code	**M101**
Course name	**Clinical Neurology and Neurosurgery**
Course code	**BPT-502**
SEMESTER	**5th Semester (25-30 Months)**
L-T-P	**3-1-2**

Code No.	COURSE OUTCOME
502.1	Demonstrate the clinical application of basic knowledge of nervous system.
502.2	Define the etiology, Classification, Pathology, Clinical Features, Relevant Investigations, Complications, Surgical & Non-Surgical Management of various Neurological Conditions.
502.3	Identify, analyse and apply the Neuro anatomical basis of brain for various clinical neurological and Psychiatric conditions.
502.4	Analysis and evaluate the causes, signs, symptoms of cerebro vascular accidents, head and spinal cord injury.
502.5	Acquires kill of clinical examination of a neurological conditions.

Course Content-

1. Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping. **2 hrs**
2. Classification of neurological involvement depending on level of lesion. **2 hrs**
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. **2 hrs**
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. **4 hrs**
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. **4 hrs**
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. **4 hrs**
7. **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, hemi facial spasm, Glossopharangial 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. **2 hrs**

8. **Cerebro-vascular diseases:** Define stroke, TIA, RIA, stroke in evolution, multiinfarct 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. **2 hrs**
9. **Head injury:** Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications. **4 Hrs**
10. **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, Seizers, 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, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Perceptual disorders and Speech disorders. **4 hrs**
11. **Movement disorders:** Definition, etiology, risk factors, pathophysilogy, 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. **2 hrs**
12. **Cerebellar and coordination disorders:** Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich's ataxia, Ataxia talengiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis. **4 hrs**
13. **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. **2 hrs**
14. **Brain tumors and spinal tumors:** Classification, clinical features, investigations, medical and surgical management. **4 hrs**
15. **Infections of brain and spinal cord:** Etiology, pathophysilogy, 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. **2 hrs**

16. **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. **2 hrs**

17. **Multiple sclerosis** - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications**. 2 hrs**
18. **Disorders of neuromuscular junction** – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism. **2 hrs**
19. **Muscle diseases:** Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy, Non-dystrophic myotonia. **2 hrs**
20. **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. **2 hrs**
21. **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, Pudental nerve palsy. **4 hrs**
22. **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, Achondroplacia, Cerebral malformations, Autism, Dandy walker syndrome and Down's syndrome. **2 hrs**
23. **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. **2 hrs**

24. Introduction, Indications and Complications of following Neuro surgeries: 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. **2 hrs**

Text Books:

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

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT502	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3				
CO2	3				2				
CO3	2				3				3
CO4	3	2	2	2	3				3
CO5	3	3		3	3				3

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 503: GENERAL MEDICINE INCLUDING PAEDIATRICS AND PSYCHIATRY

Programme name	**BPT**
Programme Code	**M101**
Course name	**General Medicine Including Pediatrics and Psychiatry**
Course code	**BPT-503**
SEMESTER	**5th Semester (25-30 Months)**
L-T-P	**3-1-0**

L-Lecture, T-Tutorial, P-Practical

Code NO	COURSE OUTCOME
503.1	Be able to describe etiology, pathophysiology, signs and symptoms and management of the various endocrine, metabolic, geriatric and nutrition deficiency conditions.
503.2	Relate the knowledge in medicine required to be practiced in community and at all levels of health care system.
503.3	Be able to describe Etiology, Pathophysiology, Signs & Symptoms, Clinical Evaluation & Management of the various Rheumatological Cardiovascular and Respiratory skin and paediatric conditions.
503.4	Judge the relevant investigations which will help to know about the important medical conditions.
503.5	Be able to describe the Principles of Management at the Medical Intensive Care Unit.

Course Content-

1. **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. **8Hrs**
2. **Poisoning:** Clinical features – general management – common agents in poisoning – pharmaceutical agents – drugs of misuse – chemical pesticides – Envenomation. **6Hrs**
3. **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. **8Hrs**
4. **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. **8Hrs**
5. **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. **6Hrs**

6. **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, Alpha1-antitrypsin deficiency, Tumors of the Liver, Gall stones, Cholycystitis. **8Hrs**

7. **Diseases of the Skin:** Examination and clinical manifestations of skin diseases; Causes, clinical features and management of the following skin conditions: Leprosy, Psoriasis, Pigmentary Anomalies, Vasomotor disorders, Dermatitis, Coccal and Fungal Parasitic and Viral infections. **8Hrs**

8. **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 behavioural problems – Hyperactivity, Autism, Challenging behaviours, Educational delay, The Clumsy Child. **8Hrs**

9.Clinical Obstetrics : 2hrs

Antenatal education, Post natal education. NVD and LSCS, Breast feeding techniques.

10. Clinical Gynaecology: **2hrs**

Pelvic surgeries, Mastectomy, Pelvic Floor Dysfunction- Urinary incontinence, Anorectal Dysfunction, Pelvic organ Prolapse, Sexual Dysfunction, Vaginal Weights and other instruments pertaining to the condition.

11. Psychiatric Disorders: 4hrs

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. Somatoform and Dissociate Disorders – conversion reactions, Somatization, Dissociate Amnesia, and Dissociate Fugue,

c. Personality disorders

d. Child psychiatry - manifestations, and management of childhood disorders -attention deficit syndrome and behavioral disorders.

e. Geriatric psychiatry.

Text Books:

1. API - Text book of Medicine – 5^{th} edition
2. Golwalla – Medicine for students
3. Principles & Practice of Medicine – 16^{th}edn - by Davidson
4. Clinical Medicine :- P. J. Mehta

Mapping-

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

Course Outcome Code	**Programme Outcome**								
BPT-503	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3				
CO2	3	1	2	2	3		2		3
CO3	3			3	3				
CO4	3				3				3
CO5	3		3	2	3				

BPT 504: COMMUNITY MEDICINE

Programme name	**BPT**
Programme Code	**M101**
Course name	**Community Medicine**
Course code	**BPT-504**
SEMESTER	**5th Semester (25-30 Months)**
L-T-P	**2-1-0**

L-Lecture, T-Tutorial, P-Practical

Course Content-

Code .NO	COURSE OUTCOME
504.1	Able to describe the role of community and team approach in rehabilitation of disability.
504.2	Able to understand and apply the concept and role of community-based rehabilitation team.
504.3	Application of various orthosis, prosthesis and other assistive devices for different physical and medical conditions.
504.4	Able to understand and apply principles of social, vocational and occupational rehabilitation in persons with disabilities.
504.5	Recognize and illustrate the ethical issues in community based rehabilitation.

1. Health and Disease:
3Hrs

Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine, The role of socio-economic and cultural environment in health and disease.

2. Epidemiology, definition and scope. **4Hrs**

Principles of Epidemiology and Epidemiological methods:
Components and Aims, Basic measurements, Methods, Uses of Epidemiology, Infectious disease epidemiology, Dynamics and modes of disease transmission, Host defenses and Immunizing agents, Hazards of Immunization, Disease prevention and control, Disinfection. Screening for Disease: Concept of screening, Aims and Objectives, Uses and types of screening.

3. Epidemiology of communicable disease: 4 Hrs

Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonoses, Surface infections, Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, obesity, Blindness, Accidents and Injuries.

4. Public health administration- 4Hrs

An overview of the health administration set up at Central and state levels. The national health programme-highlighting the role of social, economic and cultural factors in the implementation of the national programmes. Health problems of vulnerable groups- pregnant and lactating women, infants and pre-school children, occupational groups.

