ROYAL GLOBAL UNIVERSITY

GUWAHATI

(ROYAL SCHOOL OF MEDICAL & ALLIED SCIENCES)

(RSMAS)

DEPARTMENT OF PHYSIOTHERAPY

Learning Outcomes-based Curriculum Framework (LOCF)

Bachelor of Physiotherapy

W.E.F 2022 - 23

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&

COURSE STRUCTURE

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I Preamble

Physical Therapy (PT) /Physiotherapy is a movement science with an established theoretical and scientific base and widespread clinical applications in the Prevention, Restoration & Rehabilitation, Maintenance and Promotion of optimal physical function. Physiotherapists diagnose and manage movement dysfunction and enhance physical and functional abilities. This physical dysfunction may be the sequelae of involvement of any of the systems like Musculoskeletal, Neurological, Cardiovascular, Respiratory or other body systems.

These practitioners contribute to society and the profession through practice, teaching, administration, and the discovery and application of new knowledge about physiotherapy experiences of sufficient excellence and breadth by research to allow the acquisition and application of essential knowledge, skills, and behaviors as applied to the practice of physiotherapy. Physiotherapist (PT) are autonomous, effective and compassionate professionals, who practice collaboratively in a variety of healthcare set ups such as neonatal to geriatric, from critical care to community fitness to sports training. Emerging graduate and post graduate students are required to demonstrate a substantial knowledge base, possess skills related to Physiotherapy practices, possess high emotional quotient to address family health and meet community responsibilities, demonstrate gender sensitivity and socio-culturally relevant competence. They should be aware of legal issues governing professional practice and follow evidence based clinical practices.

Royal School of Medical and Allied Sciences imbibes a **Learning Outcome-based Curriculum Framework (LOCF)** for its Under Graduate program - Bachelor of Physiotherapy (BPT) from the new academic session which will make learning more student centric, interactive and outcome oriented with well defined aims, objectives and goals. The LOCF approach is envisioned to provide a focused, outcome-based syllabus at the program level with an agenda to structure the teaching-learning process in such a way that the students obtain the much needed 21st Century skills like critical thinking, problem solving, analytical reasoning, cognitive skills, self directed learning's among other such skills. In short, the main focus of the Program is to prepare the graduate level students in the best possible way for both, academia and employability.

The new curriculum will offer students with relevant core papers that help build their foundation in the area of management. The choice of generic electives and skill enhancement courses will enable students to pursue an area of their interest in the field of management & its allied fields . The contents of each course have been carefully designed to prepare students with knowledge and skill sets that will not only make them industry ready but also foster entrepreneurial and innovative thinking.

In order to achieve the program goals following measures would be adopted:

(i) Regulatory curriculum reform based on a Learning Outcomes-based Curriculum Framework (LOCF);

(ii) Enriching the quality of teaching and research;

(iii) Enlightening learning environment through ICT based hands-on approach to students;

(iv) Involving students in discussions, problem-solving, and out of the box thinking;

(v) Motivating the learners to understand various concepts of management and apply them in real life situations.

Introduction :

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

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

1.2 Learning Outcomes-based Approach to Curricular Planning

The LOCF program in BPT provides an opportunity for the students to choose courses from the prescribed courses comprising Core, Discipline Specific Elective, Generic Elective and Skill Enhancement Courses. The courses will be evaluated following the grading system, which is considered to be better than the conventional marks system. This will benefit the students to move across institutions within India to begin with and across countries. The uniform grading system will also enable potential employers in assessing the performance of the candidates. In order to bring uniformity in evaluation system and computation of the Cumulative Grade Point Average (CGPA) based on student's performance in examinations, the UGC guidelines will be followed.

An outcome-based approach moves away from the emphasis on *what is to be taught* to *what is actually learnt*. This approach provides greater flexibility to the teachers to develop and the students to adopt different pedagogical strategies in an interactive and participatory ecosystem. The idea is to integrate social needs and teaching practices in a manner that is responsive to the need of the community. The Assam Royal Global University has addressed this aspect since its inception through the CBCS curricula adopted by the university in 2017. This approach is further consolidated through identifying further relevant and common outcomes beneficial to the student community and by developing such outcomes that not only match the specific needs of the students but also expands their outlook and values. Moreover, this curriculum keeps into perspective the fact that the focus is not just on domain knowledge or outcomes only but on processes and approaches to be employed in pedagogical transactions. This is important in order to ensure the efficacy of the curriculum adopted.

The Outline of Learning Based Curriculum Framework (LOCF) shall be:

- **Core Course**: This course is compulsorily to be studied by a candidate as a core requirement in pursuit of a bachelor degree in Physiotherapy.
- **Elective Course:** This course can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the medical and allied courses or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill and , therefore , called as an Elective Course.

Elective Courses has been further classified as under-

- **Open Generic Elective Course:** A student has to choose an Elective Course from an unrelated discipline/subject, with an intention to seek exposure in a wide field of study. Four papers will be offered throughout semester I to IV.

- **Ability Enhancement Compulsory Courses :** These are the courses based upon the content that leads to Knowledge enhancement. They are :

(a) Environmental science

(b) English Communication & Public speaking

(c) Behavioural Science

Ability Enhancement Elective Courses: These are value- based and/or skill-based and are aimed at providing hands-on-training, competencies & desired skills. These courses may be chosen from a pool of courses offered in BPT Program.

1.2.1 Nature and Extent of Bachelor's Degree Programme in Physiotherapy

A bachelor's degree in Physiotherapy is a **4 year and 6 months** degree course divided into 8 semesters with 6 months of rotatory clinical internship.

Sl. No.	**Year**	**Mandatory Credits to be Secured for the Award**
1	1st	48
2	2nd	49
3	3rd	52
4	4th	32
Total Credits		**181**

1.2.2 Aims of Bachelor's Degree Programme in Physiotherapy(BPT)

The curriculum of BPT is planned to have the following aims & objectives:

- The progression of the program and structure will enable students to build on their learning in a systematic manner leading to critical evaluation and application of the concepts to the real world;
- Build fundamentals in core areas of Anatomy, Physiology, Biomechanics, Orthopaedics, Neurology, Sports injuries, Cardiovascular disorders, Paediatrics, Geriatrics and exposure to diagnosis and treatment of various cases;
- Enabling students to gain advanced exposure in area of their choice through Elective Courses offered;
- Provide a conducive environment inside the campus that holistically engages students through an all- encompassing knowledge impartation;
- Widen the scope and depth of the course enabling them to undertake further studies in health and its allied areas on multiple disciplines concerned mainly with the field of Physiotherapy;
- Encourage the learners to advance a range of generic skills helpful in

employment, internships, and social activities;

- Sensitize students towards environment through courses on Environmental Science.
- Develop ability to use software for data extractions and analysis through statistical and econometric tools under Skill Enhancement course papers.
- The program encourages students to undertake internship to gain practical insight from hospitals which makes their understanding of courses taught more meaningful.
- Through academic exposure, practical training, skill enhancement activities develop students in to becoming successful practitioners/ researchers/ academicians/ entrepreneurs.

1.3. Graduate Attributes (GA)

The following graduate attributes are considered as "essential requirements" to strengthen abilities of a Physiotherapist for widening knowledge, skills and abilities through meaningful learning experiences, and critical thinking. These attributes are necessary for completing the professional education enabling each graduate to subsequently enter clinical practice. The purpose of this curriculum is to delineate the cognitive, affective and psychomotor skills deemed essential for completion of this program and to perform as a competent physiotherapist who will be able to evaluate, plan & execute physiotherapy treatment independently. Some of the characteristic attributes that a graduate should demonstrate are as follows:

GA 1 Disciplinary knowledge: The student must demonstrate comprehensive knowledge and understanding of curricular content that form the program**.** The student must demonstrate cognitive learning skills, ability to receive, interpret, remember, reproduce and use information in the cognitive, psychomotor, and affective domains of learning to solve problems, evaluate work, and generate new ways of processing or categorizing similar information listed in course objectives.

GA 2 Psychomotor Skills: Physiotherapy students must demonstrate psychomotor skills of locomotor ability to access lecture halls, practical laboratory and clinics.

a. They must possess ability to move with reasonable swiftness in emergency situations to protect the patient (e.g. from falling).

b. They should be competent to perform physical tasks such as positioning patients to effectively perform evaluation, manipulate assessment tools used for evaluation of joint mobility, muscle strength, testing musculoskeletal, neurological and cardiorespiratory systems.

c. Students should be competent to perform risk assessment, safely and effectively guide, facilitate, inhibit, and resist movement and motor patterns through physical facilitation and inhibition techniques (including ability to give timely urgent verbal feedback),perform transfers, positioning, exercise, mobilization techniques and use assistive devices and perform cardiopulmonary resuscitation.

d. Students must possess fine motor skills to legibly record thoughts for written assignments (including diagrams) and tests, document evaluations, patient care notes, referrals, etc. in standard medical charts in hospital/clinical settings in a timely manner and consistent with the acceptable norms of clinical settings and safely use electrotherapy modalities and fine mobilisation techniques.

e. Students must possess visual acuity to read patient's treatment chart, observe demonstrations, visual training, receive visual information from patients, treatment environment and clues of treatment tolerance. Auditory acuity to distinguish between normal and abnormal sounds, engage in conversation with patients and retrieve meaningful information relevant to patient care.

GA3 Communication skills : The student must be able to express thoughts and ideas effectively in writing and verbally, communicate with others using appropriate media, share views, demonstrate ability to listen carefully, write analytically, present complex information in a clear, and concise manner. Student must be able to effectively communicate information and safety concerns with other students, teachers, patients, peers, staff and personnel by asking questions, giving information, explaining conditions and procedures, or teaching home programs. They should be able to receive and send verbal communication in life threatening situations in a timely manner within the acceptable norms of clinical settings. Physiotherapy education presents exceptional challenges in the volume and breadth of required reading and the necessity to impart information to others. Students must be able to communicate quickly, effectively and efficiently in oral and written English with all members of the health care team.