5. Health programmes in India: 4Hrs

Vector borne disease control programme, National leprosy eradication programme, National tuberculosis programme, National AIDS control programme, National programme for control of blindness, Iodine deficiency disorders (IDD) programme, Universal Immunisation programme, Reproductive and child health programme, National cancer control programme, National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme, Minimum needs programme.

6. Demography and Family Planning: 3 Hrs

Demographic cycle, Fertility, Family planning-objectives of national family planning programme and family planning methods, A general idea of advantage and disadvantages of the methods.

7. Preventive Medicine in Obstetrics, Paediatrics and Geriatrics: 3Hrs

MCH problems, Antenatal, Intranatal and post-natal care, Care of children, Child health problems, Rights of child and National policy for children, MCH services and indicators of MCH care, Social welfare programmes for women and children, Preventive medicine and geriatrics.

8. Nutrition and Health: 4Hrs

Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programmes.

9. Environment and Health: 3Hrs

Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology.

10. Hospital waste management: 4Hrs

Sources of hospital waste, Health hazards, Waste management.

11. Disaster Management: **3Hrs**

Natural and man-made disasters, Disaster impact and response, Relief phase, Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness.

12. Occupational Health: **3Hrs**

Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts.

13. Mental Health: **3Hrs**

Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health. Role of Physiotherapist in mental health problems such as mental retardation.

14. Health Education: **3Hrs**

Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education.

Text Books:

1. K. Park – Park ’s Textbook of Preventive & Social Medicine

2. P. K. Mahajan & M. C. Gupta – Textbook of Preventive & Social Medicine

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT-504	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3				
CO2	3	3	3		3		3		
CO3	3	2		3	3		3		3
CO4	3	2	3		3	3			3
CO5	2			3	3	2			

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 505: PROFESSIONALISM AND VALUES

Programme name	**BPT**
Programme Code	**M101**
Course name	**Professionalism and values**
Course code	**BPT-505**
SEMESTER	**5th Semester (25-30 Months)**
L-T-P	**1-0-0**

L-Lecture, T-Tutorial, P-Practical

Code.NO	COURSE OUTCOME
505.1	Know professional and personal values
505.2	Understands and able to describe role of physiotherapists.
505.3	Able to describe role of Physiotherapist as a consultant, critical inquirer, administrator and educator.

Course Content-

Theory **8 hrs**

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 health care practitioner, direct access, autonomy in profession, practitioner of practice and evidence based practice.

The five roles of the Physiotherapist - **8hrs**

1. The Physiotherapist as Patient/Client manager

a. Evaluation and diagnosis
b. Diagnosis as clinical decision making
c. Prognosis
d. Discharge planning and discontinuance of care
e. Discontinuance of care
f. Outcomes
g. Clinical decision making
h. Referral relationships
i. Interpersonal relationships
j. Ethical and legal issues
k. Informed consent

l. Managed care and fidelity.
2. The Physiotherapist as Consultant

a. Physiotherapy consultation
b. Building a consulting business
c. The consulting process
d. The skills of a good consultant
e. Trust in the consultant/client relationship
f. Ethical and legal issues in consultation
g. Components of a consulting agreement.

3. The Physiotherapist as Critical Inquirer

a. History of critical inquiry
b. Evidence-based practice
c. Outcomes research
d. Whose responsibility is research?
e. Roles of the staff physiotherapist in critical inquiry
f. Collaboration in clinical research
g. Ethical and legal issues in critical inquiry.

4. The Physiotherapist as Administrator

a. History of physiotherapy administration
b. Contemporary physiotherapy administration
c. Patient/client management
d. First-line management
e. Midlevel managers and chief executive officers
f. Leadership
g. Ethical and legal issues.

5**. The Physiotherapist as Educator**

a. History of physiotherapy education
b. Contemporary educational roles of the physiotherapist
c. Teaching opportunities in continuing education d.Academic teaching opportunities
e. Theories of teaching and learning in professional education.
f. Ethical and legal issues in physiotherapy education.

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT505	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	1			3	1		1		
CO2	1	3	2			3			
CO3	1	3	3	1	2	2	2		

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT-506P: CLINICAL ORTHOPAEDICS & TRAUMATOLOGY PRACTICAL

The syllabus for practical examination shall be relevant portion of the theory. **64hrs**

BPT-507P: CLINICAL NEUROLOGY & NEUROSURGERY PRACTICAL

The Syllabus for Practical examination shall be relevant portion of the theory. **64 hrs**

6TH SEMESTER

BPT 601: PHYSIOTHERAPY IN ORTHOPEDICS & TRAUMATOLOGY-I

L-Lecture, T-Tutorial, P-Practical

Programme name	**BPT**
Programme Code	**M101**
Course name	**Physiotherapy in Orthopaedics and Traumatology-I**
Course code	**BPT-601**
SEMESTER	**6th Semester (31-36 Months)**
L-T-P	**3-1-2**

Code .No.	COURSE OUTCOME
601.1	Recollect the knowledge gained in clinical orthopedics and apply the skills gained in clinical situation of dysfunction and musculoskeletal pathologies.
601.2	To describe general PT assessment and classification of fractures ,causes and types ,signs and symptoms ,complications of fracture and principles of fracture management.
601.3	To discuss about specific fractures and their complete PT assessment and management. Demonstrate clinical decision making ability and able to treat different musculoskeletal conditions.
601.4	To explain degenerative and infective conditions.
601.5	Describe various postural abnormalities with their PT assessment and management. Select the relevant investigation techniques which will help to diagnose various orthopaedic conditions.

Course Content-

1. **PT assessment for Orthopedic conditions -** SOAP format. Subjective - history taking, informed consent, personal, past, medical and socioeconomic 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 follows up.

14 hrs

B. **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 mal union, 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. **16 hrs**

2. **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. 12 **hrs**

3. **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, Periarthritic shoulder.
1**2hrs**

4. **Infective conditions:** Definition, signs and symptoms, clinical features, 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. **10 hrs**

5. Define; review the postural abnormalities of spinal column, clinical features, deformities, medical and surgical management. Describe PT assessment and management and home program. **2 hrs**

Text Books:

1. Orthopedic Physical therapy – by Donatelli.
2. Manual mobilization of extremity joints – by Freddy Kaltenborn, Maitland.
3. Neural tissue mobilization – Butler
4. Textbook of Orthopaedic Medicine – By James Cyriax.
5. Outline of orthopedics – Adams Hamblen
6. Taping Techniques – by Rose Mac Donald.
7. Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz

Mapping-

Course outcome Code	**Programme Outcome**								
BPT-601	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3			2	3
CO2	2				3			1	2
CO3	3			2	2			2	3
CO4	2	2	2		2			3	3
CO5	3	3		3	3	3	1	3	3

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 602: PHYSIOTHERAPY IN NEUROLOGY & NEUROSURGERY-I

Programme name	**BPT**
Programme Code	**M101**
Course name	**Physiotherapy In Neurology and Neurosurgery-I**
Course code	**BPT-602**
SEMESTER	**6th Semester (31-36 Months)**
L-T-P	**3-1-2**

L-Lecture, T-Tutorial, P-Practical

CODE. NO	COURSE OUTCOME
602.1	Recollect the knowledge gained in clinical neurology and apply the skills gained in clinical situation of dysfunction and neurological pathologies.
602.2	Select the relevant investigation and assessment techniques which will help to diagnose various neurological conditions.
602.3	Explain cranial nerve examination with Assessment and PT management of disorders of various cranial nerves.
602.4	Describe about various techniques used in assessment and treatment of various nervous tissue disorders. Demonstrate clinical decision making ability and able to treat different neurological conditions.
602.5	Able to asses neurological dysfunctions, set treatment goals and apply their skills gained in physiotherapy rehabilitation to restore neurological functions in clinical situations.