GA 4 Critical thinking : Student should be able to apply analytical thought to a body of knowledge , analyse based on empirical evidence, draw relevant assumptions or implications , formulate arguments, critically evaluate policies and theoretical framework and formulate a scientific approach to knowledge development. They should be able to identify structural and functional impairments, identify contextual factors influencing function, critically appraise treatment options and implement care that is socio-culturally relevant to each patient.

GA5 Problem Solving: Students must demonstrate capacity to extrapolate theoretical knowledge and apply competencies gained to solve non- familiar problems and real life situations.

GA 6 Analytical reasoning: To a certain extent, students should be able to evaluate reliability and relevance of evidence, synthesize data, draw valid conclusions and support them with evidence.

GA 7 Research Related Skills: Students should be able to define research problem, formulate hypothesis, manage resources, analyze and interpret data, explore cause – effect relationships, plan and execute a report, present results of the experiment and demonstrate a sense of scientific enquiry, reflective thinking, self directed learning and creativity.

GA 8 Co-operation /Team Work: Students should demonstrate the ability to work effectively and respectfully with a multi disciplinary team, facilitate co-operative and co-ordinated effort for the common cause in various clinical settings.

GA 9 Socio-cultural and multicultural competency: Knowledge of socio-cultural values, attitudes and beliefs relevant to a particular society, nation and global perspectives must be present to effectively engage and identify with diverse groups.

GA 10 Awareness of moral, ethical and legal issues: Students must demonstrate moral /ethical values in conduct, awareness of ethical issues related to patient care, work practices, refraining from malpractice, unethical behaviour, falsification, plagiarism, misinterpretation of data, non adherence to intellectual property rights, adhering to truthful, unbiased actions in all aspects of work without discrimination based on age, race, gender, sexual preference, disease, mental status, lifestyle, opinions or personal values.

GA 11 Lifelong Learning: Students must demonstrate ability to acquire knowledge and skills through ongoing learning, participation in continuous education programs, engaging in self-paced, self- directed learning aimed at personal development, meeting social and cultural objectives, skill development, adapting to changing environment and workplace requirements and challenges.

1.4 Qualification Descriptors for Graduates Bachelor of Physiotherapy:

The qualification descriptors suggest that generic outcomes and attributes is to be obtained by the students while obtaining the BPT Degree. These parameters are expected to be attained and demonstrated by the learners after becoming graduate in this program. The learning experiences and assessment procedures thereby are so designed that every graduate in physiotherapy may achieve the program learning outcomes with equal opportunity irrespective of class, gender, community, and regions.

Each graduate in physiotherapy shall be able to:

- Gain knowledge and understanding regarding various structures, histological appearance of various organs of the human body.
- Acquire knowledge of the normal physiology of various human body systems and understand the alterations in physiology in diseases and practice of physiotherapy.
- Demonstrate educational skills in areas of Biomechanics, biochemistry, psychology, pathology, microbiology and pharmaceutics and able to practice its application in human body treatment.
- Formulate the concepts of electrotherapy, exercise therapy, mobilization and soft tissue techniques in treating patients.
- Acquire various soft skills (like business communication, public speaking etc.) required to manage patient to doctor relationship as well as life situations;
- Apply knowledge, understanding, and skills to identify the difficult/unsolved problems in rapidly changing environment and to collect the required information from possible range of sources and try to analyse and assess these problems using appropriate methodologies;
- Fulfil one's learning requirements to provide an insight of research in management and allied fields and interdisciplinary areas while seeking research pursuits;
- Apply one's disciplinary knowledge and transferable skills to new/unfamiliar contexts, rather than replicate curriculum content knowledge, to identify and analyse problems and issues and solve complex problems with well-defined solutions;
- Good value systems leading to high ethical and moral conduct in society at large;

1.5 Program Learning Outcomes for Bachelor of Physiotherapy(POs):

PO 1 **Disciplinary knowledge about Physiotherapy Profession**

To demonstrate behavioural skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals

PO 2 **Psychomotor Skills**

To demonstrate and relate moral, ethical values and legal aspects concerned with Physiotherapy management.

PO 3 **Communication skill**

To develop healthy Physiotherapist – Patient relationship

PO 4 **Critical thinking**

To demonstrate academic skills and knowledge related to understanding the structural and functional of human body and applied anatomy, physiology in physiotherapy practice.

PO 5 **Problem Solving skill**

To apply and outline pathology of medical conditions in context with Physiotherapy, interpret& use medical communication.

PO 6 **Analytical reasoning**

To apply knowledge of biomechanics of human movement in musculoskeletal, neurological and cardio-respiratory conditions in planning, recommending, and executing Physiotherapy management.

PO 7 **Research Related Skills**

To outline and implement Physiotherapy management by co-relating assessment and examination skills of clinical subjects like Orthopaedics, General Surgery, Medicine, Neurology, Paediatrics, Dermatology & Gynaecology & Obstetrics, Community Medicine and Sociology

PO 8 **Team work**

To demonstrate skill in developing teamwork approach in managing various conditions who require multidisciplinary medical management including medical professionals , social workers and other related professionals.

PO 9 **Socio-cultural and multicultural competency**

To describe and analyse concepts of energy conservation, global warming and pollution and justify optimal use of available resources.

PO 10 **Awareness of moral, ethical and legal issues related to Physiotherapy Profession**

To demonstrate ability of critical thinking, scientific enquiry, experiential learning, personal finance, entrepreneurship and managerial skills related to task in day-to-day work for personal & societal growth.

PO 11 **Lifelong learning Process**

Students must demonstrate ability to acquire knowledge and skills through ongoing learning, participation in continuous education programs.

1.6 BPT Programme Specific Outcomes (PSOs)

PSO 1 Acquire, assess, apply and integrate new knowledge, learn to adapt to changing circumstances and ensure that patients receive the highest level of professional care.

PSO 2 Establish the foundations for lifelong learning and continuing professional development, including a professional development portfolio containing reflections, achievements and learning needs.

PSO 3 Continually and systematically reflect on practice and, whenever necessary, integrate that reflection into action, using improvement techniques and audit.

PSO 4 Manage time and prioritize tasks, and work autonomously when necessary and appropriate.

PSO 5 Recognize own personal and professional limits and seek help from colleagues and supervisors when necessary.

PSO 6 Function effectively as a mentor and teacher including contributing to the appraisal, assessment and review of colleagues, providing effective feedback, and taking advantage of opportunities to develop these skills.

1.7 Teaching Learning Process

Teaching and learning in this programme involves classroom lectures as well as tutorial and remedial classes.

Tutorial classes: Tutorials allow closer interaction between students and teacher as each student gets individual attention. The tutorials are conducted for students who are unable to achieve average grades in their weekly assessments. Tutorials are divided into three categories, viz. discussion-based tutorials (focusing on deeper exploration of course content through discussions and debates), problem-solving tutorials (focusing on problem solving processes and quantitative reasoning), and Q&A tutorials (students ask questions about course content and assignments and consolidate their learning in the guiding presence of the tutor).

Remedial classes: The remedial classes are conducted for students who achieve average and above average grades in their weekly assessments. The focus is laid to equip the students to perform better in the exams/assessments. The students are divided into small groups to provide dedicated learning support. Tutors are assigned to provide extra time and resources to help them understand concepts with advanced nuances. Small groups allow tutors to address their specific needs and monitor them. Following methods are adopted for tutorial and remedial classes:

- Written assignments and projects submitted by students
- Project-based learning
- Group discussions
- Home assignments
- Class tests, quizzes, debates organised in the department
- Seminars and conferences
- Extra-curricular activities like cultural activities, community outreach programmes etc.
- Field trip, excursions, study tour, interacting with eminent authors, etc.

1.8 Assessment Methods

	Component of Evaluation	Marks	Frequency	Code	Weightage (%)
A	**Continuous Evaluation**				
I	Analysis/Class test	Combination of any three from (i) to (v) with 5 marks each	1-3	C	25%
Ii	Home Assignment		1-3	H	
Iii	Project		1	P	
Iv	Seminar		1-2	S	
V	Viva-Voce/Presentation		1-2	V	
Vi	MSE	MSE shall be of 10 marks	1-3	Q/CT	
Vii	Attendance	Attendance shall be of 5 marks	100%	A	5%
B	Semester End Examination		1	SEE	70%
	Project				**100%**

BACHELOR DEGREE IN PHYSIOTHERAPY (BPT)

PROGRAMME STRUCTURE

BPT 1ST SEMESTER							
SL.NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**L**	**T**	**P**	**C**	**TCP**
CORE SUBJECTS							
1	**PHT242C101**	**ANATOMY-I(Theory+ Lab)**	**2**	**1**	**2**	**4**	**4**
2	**PHT242C102**	**PHYSIOLOGY-I(Theory+ Lab)**	**2**	**1**	**2**	**4**	**4**
3	**PHT242C103**	**BIOMECHANICS-I (Theory +Lab)**	**2**	**1**	**2**	**4**	**4**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)							
8	**CEN982A101**	**COMMUNICATIVE ENGLISH-I**	**1**	**0**	**0**	**1**	**1**
9	**BHS982A104**	**BEHAVIOURAL SCIENCE-I**	**1**	**0**	**0**	**1**	**1**
SKILL ENHANCEMENT COURSE (SEC)							
10	**PHT242S101**	**BASIC LIFE SUPPORT**	**1**	**1**	**0**	**2**	**2**
ABILITY ENHANCEMENT ELECTIVE COURSES (AEEC)							
11		**Subjects offered by other departments**	**2**	**0**	**0**	**2**	**2**
GENERIC ELECTIVE							
12	**PHT242G101**	**GE 1 (BIOCHEMISTRY)**	**3**	**0**	**0**	**3**	**3**
13	**PHT242G102**	**Basics of Physiotherapy offered by department**	**3**	**0**	**0**	**3**	**3**
		TOTAL				**24**	
BPT 2ND SEMESTER							
SL.NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**L**	**T**	**P**	**C**	**TCP**
CORE SUBJECTS							
1	**PHT242C201**	**ANATOMY-II(Theory+ Lab)**	**2**	**1**	**2**	**4**	**4**
2	**PHT242C202**	**PHYSIOLOGY-II (Theory+ Lab)**	**2**	**1**	**2**	**4**	**4**
3	**PHT242C203**	**BIOMECHANICS-II (Theory+ Lab)**	**2**	**1**	**2**	**4**	**4**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)							
4	**CEN982A201**	**COMMUNICATIVE ENGLISH-II**	**1**	**0**	**0**	**1**	**1**
5	**BHS982A204**	**BEHAVIOURAL SCIENCE-II**	**1**	**0**	**0**	**1**	**1**
SKILL ENHANCEMENT COURSE(SEC)							
	PHT242S201	**ORIENTATION TO PHYSIOTHERAPY**	**1**	**1**	**0**	**2**	**2**