1. Brief discussion of the nervous system including structures and functions of CNS, peripheral nerves and ANS **10 hrs**

2. **Neurological Assessment:** Required materials for examination, Chief complaints, History taking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function – Consciousness, Motor system Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes –reflex testing , deep tendon reflexes, Superficial reflexes, Sensory examination – Superficial, Deep and Cortical sensations, , Coordination examination Understanding sensory system & Organization of sensory strategies for efficient motor output,various modalities used for the examination of sensory system**16 hrs**

3. **Cranial nerve examination:** olfactory, optic, occulomotor, trochlear, trigeminal, abducens, facial, vestibulocochlear, glosopharyngeal, vagus,spinal accessory and hypoglossall with their examination, disorder and physiotherapy management. **10 hrs**

4. **Neuro physiological Techniques –** Concepts, Principles, Techniques, Effects of following Neuro physiological techniques: NDT, PNF, , Rood's Sensory motor Approach, Brunnstorm movement therapy, Motor relearning program, **16 hrs**

5. Application of skills of Co-ordination & Balancing exercises by using techniques based on Neuro-physiological principles. **12 hrs**

Text Books:

1. Cash's Text book for Physio Therapists in Neurological disorders --Jaypee brothers Publication
2. Practical Physical therapy by Margaret Hollis
3. Therapeutic Exercise by Carolyn Kisner & Colby
4. Physical Rehabilitation by Susan. B.O` Sullivan
5. Tidy's Physiotherapy by Stuart Porter
6. Neurological Rehabilitation by Darcy Umphred
7. "Right in the middle of stroke" by Patricia Davis

Mapping-

Course outcome Code	**Programme Outcome**								
BPT-602	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3			2	3
CO2	2				3			1	2
CO3	3			2	2			2	3
CO4	2	2	2		2			3	3
CO5	3	3		3	3	3	1	3	3

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT603: PHYSIOTHERAPY IN GENERAL MEDICINE & GENERAL SURGERY INCLUDING BURNS AND PLASTIC SURGERY.

Programme name	**BPT**
Programme Code	**M101**
Course name	**Physiotherapy in General Medicine and General Surgery including Burns and Plastic Surgery**
Course code	**BPT-603**
Semester	**6th Semester (31-36 Months)**
L-T-P	**1-1-0**

Code. NO.	**COURSE OUTCOME**
603.1	Recollect the knowledge gained in clinical medicine and apply the skills in clinical situation of common medical disorders like inflammation, obesity, diabetes, etc.
603.2	Elaborate broad outline of goals of pharmacological and surgical therapy imparted in those disease in which physical therapy will be an important component.
603.3	To describe about general surgery with their PT treatment and post operative complication in of Burns and skin grafting and to understand the limitations imposed by the disease on any therapy.
603.4	To describe about general surgical procedures for skin grafting and to understand the limitations imposed by the disease on any therapy.
603.5	Identify the realistic goals based on knowledge of prognosis of diseases and provide safe evidence based physiotherapy rehabilitation in various ENT conditions

L-Lecture, T-Tutorial, P-Practical

Course Content-

THEORY

1. Review of pathological and principles of management by physiotherapy in the following conditions:
   Inflammation-Acute ,chronic and suppurative, oedema, Artherosclerosis, Aneurysms, tumors , Lymphodema, Tetanus Arthritis and allied conditions:Osteoarthritis-Generalized ,degenerative and traumatic, Spondylosis and disorders, rheumatoid arthritis, Spondylitis,Ankylosing Spondylitis Deficiency diseases : Rickets, Diabetes,Obesity,Osteoporosis and other deficiency disorders related to Physiotherapy.
   6 hrs
2. **Gen Surgry: Wounds, Ulcers, Carbuncles:Common abdominal incisions and common surgeries** Operations on large and small intestine – Appendisectomy, cholecystectomy, partial colectomy, ileostomy, hernia and herniotomy, hernioraphy, hernioplasty Operations

on upper G.I.T.- oesophagus, stomach, duodenum. Physiotherapy in pre and post operative stages.. Complication common to all operations **6 hrs**

3. **Burns and its treatment –** physiotherapy in burns, skin grafts, and reconstructive surgeries. Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars-U.V.R and other electro therapeutics for healing of wounds, prevention of Hyper-granulated Scars Keloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues. **6 hrs**

4. **Physiotherapy in dermatology** -Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhydrosis. Massage maneuvers for cosmetic purpose 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. Skin grafting and flaps ,liposuction, mammoplasty, rhinoplasty **6 hrs**

5. **ENT –** sinusitis, non-suppurative and chronic suppurative otitis media Rhinitis, Sinusitis,Vertigo, Tinsilitis Palatal surgeries, mastoidectomy, laryngectomy, pharyngeo – laryngectomy, facial palsy. **4 hrs**

Text Books:

1. Cash`s Text book for Physiotherapists in Chest, Heart & Vascular diseases- Jaypee bros. Publication
2. Cash`s text book in General Medical & Surgical conditions for Physio therapists
3. Chest Physical therapy & Pulmonary rehabilitation-by Donna Frownfilter
4. Brompton`s hospital guide
5. Physical Rehabilitation - O'sullivan

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT-603	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3			2	2
CO2	2	1	2		2			1	2
CO3	3	2	2	2	3		2	2	2
CO4	3	3		3	3	2	3		3
CO5	3			3	3			3	3

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT604: PT IN PEDIATRICS AND OBSTETRICS AND GYNAECOLOGY

L-Lecture, T-Tutorial, P-Practical

Programme name	**BPT**
Programme Code	**M101**
Course name	**PT in Pediatrics and Obstetrics and Gynaecology**
Course code	**BPT-604**
SEMESTER	**6th Semester (31-36 Months)**
L-T-P-	**2-1-1**

Course Content-

S.NO	COURSE OUTCOME
604.1	Acquire the knowledge of normal neurodevelopment with specific reference to locomotion ,Milestones and reflexes with assesement and physiotherapy management of various pediatric conditions
604.2	Demonstrate clinical decision making ability and able to treat different pediatric conditions
604.3	Relate the knowledge in medicine required to be practiced in community and at all levels of health care system.
604.4	Diagnose conditions from history taking clinical evaluation and investigations in antenatal and post natal cases.
604.5	Be able to describe thePrinciplesofManagement of variuos gynaecological problems

1. **Paediatric Neurology:** Paediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental 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. **6 HRS**

2. **Physiotherapy in mother and child care** – ante and post-natal management, early intervention and stimulation therapy in child care (movement therapy) **6 HRS**

3. **Pediatrics :** Problems and PT management of LBW infants,Neonatal ICU, Paediatric ICU, Complications of low birth Weight ,Perinatal problems and management, Congenital abnormalities and its Physiotherapy management, Physiotherapy management of Respiratory conditions of childhood, Orthopedic and Neuromuscular disorders in childhood;Sensory disorders – problems resulting from loss of vision and hearing ; Learning and behavioural problems – Hyperactivity, Autism, Challenging behaviours, Educational delay, The Clumsy Child. Role of Orthotics in pediatric conditions **6 HRS**

4. **Physiotherapy in Obstetrics** :Antenatal Assessment, Antenatal education and exercises for normalpregnancy and special conditions, Post natal assessment &PhysiotherapyManagement

For NVD and LSCS, Breast feeding techniques, complications and its physiotherapy management. **8 HRS**

5. **Physiotherapy in Gynaecology**: Pre Operative and post Operative assessments andPhysiotherapy Management of Pelvic surgeries, Pre Operative and post Operative assessments and, Physiotherapy Management following Mastectomy, Assessment for Pelvic Floor Dysfunction- Urinaryincontinence, Anorectal Dysfunction, Pelvic organ Prolapse, Sexual Dysfunction and Physiotherapy Management includes pelvic floor exercise prescriptions, Vaginal Weights and other instruments pertaining to the condition.Applied Yoga in Obstetric and Gynecological conditions **6 HRS**

6. **Clinicals Evaluation & presentation :**

Uro-genital dysfunction, Antenatal care, Postnatal care, Following normal labour, Following Caesarean section, Pelvic Inflammatory Diseases, Pediatric case study. **32 HRS**

Text Books:

1. Pediatric in physical therapy-Stephen Tecklin
2. Physical Therapy for children-campbell
3. Nelsons textbook of pediatrics
4. Handbook of pediatric physical therapy-Toby M Long
5. Text book of Gynecology – Datta – New Central Book Agency
6. Text book for women‘s health- saposford
7. Physiotherapy in obstetrics and gynecology- Jill mantle

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT-604	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3				
CO2	2	1	2	2	1		2		3
CO3	3			3	3				
CO4	3				3				3
CO5	1		3	2	2				

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 605: DIAGNOSTIC IMAGING FOR PHYSIOTHERAPISTS

Programme name	**BPT**
Programme Code	**M101**
Course name	**Diagnostic Imaging for Physiotherapists**
Course code	**BPT-605**
Semester	**06th Semester (31-36 Months)**
L-T-P	**1-0-1**

L-Lecture, T-Tutorial, P-Practical

Course Content-

S.NO	COURSE OUTCOME
605.1	Able to describe the principles of various imaging modalities
605.2	Acquires skill for Interpretationof various diagnostic imaging in context with physiotherapy treatment
605.3	Able to evaluate and describe physiotherapy management based on diagnostic imaging
605.4	To be able to differentiate diagnostic imaging finding and correlate it normal anatomy.
605.5	Able to interpret various diagnostic imaging used in primary care of ICU patients.

1.IMAGE INTERPRETATION **6Hrs**

a. History
b. A new kind of Ray
c. How a medical image helps
d. What image studies reveal
e. Radiography (x-rays)
f. Fluoroscopy
g. Computed Tomography (CT)
h. Magnetic Resonance Imaging (MRI)
i. Ultrasound
j. Endoscopy.

2.RADIOGRAPHY AND MAMMOGRAPHY **6Hrs**

a. Equipment components
b. Procedures for Radiography & Mammography
c. Benefits versus Risks and Costs
d. Indications and contraindications.

3. FLUOROSCOPY **6Hrs**

a. What is Fluoroscopy?
b. Equipment used for fluoroscopy
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in Fluoroscopy
f. Benefits versus Risks and Costs.

4. COMPUTED TOMOGRAPHY (CT) **6Hrs**

a. What is Computed Tomography?
b. Equipment used for Computed Tomography
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in Computed Tomography
f. Benefits versus Risks and Costs.

5. MAGNETIC RESONANCE IMAGING (MRI) **6Hrs**

a. What is MRI?

b. Equipment used for MRI
c. Indications and Contra indications

d. How it helps in diagnosis
e. The Findings in MRI
f. Benefits versus Risks and Costs

g. Functional MRI.

6. ULTRASOUND **6Hrs**

a. What is Ultrasound?

b. Equipment used for Ultrasound
c. Indications and Contra indications

d. How it helps in diagnosis
e. The Findings in Ultrasound
f. Benefits versus Risks and Costs.

7. ENDOSCOPY **6Hrs**

a. What is Endoscopy?

b. Equipment used for Endoscopy
c. Indications and Contra indications

d. How it helps in diagnosis
e. The Findings in Endoscopy
f. Benefits versus Risks and Costs.

8. NUCLEAR MEDICINE **6Hrs**

a. What is Nuclear Medicine?

b. Equipment used for Nuclear Medicine c. Indications and Contra indications

d. How it helps in diagnosis.
e. Benefits versus Risks and Costs.

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT-605	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	2				2				1
CO2	3		1		2				1
CO3	2	2			2				
CO4	2				3				1
CO5	3		2		2				1

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT-606P: PT IN ORTHOPAEDICS AND TRAUMATOLOGY-I PRACTICAL

PRACTICAL- **64HRS.**

Practical shall be conducted for all the relevant topics discuss in the theory in the following forms.

i. Bedside case presentations & case discussions.
ii. Labs session consisting of evaluation & Assessment methods on students models, treatment techniques & practice sessions.

BPT-607P: PT IN NEUROLOGY AND NEURO SURGERY-I PRACTICAL

PRACTICAL- **64HRS.**

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 consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

BPT-608P: PT IN PEDIATRICS AND OBSTETRICS AND GYNAECOLOGY PRACTICAL

PRACTICAL- **64HRS.**

PRACTICALS
CLINICALS
Evaluation & presentation of One case Each in:

i) Uro-genital dysfunction
ii) Antenatal care
iii) Postnatal care
iv) Following normal labor
v) Following Caesarean section
vi) Pelvic Inflammatory Diseases
vii) Pediatric case study.

Observation –One Normal & One Caesarean delivery & One Hysterectomy / Repair of the Uro-genital Prolaps

7th Semester

Programme name	**BPT**
Programme Code	**M101**
Course name	**Physiotherapy in Orthopedics and Traumatology-II**
Course code	**BPT-701**

Semester	**7th Semester (37-42 Months)**
L-T-P	**2-1-2**

BPT701: PHYSIOTHERAPY IN ORTHOPAEDICS AND TRAUMATOLOGY- II

L- Lecture, T-Tutorial, P-Practical

Course Content-

Code.NO.	COURSE OUTCOME
701.1	Be able to identify, discuss & analyze, the Musculoskeletal Dysfunction in terms of Biomechanical, Kinesiology & Biophysical basis & correlate the same with the provisional diagnosis, routine radiological & Electrophysiological investigations & arrive at appropriate Functional diagnosis with clinical reasoning.
701.2	Select the relevant investigation techniques which will help to diagnose various orthopaedic conditions.
701.3	Be able to plan & Prescribe as well as acquire the skill of executing short & long term Physiotherapy treatment by selecting appropriate modes of Mobilization / Manipulations, Electro-Therapy, Therapeutic exercise & appropriate Ergonomic advise for the relief of pain, restoration / Maintenance of function & rehabilitation for maximum functional independence in A.D.L. at home & work place.
701.4	Able to describe and discuss Pre and post-operative physiotherapy management for musculoskeletal disorders and major orthopaedic surgeries.
701.5	1.Acquire knowledge about biomechanical principles, of application of variety of aids & appliances used for ambulation, protection & prevention. 2. Acquire knowledge about various material used for splints / Orthosis & prosthesis--selection criteria.