ABILITY ENHANCEMENT ELECTIVE COURSES (AEEC)							
		Subjects offered by other departments	**2**	**0**	**0**	**0**	**2**
GENERIC ELECTIVE							
6	**PHT242G201**	**PSYCHOLOGY & SOCIOLOGY**	**3**	**0**	**0**	**3**	**3**
7	**PHT242G202**	**Principles of Exercise Therapy**	**3**	**0**	**0**	**3**	**3**
		TOTAL				**24**	
BPT 3RDSEMESTER							
SL.NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**L**	**T**	**P**	**C**	**TCP**
CORE SUBJECTS							
1	**PHT242C301**	**PATHOLOGY-I & MICROBIOLOGY -I**	**3**	**1**	**0**	**4**	**4**
2	**PHT242C302**	**EXERCISE THERAPY-I(Theory +Lab)**	**2**	**1**	**2**	**4**	**4**
3	**PHT242C303**	**ELECTROTHERAPY-I(Theory +Lab)**	**2**	**1**	**2**	**4**	**4**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)							
4	**EVS982A303**	**ENVIRONMENTAL SCIENCE**	**2**	**0**	**0**	**2**	**2**
5	**CEN982A301**	**COMMUNICATIVE ENGLISH-III**	**1**	**0**	**0**	**1**	**1**
SKILL ENHANCEMENT COURSE(SEC)							
6	**PHT242S301**	**INTRODUCTION TO TREATMENT**	**1**	**0**	**0**	**1**	**1`**
GENERIC ELECTIVE							
7	**PHT242G301**	**PHARMACOLOGY -I**	**3**	**0**	**0**	**3**	**3**
8	**PHT242G302**	**Basics of Physiotherapy**	**3**	**0**	**0**	**3**	**3**
		TOTAL				**24**	
BPT 4TH SEMESTER							
SL.NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**L**	**T**	**P**	**C**	**TCP**
CORE SUBJECTS							
1	**PHT242C401**	**PATHOLOGY-II & MICROBIOLOGY -II**	**3**	**1**	**0**	**4**	**4**
2	**PHT242C402**	**EXERCISE THERAPY-II(Theory +Lab)**	**2**	**1**	**2**	**4**	**4**
3	**PHT242C403**	**ELECTROTHERAPY-II)Theory + Lab)**	**2**	**1**	**2**	**4**	**4**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)							
4	**CEN982A401**	**COMMUNICATIVE ENGLISH-IV**	**1**	**0**	**0**	**1**	**1**
ABILITY ENHANCEMENT ELECTIVE COURSES (AEEC)							
5		**Subjects offered by other departments**	**1**	**1**	**0**	**2**	**2**
GENERIC ELECTIVE							
6	**PHT242G401**	**GE 1 (PHARMACOLOGY-II)**	**3**	**0**	**0**	**3**	**3**
7	**PHT242G402**	**Principles of Exercise Therapy offered by the department**	**3**	**0**	**0**	**3**	**3**

DISCIPLINE SPECIFIC (DSE) (ANY ONE)							
8	**PHT242D401**	**RESEARCH METHODOLOGY**	**3**	**1**	**0**	**4**	**4**
9	**PHT242D402**	**BIOSTATISTICS**	**3**	**1**	**0**	**4**	**4**
		TOTAL				**25**	
BPT 5TH SEMESTER							
SL.NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**L**	**T**	**P**	**C**	**TCP**
CORE SUBJECTS							
1	**PHT242C501**	**GENERAL SURGERY, OBSTETRICS & GYNAECOLOGY**	**2**	**1**	**0**	**3**	**3**
2	**PHT242C502**	**GENERAL MEDICINE**	**2**	**1**	**0**	**3**	**3**
	PHT242C503	**COMMUNITY MEDICINE-I**	**2**	**1**	**0**	**3**	**3**
4	**PHT242C504**	**CLINICAL ORTHOPAEDICS & SPORTS**	**2**	**1**	**0**	**3**	**3**
5	**PHT242C511**	**CLINICAL EDUCATION-I**	**0**	**0**	**8**	**6**	**12**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)							
	PHT242A502	**ETHICS IN PHYSIOTHERAPY& BASIC FIRST AID**	**2**	**1**	**0**	**3**	**3**
5	**CEN982A501**	**COMMUNICATIVE ENGLISH-V**	**1**	**0**	**0**	**1**	**1**
ABILITY ENHANCEMENT ELECTIVE COURSES (AEEC) (ANY ONE)							
6		**ILD-I**	**2**	**0**	**0**	**2**	**2**
7		**FRENCH-I**	**2**	**0**	**0**	**2**	**2**
8		**C++**	**2**	**0**	**0**	**2**	**2**
9		**ANY OTHER COURSE OFFERED BY OTHER SCHOOLS OF RGU AND OPTED BY STUDENT**	**2**	**0**	**0**	**2**	**2**
		TOTAL				**21**	
BPT 6TH SEMESTER							
SL.NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**L**	**T**	**P**	**C**	**TCP**
CORE SUBJECTS							
1	**PHT242C601**	**CLINICAL CARDIOLOGY AND PULMONARY DISORDERS**	**2**	**1**	**0**	**3**	**3**
2	**PHT242C602**	**NEUROLOGY AND NEUROSURGERY**	**2**	**1**	**0**	**3**	**3**
4	**PHT242C604**	**PEDIATRICS AND PSYCHIATRY**	**1**	**1**	**0**	**2**	**2**
	PHT242C405	**COMMUNITY MEDICINE-II**	**2**	**1**	**0**	**3**	**3**

5	**PHT242C611**	**CLINICAL EDUCATION-II**	**0**	**0**	**8**	**6**	**12**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)							
	PHT242A602	**EXERCISE PHYSIOLOGY**	**2**	**0**	**0**	**2**	**2**
7	**CEN982A601**	**COMMUNICATIVE ENGLISH-VI**	**1**	**0**	**0**	**1**	**1**
ABILITY ENHANCEMENT ELECTIVE COURSES (AEEC) (ANY ONE)							
8		**ILD-2**	**2**	**0**	**0**	**2**	**2**
9		**FRENCH-2**	**2**	**0**	**0**	**2**	**2**
10		**LATEX**	**2**	**0**	**0**	**2**	**2**
11		**ANY OTHER COURSE OFFERED BY OTHER SCHOOLS OF RGU AND OPTED BY STUDENT**	**2**	**0**	**0**	**2**	**2**
		TOTAL				**20**	

BPT 7TH SEMESTER

SL.NO.	SUBJECT CODE	NAMES OF SUBJECTS	L	T	P	C	TCP
CORE SUBJECTS							
1	**PHT242C701**	**COMMUNITY BASED REHABILITATION (Theory+ Lab)**	**2**	**1**	**2**	**4**	**4**
2	**PHT242C702**	**PHYSIOTHERAPY IN ORTHOPAEDICS CONDITION(Theory+ Lab)**	**2**	**1**	**2**	**4**	**4**
3	**PHT242C704**	**PHYSIOTHERAPY IN NEURO AND PSYCHOSOMATIC CONDITIONS(Theory+ Lab)**	**2**	**1**	**2**	**4**	**4**
8	**PHT242C714**	**CLINICAL EDUCATION-III**	**0**	**0**	**2**	**6**	**12**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)							
9	**CEN982A701**	**COMMUNICATIVE ENGLISH-VII**	**1**	**0**	**0**	**1**	**1**
ABILITY ENHANCEMENT ELECTIVE COURSES (AEEC)							
DISCIPLINE SPECIFIC-DSE (ANY ONE)							
10	**PHT242D701**	**PRINCIPLES OF BIOENGINEERING**	**3**	**1**	**0**	**4**	**4**
11	**PHT242D702**	**BASIC RADIOPHYSICS**	**3**	**1**	**0**	**4**	**4**
		TOTAL				**29**	

BPT 8TH SEMESTER

SL.NO.	SUBJECT CODE	NAMES OF SUBJECTS	L	T	P	C	TCP
CORE SUBJECTS							

1	**PHT242C801**	**CLINICAL REASONING, EVIDENCE BASED PHYSIOTHERAPY, ADMINISTRATION AND TEACHING SKILLS**	**1**	**1**	**0**	**2**	**2**
2	**PHT242C802**	**PHYSIOTHERAPY IN SPORTS INJURIES**	**2**	**1**	**0**	**3**	**3**
3	**PHT242C804**	**PHYSIOTHERAPY IN CARDIO RESPIRATORY AND GENERAL SURGICAL CONDITIONS**	**2**	**1**	**0**	**3**	**3**
4	**PHT242C811**	**PHYSIOTHERAPY IN SPORTS INJURIES LAB**	**0**	**0**	**2**	**2**	**4**
5	**PHT242C812**	**PHYSIOTHERAPY IN CARDIO RESPIRATORY AND GENERAL SURGERY CONDITIONS LAB**	**0**	**0**	**2**	**2**	**4**
6	**PHT242C813**	**CLINICAL EDUCATION-IV**	**0**	**0**	**2**	**6**	**12**
7	**PHT242C821**	**RESEARCH PROJECT**	**0**	**0**	**2**	**2**	**4**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)							
10	**CEN982A801**	**COMMUNICATIVE ENGLISH-VIII**	**1**	**0**	**0**	**1**	**1**
ABILITY ENHANCEMENT ELECTIVE COURSES (AEEC)							
DISCIPLINE SPECIFIC-DSE (ANY ONE)							
11	**PHT242D801**	**OCCUPATIONAL THERAPY**	**3**	**1**	**0**	**4**	**4**
12	**PHT242D802**	**ORTHOTICS & PROSTHETICS**	**3**	**1**	**0**	**4**	**4**
		TOTAL				**25**	