1. **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. **4 hrs**

2. **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. **2 hrs**

3. **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. **4 hrs**

4. **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**.** **4 hrs**

5. Effects of spinal traction, types of traction, modes of application, indications for spinal traction, contraindications, precautions, limitations of traction. **2 hrs**

6. **Osteoporosis**- causes, predisposing factors, investigations and treatment. **2 hrs**

7. **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, Re-attachment of limbs, External fixators, Synovectomy. **4 hrs**

8. **Shoulder joint:** Shoulder instabilities, TOS, RSD, Impingement syndrome - conservative and post-operative PT management. Total shoulder replacement and Hemi replacement. - Post operative PT management. AC joint injuries - rehabilitation. Rotator cuff tears- conservative and surgical repair. Subacromial decompression - Post operative PT management. **4 hrs**

9. **Elbow and forearm:** Excision of radial head - Post operative PT management. Total elbow arthroplasty- Post operative PT management. **4 hrs**

10. **Wrist and Hand:** Total wrist arthroplasty. Repair of ruptured extensor tendons. Carpal tunnel syndrome. Flexor and extensor tendon lacerations - Post operative PT management. **4 hrs**

11. **Hip: Joint surgeries** - hemi and total hip replacement - Post operative PT management Tendonitis and bursitis. - Management. **4 hrs**

12. **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 **4 hrs**

13. **Ankle & foot:** Ankle instability. Ligamentous tears- Post operative management. **4 hrs**

14. **Introduction to Bio-Engineering;** Classification of Orthoses and prostheses; Biomechanical principles of orthotic and prosthetic application; Designing of upper extremity, lower extremity and spinal orthosis, indications and check out; Designing of upper extremity and lower extremity prostheses, indications and check out; Psychological aspects of orthotic and prosthetic application; prescription and designing of footwear and modifications; Designing and construction of adaptive devises. **4 hrs**

Text Books:

1. Orthopedic Physical therapy – by Donatelli.
2. Manual mobilization of extremity joints – by Freddy Kaltenborn, Maitland.
3. Neural tissue mobilization – Butler
4. Textbook of Orthopaedic Medicine – By James Cyriax.
5. Outline of orthopedics – Adams Hamblen
6. Taping Techniques – by Rose Mac Donald.
7. Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz
8. Amputation and prosthetics –Bella May
9. Orthotic in rehabilitation-Mckee/Morgan

Mapping-

Course outcome Code	**Programme Outcome**								
BPT-701	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3			2	3
CO2	2				3			1	2
CO3	3			2	2			2	3
CO4	2	2	2		2			3	3
CO5	3	3		3	3	3	1	3	3

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT702: PT IN NEUROLOGY AND NEUROSURGERY-II

L-Lecture, T-Tutorial, P-Practical

Programme name	**BPT**
Programme Code	**M101**
Course name	**PT in Neurology and Neurosurgery-II**
Course code	**BPT-702**
Semester	**7th Semester (37-42 Months)**
L-T-P	**2-1-2**

Course Content-

S.NO	COURSE OUTCOME
702.1	Reccollect the knowledge gained in clinical neuorology and apply the skills gained in clinical situation of dysfunction and neurological pathologies. Be able to assess, identify &analyse disorders of the nervous system in terms of alteration in terms of alteration in the muscle tone, power, coordination. And involuntary movements with its rehabilitation
702.2	Apply the skills of applications of various techniques on patients.
702.3	Be able to plan, prescribe & execute short term & long term treatment, with special reference to relief of Neuropathic & psycho-somatic pain, mat exercises, functional re-education, gait training, postural & functional training for A.D.L., ergonomic
702.4	Describe about various techniques used in assesement and treatment of various nervous tissue disorders.Demonstrate clinical decision making ability and able to treat different neurological conditions.
702.5	Able to asses neurological dysfunctions, set treatment goals and apply their skills gained in physiotherapy rehabilitation to restore neurological functions in clinical situations.

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 Neurophysiological approaches& Modalities in Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors,poliomyelitis,leprosy,spinal cord injuries. **10 hrs**

2. **Demyelinating diseases of the nervous sytem**: 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 Neurophysiological approaches& Modalities in Ataxia, Multiple sclerosis,transverse myelitis **10 hrs**

3. **Evaluation and management of basal ganglia and extrapyramidal 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,Parkinsons disease,spasmodictorticoliis,chorea **10hrs**

4. **Evaluation and Management of Peripheral Nerve Injuries and Disorders :** classification of polyneuropathies.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 Neurophysiological 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 Pudental nerve palsy. **10 hrs**
5. Applied Yoga in neurological conditions **8 hrs**

Text Books:

1. Cash's Text book for Physio Therapists in Neurological disorders --Jaypee brothers Publication
2. Practical Physical therapy by Margaret Hollis
3. Therapeutic Exercise by Carolyn Kisner & Colby
4. Physical Rehabilitation by Susan. B.O` Sullivan
5. Tidy's Physiotherapy by Stuart Porter
6. Neurological Rehabilitation by Darcy Umphred
7. Right in the middle of stroke" by Patricia Davis

Mapping-

Course outcome Code	**Programme Outcome**								
BPT-602	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	1				2			2	3
CO2	2				3			1	2
CO3	3			2	2			2	3
CO4	2	2	2		2			3	3
CO5	3	3		2	3	3	1	3	3

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT703: CLINICAL CARDIOTHORACIC AND PULMONARY SYSTEM.

Programme name	**BPT**
Programme Code	**M101**
Course name	**Clinical Cardiothoracic and Pulmonary System**
Course code	**BPT-703**
Semester	**7th Semester (37-42 Months)**
L-T-P	**3-1-1**

L-Lecture, T-Tutorial, p-Practical

Code. NO	COURSE OUTCOME
703.1	Able to describe the pathophysiological changes in respiratory and cardio vascular disorders.
703.2	Acquires skill for Interpretationof different invasive and noninvasive diagnostic investigations related to respiratory and cardio vascular disorders.
703.3	Able to evaluate and describe the surgical management of general, cardio vascular and thoracic surgeries.
703.4	To be able to differentiate X-Ray finding and correlate it with respiratory system, cardio vascular system and cardio thoracic system.
703.5	Able to recognize, discuss and demonstrate various instruments used in primary care of ICU patients.

Course Content-

1. Anatomy and Physiology

a. Respiratory system **12 hrs**

i. Upper respiratory tract

ii. Lower respiratory tract – Trachea, Bronchial tree, Bronchopulmonary segments

iii. Respiratory unit, hilum of lung.

iv. Muscles of respiration

v. Pleura, intra pleural space, intra pleural pressure, surfactant

vi. Mechanics of respiration – Chest wall movements, lung & chest wall compliance

vii. V/Q relationship, airway resistance

viii. Respiratory centre, Neural & chemical regulation of respiration

ix. Lung volumes and lung capacities, Spiro meter, lung function test

x. Pulmonary circulation, Lung sounds, cough reflex

b. Cardiovascular systems **10 hrs**

i. Chambers of heart, semi lunar and atria ventricular valves

ii. Coronary circulation, conductive system of heart

iii. Cardiac cycle, ECG, Heart sounds

iv. Blood pressure, pulse, cardiac output

2. Cardio Vascular system **10 hrs**

a. Define, etiology, pathogenesis, clinical features, complications,

b. Conservative and surgical management of the following conditions

i. Ischemia heart disease

ii. Myocardialinfarction

iii. Heartfailure

iv. Cardiac arrest

v. Rheumatic fever

vi. Hypertension

vii. Infectiveendocarditis

viii. Myocarditis & cardiomyopathy

a. Cardiovascular Disease : **10 hrs**

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.

b. Disorders of the Heart: **10 hrs**

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, Tetraology 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. Respiratory System

a. Respiratory Disease: **6 hrs**

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- **6 hrs**

Definition, Clinical features, diagnosis and choice of 8 hrsmanagement for the following disorders – chest wall deformities, chest wall tumors, Spontaneous Pneumothorax, Pleural Effusion, Empyema Thoracis, Lung abscess, 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.

Textbook:

1. Cash's Text Book in General medical & Surgical conditions for Physiotherapist.
2. Chest physical Therapy & Pulmonary Rehabilitation- By Donna Frownfilter.
3. Brompton's Hospital Guide.
4. Physical rehabilitation- O' Sullivan.

Mapping—

Course Outcome Code	**Programme Outcome**								
BPT702	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3				
CO2	3				3				
CO3	3		2		3				3
CO4	3				3				3
CO5	3	2	3	2	3				3

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 704: BIOSTATISTICS & RESEARCH METHODOLOGY

Programme name	**BPT**
Programme Code	**M101**
Course name	**Biostatics and Research Methodology**
Course code	**BPT-704**
Semester	**7th semester (37-42 Months)**
L-T-P	**3-0-0**
L-Lecture, T-Tutorial, P-Practical	

Code. No.	Course Outcome
704.1	Describe how research is undertaken, and its benefits.
704.2	Differentiate between quantitative research and qualitative research.
704.3	Select an appropriate study design based on research question.
704.4	Identify ethical issues in research.
704.5	Apply the principles of research and biostatistics to health practice.

Course content-

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 hrs**
2. **Research problem:** Statement of research problem., Statement of purpose and objectives of research problem, Necessity of defining the problem **2hrs**
3. **Research design:** Meaning of research design, Need for research design, Features for good design, Different research designs, principles of research design 4**hrs**
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 2 **hrs**
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. **2 hrs**
6. **Methods of data collection:** collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules. **2 hrs**
7. **Sampling fundamentals**, need for sampling & some fundamental definitions, important sampling distributions. **2 hrs**
8. **Processing & analysis of data:** Processing operations, problems in processing, Types of analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship. **2 hrs**
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 **4 hrs**
10. **Computer technology:** Introduction to Computers, computer application in research. **2Hrs**

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 hrs**
2. **Tabulation of Data:** Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve. **4 hrs**
3. **Measure of Central Tendency:** **4 hrs**

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 binominal distribution, the normal distribution, Divergence from normality – skew ness, kurtosis. **4 hrs**
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. **4 hrs**
6. **Analysis of variance & covariance:** **4 hrs**

Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Co variance (ANACOVA).

7. **Format of scientific documents.** (Structure of protocols, formats reporting in scientific journals, systematic reviews and meta-analysis). **2 hrs**

Text Books:

1. B. K. Mahajan – Methods in Biostatistics
2. Kulkarni, Bairde, Muzumdar – Manual of Biostatistics
3. Elements of Health Statistics: Rao.N.S.N
4. An introduction of Biostatistics: Sunder Rao.P.S.S.
5. Methods in Bio-Statistics 6^{th} Edn. 1997: B.K. Mahajan
6. Biostatistics : A manual of Statistics Methods: K. Visweswara Rao
7. Elementary Statistics 1 st Edn, 1990. in Medical Workers: Inderbir Singh
8. Fundamentals of Research, 4 th Edn.: David J. Fox

Mapping

Course Outcome Code	**Programme Outcome**								
BPT704	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3			3	
CO2								3	
CO3								3	
CO4				3	3			1	
CO5	2				3				3
3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated									

BPT 705: HEALTH PROMOTION, FITNESS AND WELLNESS

Programme name	**BPT**
Programme Code	**M101**
Course name	**Health Promotion ,Fitness and wellness**
Course code	**BPT-705**
Semester	**7th Semester (37-42 Months)**
L-T-P	**1-0-0**

L-Lecture, T-Tutorial, P-Practical

Course Content-

S.NO	COURSE OUTCOME
705.1	Able to describe the concepts of health and fitness.
705.2	Acquires skill to evaluate various components of the fitness in healthy and patient.
705.3	Able to conduct fitness training in healthy and patient population
705.4	To be able to differentiate between various preventive practice used in a variety of clinical conditions
705.5	Able to recognize, discuss and demonstrate various instruments used in fitness testing and training.

1. Prevention practice: a holistic perspective for physiotherapy **1 hr**

a. Defining Health
b. Predictions of Health Care
c. Comparing Holistic Medicine and Conventional Medicine
d. Distinguishing Three Types of Prevention Practice.

2. Healthy People **1 hr**

a. Definition of healthy people
b. Health education Resources
c. Physiotherapist role for a healthy community.

3. Key concepts of fitness **1 hr**

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 **1 hr**

a. Physical Activities Readiness Questionnaire
b. Physical Activities Pyramid
c. Exercise Programs
d. Evidence-Based Practice.

5. Health, fitness, and wellness: issues during childhood and adolescence **1 hr**

6. Health, fitness, and wellness: during adulthood **1 hr**

7. Women's health issues: focus on pregnancy. **1 hr**

8. Prevention practice for older adults **1 hr**

9. Resources to optimize health and wellness **1 hr**

10. Health protection. **1 hr**

11. Prevention practice for musculoskeletal conditions **1 hr**

12. Prevention practice for cardiopulmonary conditions **1 hr**

13. Prevention practice for neuromuscular conditions **1 hr**

14. Prevention practice for integumentary disorders **1 hr**

15. Prevention practice for individuals with developmental disabilities **1 hr**

16. Marketing health and wellness. **1 hr**

Text Books:

1. Physiotherapy in Gynaecological &Obstetrical conditions – by Poldon – Jaypee
2. Text book of Work Physiology - Astrand P A Rodahe K
3. Therapeutic Exercise – By Kisner & Colby.
4. Text book of community medicine &Community Health – by Bhaskar Rao.
5. Geriatrics Physiotherapy – By Andrew Guccione.
6. Industrial Therapy – by Glenda Key
7. Preventive &Social Medicine –by Park
8. Musculoskeletal Disorders in work place: Principle &Practice-by Nordin Andersons pope.

Mapping-

Course outcome Code	**Programme Outcome**								
BPT-705	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	2	3	2		1	1		1	1
CO2	3				2				
CO3	3			2	2		2		2
CO4	2		2		2				2
CO5	3	1	2	1	3	3			2

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT-706: CASE PRESENTATION ASSESMENT & DISCUSSION

1. Bedside case presentations and case discussions

2. Labsessionsconsistingofevaluationandassessmentmethodsonstudentmodels, treatment techniques and practice sessions.

BPT-707P: PT IN ORTHOPAEDICS AND TRAUMATOLOGY-II -PRACTICAL

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

3. Bedside case presentations and case discussions

4. Labsessionsconsistingofevaluationandassessmentmethodsonstudentmodels, treatment techniques and practice sessions. **64 hrs**

BPT-708P: PT IN NEUROLOGY AND NEUROSURGERY II -PRACTICAL

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 consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions. 6 **4 hrs**

BPT-709P: CLINICAL CARDIO VASCULAR AND PULMONARY SYSTEMS - PRACTICAL

Practical: Practical shall be conducted for all the relevant topics discuss in theory in following terms.