Bachelor Degree in Physiotherapy (BPT)

Programme Structure

FIRST SEMESTER							
Sl.No.	**Subject Code**	**Names of subjects**	**L**	**T**	**P**	**C**	**TCP**
Core Subjects							
1	**PHT242C101**	**ANATOMY-I**	**2**	**1**	**0**	**3**	**3**
2	**PHT242C102**	**PHYSIOLOGY-I**	**2**	**1**	**0**	**3**	**3**
3	**PHT242C103**	**BIOMECHANICS-I**	**2**	**1**	**0**	**3**	**3**
4	**PHT242C104**	**BIOCHEMISTRY**	**2**	**1**	**0**	**3**	**3**
5	**PHT242C111**	**ANATOMY LAB-I**	**0**	**0**	**2**	**2**	**4**
6	**PHT242C112**	**PHYSIOLOGY LAB-I**	**0**	**0**	**2**	**2**	**4**
7	**PHT242C113**	**BIOMECHANICS LAB-I**	**0**	**0**	**2**	**2**	**4**
Ability Enhancement Compulsory Courses (AECC)							
5	**CEN982A101**	**COMMUNICATIVE ENGLISH**	**1**	**0**	**0**	**1**	**1**
6	**BHS982A104**	**BEHAVIOURAL SCIENCE**	**1**	**0**	**0**	**1**	**1**
Generic Elective							
10	**PHT242G101**	**GE-2**	**3**	**0**	**0**	**3**	**3**
	TOTAL					**23**	

Level: Semester I

Course: C-1

Title of the Paper: ANATOMY I

Subject Code: PHT242C101

L-T-P-C:2-1-0-3 **Total credits: 3**

Course Objectives

Identify all gross anatomical structures, particular emphasis will be placed on description of bones, joints, muscles, brain, cardio-pulmonary and nervous systems as these relate to the application of Physiotherapy. Understanding the different type of classification and general features of bone, joints and muscular tissues.

Course Outcomes

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** the anatomy of upper quadrant including spine, thorax and upper extremities:	**BT 1**
CO 2	**Understand** the bones, joints, soft tissues, muscles related to musculoskeletal system of upper extremities and to localize various surface land-marks of face, neck, spinal cord.	**BT 2**
CO 3	**Demonstrate** the bones, muscles, nerve and ligaments of the upper extremities.	**BT 3**
CO 4	**Analyze** the course of peripheral nerves including their functions and structures.	**BT 3**

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods
I.	**General Anatomy:** Introduction to Anatomy, terms and terminology. Regions of Body, Cavities and systems. Surface anatomy – musculo-skeletal, vascular, cardiopulmonary system General Embryology. Applied anatomy. Head and Neck: Facial muscles-origin, insertion, actions, nerve supply Temporomandibular joints-structure, types of movement Spine and Thorax:	**20**

	Back muscles-superficial layer, deep muscles of back, their origin, insertion, action and nerve supply. Vertebral column-structure and development, structure and joints of vertebrae Applied Anatomy.	
II	**Musculoskeletal system:** Connective tissue & its modification, tendons, membranes, special connective tissue. Bone structure, blood supply, growth, ossification, and classification. Muscle classification, structure and functional aspect. Joints – classification, structures of joints, movements, range, limiting factors, stability, blood supply, nerve supply, dislocations and applied anatomy. Introduction to Upper Limb, Bones,Joints of Upper limb, Axilla, Pectoral region,The back, Scapular region, Arm, forearm and Hand, Nerve supply, blood supply and lymphatic drainage of upper limb.	**20**
III	**Nervous system:** Classification of nervous system Nerve – structure, classification, microscopy with examples. Neurons, classification with examples. Simple reflex arc. Parts of a typical spinal nerve/Dermatome Central nervous system – disposition, parts and functions Cerebrum Cerebellum Midbrain & brain stem Blood supply & anatomy of brain Spinal cord- anatomy, blood supply, nerve pathways Pyramidal, extra pyramidal system Thalamus, hypothalamus Structure and features of meninges Ventricles of brain, CSF circulation Development of nervous system & defects Cranial nerves – (course, distribution, functions and palsy) Sympathetic nervous system, its parts and components Parasympathetic nervous system Applied anatomy	**20**
IV	**Sensory system:** Structure and function of: Visual system Auditory system Gustatory system Olfactory system Somato sensory system	**20**
TOTAL		**60**

Text Book

Alison,G.Anne,W.(2014). Ross and Wilson Anatomy and Physiology in Health and Illness. Elsevier Health; UK, 13th edition

Khurana, I., Khurana, A., (2018).Textbook of anatomy and physiology, 3rd edition.

Shekar C N C. Manipal Manual Of Medical Physiology: CBS Publication, 1st edition.

Singh, S.H.(2017). Principles of human physiology for allied health sciences: CBS Publishers & Distributors

Reference Book:

Tortora,GJ. &DerriksonB.(2008).Principles of Anatomy and Physiology. Wiley, Global edition.
Venkatesh D. Sudhakar H.H. (2016). Basics of anatomy, physiology &microbiology level 1: CBS Publishers & Distributors, 4th edition
YalayyaswamyN.N.(2018). Human anatomy and physiology for courses in nursing and allied health sciences, 3rd edition.

Level: Semester I

Course: C-2

Title of the Paper: PHYSIOLOGY-I

Subject Code: PHT242C102

L-T-P-C: 2-1-0-3 **Total credits: 3**

Course Objectives

Objective of the course is to demonstrate and understanding of elementary human physiology dealing with cell, skin, muscle, blood and other important systems of the body. Detail knowledge of different types and functions of blood cells. Alteration of normal physiology in terms of different diseases.

Course Outcomes

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Learn** varous structural and functional importance of cell, muscle and skin.	**BT 1**
CO 2	**Explain** different tissues & organs of different systems of human body.	**BT 2**
CO 3	**Understand** how abnormal Physiology affects human function and dysfunction of the human body.	**BT 2**
CO 4	**Demonstration** of normal human physiology with special emphasis on the functioning of the cardiovascular, musculo-skeletal and nervous systems.	**BT 3**

DETAILED SYLLABUS:

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	**General Physiology** Cell: morphology, Structure and function of cell organelles Structure of cell membrane Transport across cell membrane Intercellular communication Homeostasis	15 hours

2	**Blood** Introduction-composition & function of blood W.B.C., R.B.C., Platelets formation & functions, Immunity Plasma: composition, formation & functions, Plasma Proteins:-types &functions Blood Groups- types , significance, determination Hemoglobin Haemostasis Lymph-composition, formation, circulation &functions **Cardiovascular system** Conducting system-components, impulse conduction Heart valves Cardiac cycle- definition, phases of cardiac cycle Cardiac output- definition, normal value, determinants. Stroke volume and its regulation Heart rate and its regulation Arterial pulse, Blood pressure-definition, normal values, factors affecting blood pressure Shock-definition, classification, causes and features Basic idea of ECG Cardiovascular changes during exercise	15 hours

3	**Nerve Muscle Physiology** Muscles- classification, structure, properties, Excitation contraction coupling Motor unit, EMG, factors affecting muscle tension, Muscle tone, fatigue, exercise Nerve –structure and function of neurons, classification, properties Resting membrane potential & Action potential their ionic basis All or None phenomenon Neuromuscular transmission Ionic basis of nerve conduction Concept of nerve injury &Wallerian degeneration Synapses Electrical events in postsynaptic neurons Inhibition & facilitation at synapses Chemical transmission of synaptic activity Principal neurotransmitters.	15 hours
3	**Nervous system** Introduction, central and peripheral nervous system, functions of nervous system Reflexes- monosynaptic, polysynaptic, superficial, deep & withdrawal reflex Sense organ, receptors, electrical & chemical events in receptors Sensory pathways for touch, temperature, pain, proprioception & others Control of tone & posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions Motor mechanism: motor cortex, motor pathway:the descending tractspyramidal& extra pyramidal tracts-origin, course, termination &functions.Upper motor neuron and lower motor neuron paralysis.	15 hours

	Spinal cord lesions- complete transection &hemisection of the spinal cord Autonomic nervous system :features and actions of parasympathetic & sympathetic nervous system Hypothalamus Higher functions of nervous system Special senses- eye, ear, nose, mouth	

Text Books:

1. Arthur, Guyton,Textbook of Medical Physiology, Mosby. 3rd Edition
2. Singh, S.H.(2017). Principles of human physiology for allied health sciences: CBS Publishers & Distributors, Latest Edition
3. Anand&Manchanda,Textbook of Physiology, Tata McGrawHill. 5th Edition.
4. Sembulingam.K,Human Physiology- Vol. 1&2 ,MedicalAllied, 7th Edition.

Reference Books:

5. Chaudhari, S.K ,Concise Medical Physiology, New CentralAgency,Calcutta, 4th Edition
6. Tortora&Grabowski,Harper Collins, Principals of Anatomy and Physiology, Gobal Edition.