1. Bedside case presentation & case discussion.
2. Labs session consisting of Evaluation & assessment methods on student's models, treatment techniques & practice session. **64 hrs**

8th SEMESTER

BPT801. PHYSIOTHERAPY IN CARDIOVASCULAR AND PULMONARY SYSTEM

Programme Name	**BPT**
Programme Code	**M101**
Course name	**Physiotherapy in cardiovascular and pulmonary system**
Course Code	**BPT-801**
Semester	**8th Semester (43-48 months)**
L-T-P	**3-1-2**

L-Lecture, T-Tutorial, P-Practical

Code. No.	Course Outcome
801.1	Recollect the knowledge gained in clinical and apply the skills in clinical situation of respiratory dysfunction and cardio thoracic pathologies
801.2	Select the relevant investigation techniques which will help to diagnose various conditions.
801.3	Demonstrate clinical decision making ability and able to able to treat different cardio-pulmonary conditions
801.4	Able to describe and discuss Pre and Post-Operative physiotherapy management for cardiopulmonary disorders and major surgeries
801.5	Able to asses cardiopulmonary dysfunctions, set treatment goals and apply their skills gained in physiotherapy rehabilitation to restore cardiopulmonary functions in clinical situations

Course Content-

1. Anatomy, Physiology and Biomechanics **7 hrs**

i. Anatomy and physiology of cardio-vascular and respiratory systems.

ii. Biomechanics of respiration.

2. Clinical assessment and Investigation- **7 hrs**

Rationale of laboratory investigations and differential diagnosis, Evaluation of respiratory dysfunctions, lung function tests – PFT, analysis of blood gases, X-ray chest.

3. Techniques to Improve Lung Volumes and Capacities- **7 hrs**

Positioning, breathing exercises, Neuro physiological Facilitation of Respiration, Mechanical aids - Incentive Spiro meter, IPPB.

4. Secretion clearance techniques- **7 hrs**

Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, Suctioning.

5. Therapy in Respiratory care- **7 hrs**

Oxygen therapy, Humidification & Nebulisation,

6. Physiotherapy management for common conditions in the ICU- **8 hrs**

i. ICU monitoring –Apparatus, Airways and Tubes used in the ICU.

ii. Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Aspiration, ARDS, Shock.

7. Physiotherapy management of peripheral vascular disorders- **7 hrs**

Exercises for peripheral vascular disorders conditions.

8. Physiotherapy management in Pulmonary Care- 7 hrs

i. Obstructive and restrictive lung disorders

ii. Pulmonary Rehabilitation

Physiotherapy management in Cardiac Care- 7 hrs

i. Physiotherapy management following congenital and acquired heart diseases

ii. Cardiac rehabilitation – Conservative and post-operative management.

9. Exercise Prescription for health promotion and fitness for special populations- 7 hrs

Physiotherapy management for Diabetes, Obesity, Hypertension.

Practical:

Practical shall be conducted for all the relevant topics discuss in theory in following terms.

1. Bedside case presentation & case discussion.
2. Labs session consisting of Evaluation & assessment methods on students models, treatment techniques & practice session. **64 hrs**

Textbook:

5. Cash's text book for Physiotherapist in chest heart & vascular diseases – Jaypee Bros. Publications.
6. Cash's Text Book in General medical & Surgical conditions for Physiotherapist.
7. Chest physical Therapy & Pulmonary Rehabilitation- By Donna Frownfilter.
8. Brompton's Hospital Guide.
9. Physical rehabilitation- O' Sullivan.
10. Exercise & the heart- Wenger

Mapping-

Course outcome Code	**Programme Code**								
BPT-801	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3			2	3
CO2	2				3			1	2
CO3	3			2	2			2	3
CO4	2	2	2		2			3	3
CO5	3	3		3	3	3	1	3	3

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 802: PHYSIOTHERAPY IN COMMUNITY REHABILITATION

Programme Name	**BPT**
Programme Code	**M101**

Course name	**Physiotherapy in Community Rehabilitation**
Course Code	**BPT-802**
Semester	**8th Semester (43-48 months)**
L-T-P	**2-1-0**

L-Lecture, T-Tutorial, P-Practical

Code. No.	Course Outcome
802.1	Able to describe the role of community and team approach in rehabilitation of disability.
802.2	Able to understand and apply the concept and role of community-based rehabilitation team.
802.3	Application of various orthosis, prosthesis and other assistive devices for different physical and medical conditions.
802.4	Able to understand and apply principles of social, vocational and occupational rehabilitation in persons with disabilities.
802.5	Recognize and illustrate the ethical issues in community based rehabilitation.

Course Content-

1. Concepts of rehabilitation- 6 hrs
Basic Concepts of rehabilitation and foundations of rehabilitation, scopes, members of Community base rehabilitation(CBR) Principle,

2. Planning and management of CBR Programme- 6 hrs
Policies of Health care system like-concept of primary /tertiary health centers-district hospitals etc, Role ofP.T. in C.B.R. of physically handicapped person. Agencies involved in rehabilitation of physical handicap, Role of familymembers in the rehabilitation of a physically handicapped.CBR Programmed planning andmanagement, Ownership and Governance. Communityparticipation, mobilization and awareness.

3. Disability and its Evaluation- 6 hrs
Introduction, assesment and evaluation findings.

4. Role of voluntary Organizations in CBR: 6 hrs
Charitable Organizations, Voluntaryhealth agencies – National level and International NGO's, Multilateral and Bilateralagencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, etc ,World bank, USAID, RED CROSS, etc.

5. Pediatric Rehabilitation in Community- 6 hrs
Earlydetection of high risk babies, Maternal nutrition and education, Rehabilitation ofCerebral Palsy, Polio, Downs Syndrome, Muscular Dystrophies etc., Prevention andrehabilitation of mental retardation and Behavioural disorders, Immunizationprogrammes, Early intervention in high risk babies, Genetic counselling.

6. Extension services and Vocational training in rehabilitation- 6 hrs
Camp approach, Vocational evaluation,Vocational rehabilitation services.

7. Geriatrics Rehabilitation- 6 hrs

Physiology of Aging /degenerative changes-Musculoskeletal, Neuromotor, cardio-respiratory, Metabolic, Endocrine, Cognitive, Immunesystems.Role of Physio Therapy inResidentialhomes, Geriatric Rehabilitation. Few conditions:- Alzheimer's disease, Dementia,Parkinson's Disease, Incontinence.

8. Industrial Health & Ergonomics- **6 hrs**

Introduction of Occupation hazards-

Physical agents-e.g.-Heat/cold, light, noise, Vibration, U.V. radiation,Ionizing radiation,
Chemical agents-Inhalation, local action, ingestion,
Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration &ergonomic evaluation of work place-mechanical stresses per hierarchy –

- I. sedentary table work –executives, clerk,
- II. inappropriate seating arrangement- vehicle drivers
- III. constant standing- watchman- Defense forces, surgeons,
- IV. Over-exertion in laborers,-common accidents –Role of P.T.-Stress management.

Psychological hazards -e.g.-executives, monotonically& dissatisfaction injob, anxiety of work completion with quality.

Role of P.T. in Industrialsetup, safety issues, injury prevention, return to work productivity, redesigning the work place& Stress management

Text Book:

1. Physiotrherapy in Gynaecology & obstetrical conditions by -Poldon –Jaypee
2. Textbook of Work Physiology- Astrand P A Rodahe K
3. Therapeutic Exercise- By Kisner & Colby
4. Text book of Community medicine & Community Health by Bhaskar rao
5. Geriatrics Physiotherapy – By Andrew Guccione.
6. Industrial therapy- by Glenda Key
7. Preventive & Social Medicine – By Park.

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT-802	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	2	3	2		2	3	2	2	
CO2	3	2	2		1		3		
CO3	3		1				1		
CO4	3		2	2			1		2
CO5	1	1		3		2	2		2

3: Highest Correlated, 2: Medium Correlated, 1: Lowest Correlated

BPT 803 (A) : PHYSIOTHERAPY IN MANUAL THERAPY

Programme Name	**BPT**

Programme Code	**M101**
Course name	**Physiotherapy in Manual therapy**
Course Code	**BPT-803 (A)**
Semester	**8th Semester (43-48 months)**
L-T-P	**1-1-2**

L-Lecture, T-Tutorial, P-Practical

Code No.	Course Outcome
803 (A).1	Acquire the knowledge and skill of various approaches of Manual therapy for joints of the limbs/spine.
803(A).2	Be able to integrate the manual therapies to rehabilitate the Mechanical Neuro-Muscular problems.
803 (A).3	Be able to impart knowledge and train the undergraduate in Manual Therapy.
803 (A).4	Be able to identify, discuss & analyse, the Musculo skeletal dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with routine radiological & Electro-physiological investigations
803 (A).5	Understand the psychosocial factors, environmental factors & individual factors affecting the performance.
803 (A).6	Be able to identify, discuss & analyse, the various cardio-respiratory function & co-relate the same with the provisional diagnosis, for fitness training & rehabilitation.

Course Content:

1. Introduction to Manual Therapy- Definition and Terminolgies, History of Manual Therapy, Subjective and Objective Assessment of Pain **8 hrs**

2. Basic principles, Indications & Contra-Indications of Maitland's school of thought **8 hrs**

3. Basic principles, Indications & Contra-Indications of Mulligan's concept **8 hrs**

4. Basic principles, Indications & Contra-Indications of Mckenzie's Mechanical Diagnosis and Treatment (MDT) **8 hrs**

5. Basic principles, Indications & contraindications of Butler's neural mobilization **8hrs**

6. Basic principles, Indications & contraindications of neurodynamic testing **8 hrs**

7. Basic principles, indications & contraindications of Muscle energy techniques. **8hrs**

8. Basic principles, indications & contraindications of Cyriax's concept **8 hrs**

Text Books:

1. Maitlands book on Manual therapy
2. Orthopaedic Physical examination – by Magee
3. Mobilization methods – Kaltonborn
4. Cyriax Mobilisation

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT-803 (A)	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	2				3			2	3
CO2	3				2			1	2
CO3	1	3			1	3			
CO4	2								
CO5	3		2		1		3		
CO6	3						1		

BPT803 (B): Physiotherapy in Sports

Programme Name	**BPT**
Programme Code	**M101**
Course name	**Physiotherapy in Sports**
Course Code	**BPT-803 (B)**
Semester	**8th Semester (43-48 months)**
L-T-P	**1-1-2**

L-Lecture, T-Tutorial, P-Practical

Code. No.	Course Outcome
803(B).1	Be able to identify, discuss & analyse, the Musculo skeletal dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological.
803(B).2	Understand the psychosocial factors, environmental factors & individual factors affecting the performance.
803(B).3	Use the anatomical rationale for the clinical tests used in differential diagnosis.
803(B).4	Be able to identify, discuss & analyse, the various cardio-respiratory function & co-relate the same with the provisional diagnosis, for fitness training & rehabilitation.
804(B).5	Identify the causes prone for injury & prevent them.

Course Content-

1. Training the aerobic and anaerobic energy system **10 hrs**

2. Physiological responses, changes & adaptations to various exercises - aerobic exercises & anaerobic exercises in Pulmonary, Cardiovascular, Neuromuscularsystem, Hormones **10 hrs** 3. Detraining effects of cardiovascular, musculoskeletal and 2 nervous system **10 hrs**

4. Sports specific training and cross training **10 hrs**

5**. Musculoskeletal injuries** **12 hrs**

- Pre–participation examination
- Causes & Mechanism of Sports Injuries, prevention of sports injuries to various structures.
- Common acute, chronic and overuse injuries in various sports at:
- Shoulder girdle, Shoulder, Arm, Elbow, Forearm, Wrist & hand
- Pelvis, hip, thigh, knee, leg, ankle, foot & Spine

Cardiopulmonary section **12 hrs**

- Sporting emergencies & first aid
- Cardio pulmonary Resuscitation; Shock management, Internal and External bleeding, Splinting, Stretcher use–Handling and transfer, Management of Cardiac arrest, Acute asthma, epilepsy, drowning, burn, Medical management of mass participation. Heatstroke and Heat illness.

Text Books:

1. Sport and physical therapy – Bernhardt Donna, Churchill Livingstone, London 1995

2. Bird, S. R., Black, N. Sports Injuries: Causes, Diagnosis, Treatment and Prevention. Cheltenham: Stanley Thomes, 1997 ISBN: 0748731814

3. Brownstein, B. Functional movement in Orthopaedic and Sports Physical Therapy: Evaluation, Treatment and Outcomes.New York; London: Churchill Livingstone,1997 ISBN: 0443075301

4. Cash, M. Sport and Remedial Massage Therapy.London: Edbury, 1996 ISBN:0091809568

5. Johnson, R. J. and Lombardo, J (eds.) Current Review of Sports Medicine Philadelphia: Butterworth-Heinemann, 1998 (2nd edition) ISBN: 0750699655

Mapping-

Course Outcome Code	**Programme Outcome**								
BPT-803B	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**
CO1	3				3			2	3
CO2	2				3			1	2
CO3	3			2	2			2	3
CO4	2	2	2		2			3	3
CO5	3	3		3	3	3	1	3	3

BPT804: PROJECT WORK

Evaluation based on project report submission. The project includes case report/recent technique review/ literature review, etc.

BPT805: CLINICAL REASONING & EVIDENCE BASED PHYSIOTHERAPY/COMMUNITY SERVICE/ AWARENESS CAMPAIGN

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.

BPT806P: PHYSIOTHERAPY IN CARDIOVASCULAR AND PULMONARY SYSTEM- PRACTICAL-

Practical shall be conducted for all the relevant topics discuss in theory in following terms.

1. Bedside case presentation & case discussion.
2. Labs session consisting of Evaluation & assessment methods on students models, treatment techniques & practice session. **64 hrs**

9th Semester

INTERNSHIP

After successful completion of 8th semester of BPT (Bachelor of Physiotherapy) the candidate shall do 6 months of compulsory rotatory internship in SHRI MAHANT INDIRESH HOSPITAL Swami Rama Himalayan University or an Institution recognize by SHRI GURU RAM RAI UNIVERSITY.

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 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

S. No.	Course Title	Departments/Areas	Duration
1.	**Internship**	Musculoskeletal Physiotherapy	**1 Month**
		Neurological & Neurosurgical Physiotherapy	**1 Month**
		Cardiopulmonary & CTVS Physiotherapy	**1 Month**
		Sports Physiotherapy & Community Physiotherapy	**15 Days**
		Obstetrics, gynecological & Medicine Physiotherapy	**1 Month**
		Surgery & Burns and Plastic Surgery	**15 Days**
		Pediatrics Physiotherapy	**1 Month**

On completion of all postings, the duly completed logbooks will be submitted to the Principal/Head of program to be considered as having successfully completed the internship program.
No candidate shall be awarded degree certificate without successfully completing six months of Internship.

***INTERNSHIP** – Minimum 966 hours (calculated based on 7 hours per day, if 180 working days in six-month span)