Level: Semester I

Course: C-3

Title of the Paper: Biomechanics I

Subject Code: PHT242C101

L-T-P-C: 3-1-0-4 **Total credits: 4**

Course Objectives

The objectives of this course is that after 60 hours of lectures and demonstrations the student will be able to demonstrate an understanding of the principles of biomechanics and biomechanical understanding in application related health and disease pertaining to muscles and joints of upper limb.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Define the various terms used in mechanics, biomechanics & kinesiology	**BT 1**
CO 2	Explain the basic principles of biophysics related to mechanics of movement / motion & apply these principles to simple equipment designs along with their efficacy in Therapeutic Gymnasium & various starting positions used in therapeutics .	**BT 2**
CO 3	Demonstrate movements in terms of anatomical planes and axes, demonstrate various starting & derived positions used in therapeutics.	**BT 3**
CO 4	Apply therapeutic skills of movement examination.	**BT 3**

COURSE OUTLINE :

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	**Mechanics** - Definition of mechanics and Biomechanics **Motion:** definition, types of motion, plane and axis of motion, factor determining the kind and modification of motion.	1 hour 1 hour

	Force - Definition, diagrammatic representation of force, point of application, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pulls of muscle. **Friction** **Gravity** - Definition, line of gravity, Centre of gravity	2hours 1hour
II	**Equilibrium** - Supporting base, types, and equilibrium in static and dynamic state. **Levers** - Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever in human body **Pulleys** - system of pulleys, types and application **Elasticity** - Definition, stress, strain, HOOKE'S Law **Springs** - properties of springs, springs in series and parallel, elastic materials in use.	1 hour 2 hours 1 hour 1hour
III	**Muscular system**: i)Definition, Properties of muscles, ii) Muscular contraction, iii)Structural classification, iv)Action of muscle in moving bone, direction of pull, angle of pull v)Functional classification Coordination of muscular system.	 2 hours 2 hours 2 hours 2 hours 2 hours
IV	**Joint structures and functions:** **i)** Joint design, Structure of Connective Tissue, **ii)** Properties of Connective Tissue, joint function, changes with disease, injury, immobilization, exercise, over use. **iii)** Structure and functions of upper extremity joints – a)Shoulder complex,	 5 hours 5 hours 5 hours

		b) Elbow complex, c)Wrist Complex d) Hand complex	5 hours 5 hours 5 hours

Text Book:

1. Norkins&Levengie,Joint Structure and Function- A Comprehensive Analysis – F.ADavis, 5th Edition
2. Norkins& White, Measurement of Joint Motion–Aguideto Goniometry, F. A Davis, 5th Edition
3. Smith et al., Brunstrom's Clinical Kinesiology —F.A Davis, 6th Edition

Reference Books:

4. Low & Reed, Basic Biomechanics explained –Butterworth Heinmann, 5th Edition
5. SoderbergLippineou,Kinesiology Applied to Pathological Motion, 6th Edition

Level: Semester I

Course: C-4

Title of the Paper: Biochemistry

Subject Code: PHT242C104

L-T-P-C: 2-1-0-3 **Total credits: 4**

Course Objectives

After completion of the course the students will be able to learn about the biochemical function and metabolism.

Acquire knowledge in biochemistry that is required to be practiced in community and all other levels of healthcare system.

Understand various relevant medical investigations which will help to diagnose a pathological condition.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Describe carbohydrate, fat and protein metabolism , classification, digestion, absorption , regulation and clinical application	**BT 1**
CO 2	Define bio-enzymes, classify, factors affecting enzyme action and therapeutic uses	**BT 2**
CO 3	Discuss normal levels in body fluids required for functioning and their abnormal levels to understand the disease process.	**BT 3**
CO 4	Demonstrate knowledge related to biochemical mechanisms of muscle contraction and biochemistry of connective tissue and apply these in treating various pathological conditions.	**BT 3**

COURSE OUTLINE:

Modules	**Topics (if applicable) & Course Contents**	**Periods**

I.	Introduction to Biochemistry: A historical prospective. Amino acids & Proteins: Structure & Function. Structure and properties of Amino acids, Types of proteins and their classification, Forces stabilizing protein structure and shape. Different Level of structural organization of proteins, Protein Purification. Denaturation and renaturation of proteins. Fibrous and globular proteins. Carbohydrates: Structure, Function and properties of Monosaccharides, Disaccharides and Polysaccharides. Homo & Hetero Polysaccharides, Mucopolysaccharides, Bacterial cell wall polysaccharides, Glycoprotein's and their biological functions.	**15**
II	Lipids: Structure and functions –Classification, nomenclature and properties of fatty acids, essential fatty acids. Phospholipids, sphingolipids, glycolipids, cerebrosides, gangliosides, Prostaglandins, Cholesterol. Nucleic acids: Structure and functions: Physical & chemical properties of Nucleic acids, Nucleosides & Nucleotides, purines &pyrimidines,. Biologically important nucleotides, Double helical model of DNA structure and forces responsible for A, B & Z – DNA, denaturation and re naturation of DNA.	**15**
III	Enzymes: Nomenclature and classification of Enzymes, Holoenzyme, apoenzyme, Cofactors, coenzyme, prosthetic groups, metalloenzymes, monomeric &oligomeric enzymes, activation energy and transition state, enzyme activity, specific activity, common features of active sites, enzyme specificity: types & theories, Biocatalysts from extreme thermophilic and hyperthermophilicarchaea and bacteria. Role of: NAD+, NADP+, FMN/FAD, coenzymes A, Thiamine pyrophosphate, Pyridoxalphosphate, lipoic-acid, Biotin vitamin B12, Tetrahydrofolate and metallic ions	**15**
IV	Carbohydrates Metabolism: Reactions, energetics and regulation. Glycolysis: Fate of pyruvate under aerobic and anaerobic conditions. Pentose phosphate pathway and its significance, Gluconeogenesis, Glycogenolysis and glycogen synthesis. TCA cycle, Electron Transport Chain, Oxidative phosphorylation. ß-oxidation of fatty acids.	**15**
TOTAL		**60**

Text Book:

1. Chatterjee M.N, Textbook of Biochemistry –JaypeeBrothers, 8th edition.

2. Vasudevan D.M, Textbook of Biochemistry for medical students -Jaypee Brothers, 8th edition.

Reference Book:

3. Marshall &Bangert, Clinical Biochemistry – Metabolic & Clinical aspects – Churchill Livingstone, 3rd edition.

4. Southland V.A, Biochemistry – Churchill Livingstone, 5th edition.

Level: Semester I

Course: C-5
Title of the Paper: ANATOMY LAB I
Subject Code: PHT242C111
L-T-P-C:0-0-2-2 **Total credits: 2**

Course Objectives
The objective of the course is to introduce students the practical gained regarding anatomy of various structures and the histological appearance of various organs of the human body. Identification of the upper limb bones and their features.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate** and understand the normal anatomy of the human body, which will help them to diagnose and treat diseases in the near future.	**BT 1**
CO 2	**Explain** the layers of meninges of the brain and spinal cord and parts of the peripheral nervous system	**BT 2**
CO 3	**Demonstrate** all the muscles, bones, ligaments and nerves of upperlimb	**BT 3**
CO 4	A**nalyze and** Identify the parts of the central nervous system; cerebrum, cerebellum, midbrain, pons and medulla oblongata. Spinal cord and parts of the spinal cord	**BT 3**

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods
I.	.Identification and description of all anatomical structures.	**5**
II	The learning of Anatomy is by demonstration only through dissected parts, slides, models, charts, etc	**5**
III	Demonstration of dissected parts (upper extremity, lower extremity, thoracic & abdominal viscera, face and brain).	**5**
IV	.Demonstration of skeleton- articulated and disarticulated	**25**
TOTAL		**40**

Text Book:

Alison,G.Anne,W.(2014). Ross and Wilson Anatomy and Physiology in Health and Illness. Elsevier Health; UK,13th edition.

Reference Books:

Low & Reed, Basic Biomechanics explained –Butterworth Heinmann, 5th Edition

Level: Semester I

Course: C-6

Title of the Paper: PHYSIOLOGY LAB-I

Subject Code: PHT242C112

L-T-P-C: 0-0-2-2 **Total credits: 2**

Course Objectives

The objective of the course is to learn about various vitals in normal & the alterations in physiology of human body.

Course Outcomes

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Learn** to apply appropriate safety & ethical standards,	**BT 1**
CO 2	**Identify** & locate the anatomical structures	**BT 2**
CO 3	**Demonstrate** the steps involved in the methods.	**BT 3**
CO 4	**Apply** the knowledge & methods in regular life.	**BT 3**

DETAILED SYLLABUS:

MODULE	TOPICS & COURSE CONTENT	PERIODS

I	1. Pulse – Introduction 2. Identification of location. 3. Examination of pulse. 4. Applied physiology of pulse.	10hrs
II	1. Blood pressure – introduction & types 2. Learn methods of measuring blood pressure. 3. Examination of Blood pressure 4. Variations & applied physiology of blood pressure.	10hrs
III	1. Respiratory rate – introduction 2. Methods of examination of respiratory rate. 3. Applied physiology.	10hrs
IV	1. Reflexes – Introduction 2. Types of reflexes 3. Reflex arch 4. Examination of various reflexes 5. Applied physiology	10hrs

Text Book:

1. Alison,G.Anne,W.(2014). Ross and Wilson Anatomy and Physiology in Health and Illness. Elsevier Health; UK,13th edition.
2. Sembulingam.K,Human Physiology- Vol. 1&2 ,MedicalAllied, 7th Edition.

Reference Books:

1. Arthur, Guyton,Textbook of Medical Physiology, Mosby. 4th Edition

Level: Semester I

Course: Core (C7)

Subject: Biomechanics Lab I

Subject Code: **PHT242C113**

Total marks/ credits: 100 /4

L-T-P-C: **0-0-2-2** **Total credits: 2**

Course Objective:

The objectives of this course is that after practical demonstrations the student will be able to illustrate an understanding of the principles of biomechanics and biomechanical understanding in application related health and disease pertaining to muscles and joints of upper limb.

Course Outcomes:

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Define** different types of muscles, palpate the muscles and able to recognize different types of muscle action	**BT 1**
CO 2	**Identification** and uses of various tools for purpose of exercises and rehabilitation.	**BT 2**
CO 3	**Demonstrate** active movements of joints in different planes and axes.	**BT 3**
CO 4	**Analyse** various motions of the human joints from normal and pathological perspective in normal individuals and in pathological condition **.**	**BT 4**

COURSE OUTLINE:

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	Surface anatomy land marks- Bony landmarks	**10**

II	Surface anatomy land marks- Muscular and ligamentous	**10**
III	Identify Muscle work of various movements in body at different angle.	**10**
IV	Identify normal and abnormal posture.	**10**

Text Book:

1. Norkins & Levengie,Joint Structure and Function- A Comprehensive Analysis –F.ADavis, 5th Edition

Reference Books:

1. Low & Reed, Basic Biomechanics explained –Butterworth Heinmann, 5th Edition

Bachelor Degree in Physiotherapy (BPT)

Programme Structure

SECOND SEMESTER							
Sl.No.	**Subject Code**	**Names of subjects**	**L**	**T**	**P**	**C**	**TCP**
Core Subjects							
1	**PHT242C201**	**ANATOMY-II**	**2**	**1**	**0**	**3**	**3**
2	**PHT242C202**	**PHYSIOLOGY-II**	**2**	**1**	**0**	**3**	**3**
3	**PHT242C203**	**BIOMECHANICS-II**	**2**	**1**	**0**	**3**	**3**
4	**PHT242C204**	**PSYCHOLOGY**	**1**	**1**	**0**	**2**	**2**
5	**PHT242C205**	**SOCIOLOGY**	**1**	**1**	**0**	**2**	**2**
6	**PHT242C211**	**ANATOMY LAB-II**	**0**	**0**	**2**	**2**	**4**
7	**PHT242C212**	**PHYSIOLOGY LAB-II**	**0**	**0**	**2**	**2**	**4**
8	**PHT242C213**	**BIOMECHANICS LAB-II**	**0**	**0**	**2**	**2**	**4**
Ability Enhancement Compulsory Courses (AECC)							
6	**CEN982A201**	**COMMUNICATIVE ENGLISH-II**	**1**	**0**	**0**	**1**	**1**
7	**BHS982A204**	**BEHAVIOURAL SCIENCE-II**	**1**	**0**	**0**	**1**	**1**
Generic Elective							
10	**PHT242G201**	**GE-2**	**3**	**0**	**0**	**3**	**3**
	TOTAL					**21**	

Level: Semester II

Course: C-1
Title of the Paper: ANATOMY II
Subject Code: PHT242C201
L-T-P-C:2-1-0-3 **Total credits: 3**

Course Objectives
The objectives of the course is to introduce students regarding Anatomy of various structures, histological appearance of various organs of the human body. Understanding Digestive, cardiovascular system & Genito- Urinary and outline of Endocrine system.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** – Identify & describe the origin/insertion, nerve /blood supply, root value & function of various skeletal muscles (including lower extremity and spine) , course of peripheral nerves	**BT 1**
CO 2	**Understand** the various surface land-marks, apply related radiological and living anatomy.	**BT 2**
CO 3	**Demonstrate** the bones, joints, soft tissues, muscles related to musculoskeletal system of spine & lower extremities. (including lower extremity and spine) , course of peripheral nerves	**BT 3**
CO 4	**Analyze** the movements of lower extremity joints	**BT 3**

COURSE OUTLINE:

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	Cardiovascular system: Circulatory system – major arteries and veins of the body, structure of blood vessels Heart structure, positions, chambers, valves, internal & external features Blood supply to heart Conductive system of heart Lymphatic system Circulation, structure & functions Lymph nodes	**20**
II	**Respiratory system:** Structure of upper and lower respiratory tract Thorax: Pleural cavities & pleura Lungs and respiratory tree Heart and great vessels	**20**

	Diaphragm	
III	**Digestive system** Parts of digestive system Abdominal cavity – divisions Muscles of abdominal wall Liver Pancreas Spleen Alimentary canal Gall bladder Intestine (small & large) Musculoskeletal system: Introduction to lower limb, Bones and Joints of Lower limb, Front, Medial side and back of thigh, Popliteal fossa, gluteal region, Front of Leg, back of leg Medial and lateral sides of leg,, Dorsum of foot, Arches of foot, Nerve supply, blood supply and lymphatic drainage of lower limb.	**20**
IV	**Urinary and Reproductive system:** Urinary system Pelvic floor, innervations Kidney, Ureter, bladder, urethra Genital system – male and female o Reproductive system of male o Reproductive system of female Endocrine system: Pituitary gland Thyroid Parathyroid	**20**
TOTAL		60

TextBook

Alison,G.Anne,W.(2014). Ross and Wilson Anatomy and Physiology in Health and Illness. Elsevier Health; UK, 13th Edition.

Joshi. (2018).Physiology practical manual 2/E, for B.Sc occupational and physical therapy, B.Sc Nursing &allied sciences, 3rd Edition.

Kapoor R. (2014). Physiology practical manual 2/E, for B.Sc occupational and physical therapy, B.Sc Nursing &allied sciences, 11th Edition.

Khurana, I., Khurana, A., (2018).Textbook of anatomy and physiology, 3rd Edition.

Shekar C N C. Manipal Manual Of Medical Physiology: CBS Publication, 4th Edition.

Reference Book:
Singh, S.H.(2017). Principles of human physiology for courses in nursing and allied health sciences: CBS Publishers & Distributors, 3rd Edition.
Tortora,GJ. &DerriksonB.(2008).Principles of Anatomy and Physiology. WileyPublishers& Distributors, global Edition.
Venkatesh D. Sudhakar H.H. (2016). Basics of anatomy, physiology &microbiologylevel 1: CBS Publishers & Distributors, 5th Edition.

Level: Semester II

Course: C-2

Title of the Paper: PHYSIOLOGY-II

Subject Code: PHT242C202

L-T-P-C: 2-1-0-3 **Total credits: 3**

Course Objectives

To introduce students normal physiology of various human body systems along with understand the alterations of physiology in diseases. Students will learn about the basic physiology of digestive, endrocrine, renal & reproductive system.

Course outcomes

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Outline** of different parts and functions of excretory, endocrine, reproductive system.	**BT 1**
CO 2	**Explain** Basic bio chemistry of different stages of digestion & metabolism of carbohydrates, lipids & proteins.	**BT 2**
CO 3	**Understand** various hormonal actions to regulate normal physiology & applied physiology.	**BT 3**

Course Outline :

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**Digestive System** Digestion & absorption of nutrients Gastrointestinal secretions & their regulation Functions of Liver & Stomach. **Respiratory System**:	20hours
II	**Endocrinology** Physiology of the endocrine glands – Pituitary, Pineal Body, Thyroid, Parathyroid, Adrenal, Gonads, Thymus, Pancreas. Hormones secreted by these glands, their classifications and functions.	10 hours
III	**Male & female reproductive system** Male - Functions of testes, pubertal changes in males, testosterone - action & regulations of secretion. Female - Functions of ovaries and uterus, pubertal changes, menstrual cycle, estrogens and progestron - action and regulation.	15 hours
IV	**Renal System** Physiology of kidney and urine formation Glomerular filtration rate, clearance, Tubular function Water excretion, concentration of urine-regulation of Na+, Cl-, K+ excretion Physiology of urinary bladder	15 hours

Text Books:

1. Arthur, Guyton, Textbook of Medical Physiology, Mosby.2nd Edition
2. Singh, S.H.(2017). Principles of human physiology for allied health sciences: CBS Publishers & Distributors, 4th Edition
3. Anand&Manchanda,Textbook of Physiology, Tata McGrawHill,5th Edition

4. Sembulingam.K, Human Physiology- Vol. 1&2 ,MedicalAllied, 7th Edition

Reference Books:

5. Chaudhari, S.K ,Concise Medical Physiology, New CentralAgency,Calcutta, 1st Edition

6. Tortora&Grabowski,Harper Collins, Principals of Anatomy and Physiology, Global Edition.

Level: Semester II

Course: Core (C3)

Subject: Biomechanics II

Subject Code: **PHT242C201**

Total marks/ credits: 100 /4

L-T-P-C: **3-1-0-4** **Total credits: 4**

Course Objective:

The objectives of this course is that the student will be able to demonstrate an understanding of the principles of Biomechanics and Kinesiology.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** Categorize the structure & functions of cervical, thoracic, lumbar and sacral vertebra.	**BT 2**
CO 2	**Identify** general and specific features of the hip, knee, and ankle complex.	**BT 3**
CO 3	**Analyze** the pathological basis of injury and aging of the hip, knee and ankle complex.	**BT 4**
CO 4	**Analyse** different postural malalignment like scoliosis, kyphosis, lordosis and fixed flexion deformity ,about the variation between different pathological gait patterns .	**BT 4**

COURSE OUTLINE :

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**Joint structures and functions:** **i.**Joint design, Structure of Connective Tissue, Properties of Connective Tissue, joint function, changes with disease, injury, immobilization, exercise, over use ii. Structure and functions of lower extremity joints – hip joint, knee joint, ankle and foot complex	20 hours
II	**Joint structures and functions:** i. Structure and functions of axial skeletal joints – vertebral column – craniocervical, thorax, lumbar, lumbo pelvic region. ii. Structure and functions of tempromandibular joint.	25 hours
III	**Posture** – dynamic and static posture, kinetic and kinematics of posture, analysis of posture, effect of age, pregnancy, occupation on posture.	5 hours
IV	**Gait** – kinematics and kinetics of gait, gait in running and stair climbing.	10 hours

Text Book:

1. Norkins & Levengie, Joint Structure and Function- A Comprehensive Analysis – F.ADavis, 5th Edition
2. Norkins& White, Measurement of Joint Motion–A guide to Goniometry, F. A Davis, 5th Edition
3. Smith et al., Brunstrom's Clinical Kinesiology —F.ADavis, 4th Edition

Reference Books:

4. Low & Reed, Basic Biomechanics explained –Butterworth Heinmann, 2nd Edition
5. SoderbergLippineou, Kinesiology Applied to Pathological Motion, 4thEdition

Level: Semester II

Course: C-4

Title of the Paper: PSYCHOLOGY

Subject Code: PHT242C204

L-T-P-C:1-1-0-2 **Total credits: 2**

Course Objectives

- The objective of the course is to introduce students to the Psychology and study of various behavioural patterns of individual.
- Students will able to learn about the communication and interaction skills appropriate to various age groups

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	relate the concepts of the term Psychology & its importance in health delivery system, explain psychological maturation during development & psychological alterations during aging.	**BT 1**
CO 2	explain the importance of psychological status of the person in health & disease and emotional status of a patients.	**BT 2**
CO 3	apply skills for good interpersonal communication with the patient and the family member.	**BT 3**
CO 4	Analyze various psychiatric disorders, Identifying intelligence (IQ)among the patients.	**BT 4**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Introduction to Psychology, Fields of application of Psychology, influence of heredity and environment on the individual.	10 hours

	Learning – theories and principles of learning, Learning disabilities. Memory – types, theories of memory and forgetting, methods to improve memory	
2	Thinking – process of thinking, problem solving, decision making and creative thinking. Motivation - theories and types of Motivation. Emotions - theories of emotions and stress, Emotional and behavioral disorders of childhood and adolescence, Disorders of under and over controlled behavior, Eating disorders. Attitudes – theories, attitudes and behavior, factors in attitude change.	20 hours
3	Intelligence - theories of intelligence, I.Q., general intelligence and special intelligence, intelligence tests and their uses. Personality, theories of personality, factors influencing personality, Personality Disorders. Conflict and frustration - Common defensive mechanism : Identification, regression, repression, projection, sublimation and rationalization.	10 hours
4	Attention and Perception : Nature of attention, factors determining attention, nature of perception, principle of perceptual grouping; Illusions and Hallucination.	20 hours

	Counseling - Aims and principles. Development and growth of behavior in infancy and childhood, adolescence, adulthood and old age, normal and abnormal. Psychotherapy – introduction to paradigms in psychopathology and therapy. Mental deficiency - a) Mental retardation, b) Autistic behavior c) Learning disabilities.	

Text Book:

1. Weld A.V, Foundation of Psychology, CBS Publishing House, 4th edition.
2. Kolkar A, Introduction to social Psychology, Oxford Publishing House, 5th Edition.
3. Porter & Alder, Psychology and Sociology- Applied to Medicine-W.B Saunders, 5th Edition.

Reference Books:

4. Mehta Manju,Behaviorial Sciences for Medical Undergraduates-Jaypee Brothers, 9th Edition.
5. Mohsin S.M., Elementary Psychology- Jaypee Brothers, 2nd Edition.

Level: Semester II

Course: C-5

Title of the Paper: SOCIOLOGY

Subject Code: PHT242C205

L-T-P-C:1-1-0-2 **Total credits: 2**

Course Objectives

- The objectives of the course is to introduce students about Sociology which will help them to work in society
- Will know more about different cultures in the society

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Relate to the different culture in the society .	**BT 1**
CO 2	Understanding social factors affecting health, influence of family, culture, community on health perspectives	**BT 2**
CO 3	apply skills for good interpersonal communication with the patient and with the society	**BT 3**
CO 4	Analyze stress and its relation with the health ,and also with the community.	**BT 4**

COURSE OUTLINE:

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	Introduction: Definitions of sociology, sociology as a science of society, uses of the study of sociology, application of knowledge of sociology in physiotherapy and occupational therapy.	10 hours

	Sociology & Health: Social factors affecting health status, social consciousness and perception of illness, social consciousness and meaning of illness, decision making in taking treatment. Institutions of health, their role in the improvement of the health of the people. Socialization: Meaning of Socialization, influence of social factor on personality, Socialization in hospitals, Socialization in the rehabilitation of patients	
II	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 hospitals and rehabilitation setting. Family: Influence of family on human personality, discussion of changes in functions of a family, influence of family on individual's health, family and nutrition, the effects of sickness on family and psychosomatic disease. Community: Concept of community, role of rural and urban communities in public health, role of community in determining belief's , practice and home remedies in treatment.	10 hours
III	Culture: Components of culture. Impact of culture on human behaviour,cultural meaning of sickness, response & choice of treatment (role ofculture as social consciousness in moulding the perception of reality),and culture induced symptoms and disease, sub- culture of medicalworkers.	10 hours

	Cast system: Features of modern caste system and its trends. Social change: Meaning of social change, factors of social change,human adaption and social change, social change and stress, socialchange and deviation, social change and health programmes, the role ofsocial planning in improvement of health and in rehabilitation	
IV	Social problems of the disabled : Population explosion Poverty and beggary Un employment Juvenile delinquency Prostitution Alcoholism Problems of women in employment Geriatric problems Problems of under previledged Social security: Social security and social legislation in relation to disabled Social worker: The role of medical social worker.	20 hours

Text Book:

1. MageeD.J, Sociology- Drydon Press, Illinois, 4th Edition.
2. Kupaswamy, Social changes in India- Vikas Publications, Delhi, 3rd Edition.
3. Ahuja K.D, Social Problems –Bookhive,Delhi, 2nd Edition.
4. Ginnsberg P, Principles of sociology – Sterling Publications, 7th Edition.

Reference Books:

5. Parter& Alder – Psychology & Sociology applied to medicine – W.B Saunders, 4th Edition.

6. Julian – Social Problems- PrenticeHall, 1st Edition.

Level: Semester II

Course: C-6
Title of the Paper: ANATOMY LAB II
Subject Code: PHT242C211
L-T-P-C:0-0-2-2 **Total credits: 2**

Course Objectives
The objective of the course is to introduce students the practical gained regarding anatomy of various structures and the histological appearance of various organs of the human body. Identification of the lower limb bones and their features.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**relate** the normal anatomy of the human body, which will help them to diagnose and treat diseases in the near future.	**BT 1**
CO 2	**Explain** the functions of all the organs and lower limb bones.	**BT 2**
CO 3	**Identify** all the muscles and bones of lowerlimb.	**BT 3**
CO 4	**Analyzing** the parts and functions of all the organs of the lower limb applying on the patients	**BT 3**

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods
I.	. . Demonstration of dissected parts (upper extremity, lower extremity, thoracic & abdominal viscera, face and brain). .	**5**
II	. Demonstration of skeleton- articulated and disarticulated.	**20**
III	During the training more emphasis will be given on the study of bones, muscles, joints, nerve supply of the limbs and arteries of limbs.	**5**
IV	. Surface anatomy: -surface land mark-bony, muscular and ligamentous. -surface anatomy of major nerves, arteries of the limbs. Points of palpation of nerves and arteries.	**10**
T**OTAL**		**40**

Text Book:

Alison,G.Anne,W.(2014). Ross and Wilson Anatomy and Physiology in Health and Illness. Elsevier Health; UK, 4th edition

Reference Books:

Low & Reed, Basic Biomechanics explained –Butterworth Heinmann, 4th Edition.

Level: Semester II

Course: C-7

Title of the Paper: PHYSIOLOGY LAB - II

Subject Code: PHT242C212

L-T-P-C: 0-0-2-2 **Total credits: 4**

Course Objectives

The objective of the course is to learn about the various lung volumes in normal & alternative physiology of human body. Learn about the various blood components haemoglobin, RBC, WBC, ESR, blood grouping etc.

Course Outcomes

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Learn** to apply appropriate safety & ethical standards,	**BT 1**
CO 2	**Identify** & use of laboratory equipments such as microscope, test tube, needle etc.	**BT 2**
CO 3	**Demonstrate** the steps involved in the methods.	**BT 3**
CO 4	**Apply** the knowledge & methods in regular life.	**BT 3**

Course Outline :

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	1. Appropriately utilize laboratory equipments such as microscope, test tube etc. 2. Appropriate safety & ethical standards during lab time.	5HRS

II	1. Spirometery to measure various lung capacities & volumes 2. Respiratory rate, 3. Tidal volume, IRV, IC, ERV, EC, residual volume on Spirometery	15HRS
III	1. Estimate of Haemoglobin, R.B.C., W.B.C., TLC, DLC, ESR count. 2. Methods of measuring. 3. Normal values & applied physiology.	10HRS
IV	1. Blood indices, Blood grouping, Bleeding& Clotting time 2. Examination methods of measuring. 3. Normal values & Applied physiololgy.	10HRS

Text Book:

1. Alison,G.Anne,W.(2014). Ross and Wilson Anatomy and Physiology in Health and Illness. Elsevier Health; UK, 4th edition
2. Arthur, Guyton, Textbook of Medical Physiology, Mosby.2ndEdition.

Reference Books:

1. Sembulingam.K, Human Physiology- Vol. 1&2 ,MedicalAllied, 7th Edition

Level: Semester II

Course: Core (C8)

Subject: Biomechanics Lab II

Subject Code: **PHT242C213**

Total marks/ credits: 100 /4

L-T-P-C: **0-0-2-2** **Total credits: 4**

Course Objective:

The objectives of this course is that after practical demonstrations the student will be able to illustrate an understanding of the principles of biomechanics and biomechanical understanding in application related health and disease pertaining to muscles and joints of lower limb and spine.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** the normal biomechanics of the joints of the lower extremity and spine in human body.	**BT 2**
CO 2	**Apply** postural analysis knowledge based upon observational skills and quantitative motion analysis to rule out various conditions.	**BT 3**
CO 3	**Analyse** various motions of the human joints from normal and pathological perspective in normal individuals and in pathological condition	**BT 4**
CO 4	**Analyse** symptoms to diagnose and treat altered biomechanics for conditions in the near future.	**BT 4**

COURSE OUTLINE :

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	Goniometry – measurement of joint ROM .	**10**
II	Identify Muscle work of various movements in body at different angle	**10**
III	Identify normal and abnormal posture.	**10**
IV	Normal gait with it parameters and identify abnormal gait with the problems	**10**

Text Book:

1. Norkins & Levengie, Joint Structure and Function- A Comprehensive Analysis –F.ADavis, 5th Edition

Reference Books:

1. Low & Reed, Basic Biomechanics explained –Butterworth Heinmann, 4th Edition.

Bachelor Degree in Physiotherapy (BPT)

Programme Structure

THIRD SEMESTER							
Sl.No.	**Subject Code**	**Names of subjects**	**L**	**T**	**P**	**C**	**TCP**
Core Subjects							
1	**PHT242C301**	**PATHOLOGY-I**	**1**	**1**	**0**	**2**	**2**
2	**PHT242C302**	**MICROBIOLOGY-I**	**2**	**1**	**0**	**3**	**3**
3	**PHT242C303**	**EXERCISE THERAPY-I**	**2**	**1**	**0**	**3**	**3**
4	**PHT242C304**	**ELECTROTHERAPY-I**	**2**	**1**	**0**	**3**	**3**
5	**PHT242C305**	**COMMUNITY MEDICINE-I**	**2**	**1**	**0**	**3**	**3**
6	**PHT242C311**	**EXERCISE THERAPY LAB-I**	**0**	**0**	**2**	**2**	**4**
7	**PHT242C312**	**ELECTRO THERAPY LAB-I**	**0**	**0**	**2**	**2**	**4**
Ability Enhancement Compulsory Courses (AECC)							
8	**EVS982A303**	**ENVIRONMENTAL SCIENCE**	**2**	**0**	**0**	**2**	**2**
9	**CEN982A301**	**COMMUNICATIVE ENGLISH-III**	**1**	**0**	**0**	**1**	**1**
Ability Enhancement Elective Courses (AEEC)							
10		**Subjects offered by other departments**	**1**	**1**	**0**	**2**	**2**
Generic Elective							
11	**PHT242G301**	**GE-2**	**3**	**0**	**0**	**3**	**3**
	TOTAL					**24**	

Level: Semester III

Course: C-1

Title of the Paper: PATHOLOGY I

Subject Code: **PHT242C301**

L-T-P-C:1-1-0-2 **Total credits: 3**

Course Objectives

The objectives of the course is to introduce students to acquire knowledge of the Pathology and learn to apply these knowledge into practice and the Lecture, the students will be able to understand about the pathology including immunity, virology, antiseptics and allergy.

Course Outcomes

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate** and understanding about disease and changes in structure and function of cells during disease condition gained.	**BT 1**
CO 2	**Understand** the cell injury &response of different tissues, organs and capacity of the body to heal.	**BT 2**
CO 3	**Demonstrate** an understanding of the pathology of common diseases that therapists would encounter in their daily practice.	**BT 3**
CO 4	**Analyze** the disease pathology and plan strategies to manage them.	**BT 3**

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods
I.	1. **Introduction**: Concepts of diseases, classification of lesions 2. **Bacterial, viral and parasitic infections** – a general outline. 3.**Cell injury:** Reversible cell injury-types, sequential changes, cellular swellings, vacualation, hyaline changes, mucoid changes. Irreversible cell injury-types of necrosis and gangrene, Autolysis.	**20**

II	4. **Inflammation and repair**- Acute inflammation-features, causes, vascular and cellular events, inflammatory cells and mediators Chronic inflammation-causes, types, classification, nonspecific and granulomatous with examples. **5.Repair**, wound healing by primary and secondary union, factors promoting and delaying the process. Healing in specific site including bone healing. Haemorrhage, shock-pathogenesis,types, morphologic changes embolism and thrombosis- formation, fate and effects.	**30**
III	**.6 Respiratory System** : Pneumonias, Bronchiectasis, Emphysema, chronic, Bronchitis, Asthma. Leukocytic disorders-leukocytosis, leukopenias, leukemoid reaction. .Leukemia-classification, clinical manifestation, pathology and diagnosis. Tuberculosis, Leprosy, Typhoid Deficiency diseases	**20**
IV	Tumors: etiology& spread, common tumours, types. Blood: Anaemia-causes, symptoms, types. Heart and blood vessels	**10**
TOTAL		**60**

Text Book:
General Pathology – Walter & Israel – Churchill Livingstone
Muirs Textbook of Pathology –Anderson – Edward Arnold Ltd.
Textbook of Pathology - Harsh Mohan –Jaypee Brothers

Reference Books:
Pathology: Implications for Physical Therapists – Goodmann and Boissonnault – W.B Saunders

Level: Semester III

Course: C-2

Title of the Paper: MICROBIOLOGY-I

Subject Code: PHT242C302

L-T-P-C: 1-1-0-2 **Total credits: 2**

Course Objectives

The subject involve the study of common organisms causing disease including nosocromial infections & precautionary measures to protect one from acquiring infections. By understanding microbiology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Learn** the microbiology of various conditions, diseases and disorders.	**BT 1**
CO 2	**Understand** how to protect themselves and their patients from infections during their interactions	**BT 2**
CO 3	**Explain** morphology, mode of infection, multiplication of medically important viruses & their treatment.	**BT 2**
CO 4	**Demonstrate** the microbiology of common diseases that therapists would encounter in their daily practice.	**BT 3**

Course Outline :

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	1. Introduction and history of microbiology 2. Micro-organisms a) Classification b) Shape and arrangement c) Special characteristics –spores, capsules, enzymes, motility, reproduction	15 hours
II	3. Disinfection and antiseptics – • Definition • Types • Use in various aspects 4. Sterilization and asepsis - • Definition • Types • Uses	15 hours
III	5. Antimicrobial agents • Antibacterial agents , Antiviral agents – • definition, • classification, • fundamental aspect, • spectrum of antibiotics • action of antibiotics • susceptibility tests.	15 hours
IV	6. Infection – • definition, • normal microbial flora, • source of infection, • chain of infection - portals of entry & exit, • spread of infection	15 hours

Text Book:

1) Essential of Medical Microbiology – Bhatia &Lal – Jaypee Brothers.

2) Medical Microbiology –Mims –Jaypee Brothers

Reference Books:

Microbiology : An introduction for the Health Sciences – Ackerman and Richards – W.B. Saunders Co

Level III

Course: C 3

Title of the Paper: Exercise Therapy-I

Subject Code: PHT242C303

Marks/ Credits: 100/4

L-T-P-C: **2-1-0-3** **Total credits: 3**

Course Objectives:

The objective of the course is after student will be able to apply the different types of exercises in different conditions considering the indications and contraindications of the procedure and describe the effects of the techniques.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the fundamentals of muscle and joint function and describe the use of various equipment's and techniques.	**BT 2**
CO 2	**Demonstrate** how to grade the strength of muscle and how to measure the joint range of motion.	**BT 3**
CO 3	**Demonstrate** the technique of different types of movements, massage therapy muscle training and fitness training concepts.	**BT 3**
CO 4	**Analyse** the problem of the patient and plan the treatment required based on problem of the patient.	**BT 4**

COURSE OUTLINE:

Modules	Course Content	Periods
I.	1. Introduction to Exercise therapy, Principles, techniques and general areas of its application, Assessment & its importance. 2. Description of Fundamental starting positions and derives position including joint positions, muscle work, stability, effects and uses. 3. Introduction to Movements including analysis of joint motion, muscle work and Neuro muscular co-ordination. 4. Classification of movements – Describe the types, technique of application, indications, contraindication, effects and uses of the following: a) Active movement b) Passive movement c) Active assisted movement d) Resisted movement 5. To study the principles, techniques of application indication, Contraindication, precaution, effects and uses of Suspension Therapy.	15
II.	1.Manual muscle testing a) Principles and application techniques of Manual muscle testing. b) Testing position, procedure and grading of muscles of the upper limb, lower limb and trunk . 2.Goniometery a) Principles, techniques and application of Goniometer. b) Testing position, procedure and measurement of R.O.M of the joints of upper limbs, lower limbs and trunk.	**10**
III.	Motor Learning i)Introduction to motor learning a) Classification of motor skills b) Measurement of motor performance. ii)Introduction to motor control a) Theories of motor control b) Applications iii)Learning Environment a) Learning of Skill b) Instruction & augmented feed back	20
IV.	1.Soft tissue manipulation(massage) a)History ,various types of soft tissue manipulation b)Physiological effects of soft tissue manipulation on various systems 2.Relaxation and Therapeutic Gymnasium	15

	a)Describe relaxation ,muscle fatigue ,muscle spasm and tension , b)Techniques of relaxation (local and general) c)Effects ,Uses and clinical application d)Indication and Contraindication 3.Therapeutic Gymnasium a)Setup of a gymnasium and its importance b)Various equipment's in the gymnasium c) Effects and uses of each equipment .	
	TOTAL	**60**

Text Book:

1. Therapeutic Exercises Foundation and Techniques – Kisner and Colby-F.A Davis.

Principle of Exercise Therapy- Gardiner – C.B.S Delhi.

Reference Books:

1. Practical Exercise Therapy Hollis- Blacwell Scientific Publications.

2. Therapeutic Exercise – Basmajian- Williams and Wilkins.

Level: Semester III

Course: Core (C4)

Subject: Electrotherapy I

Subject Code: **PHT242C304**

Total marks/ credits: 100 /3

L-T-P-C: **2-1-0-3** **Total credits: 3**

Course Objective:

The course objective is that after completion of this course the students will be able to understand the basic aspects of electrotherapy, low frequency current & radiation therapy & utilize contemporary & recent methods to select the most appropriate method to alleviate pain for patients.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Define** the basics of electricity and its physiological & therapeutic effects gained	**BT 1**
CO 2	**Illustrate** about pain and pain modulation mechanism & **examine** neuromuscular dysfunctions by using electro-diagnostic test	**BT 2**
CO 3	**Apply** the construction, biophysical principles and effects, dangers, safety measures, judicial use, appropriate methods of application, contraindications of the various low frequency equipments & radiation therapy units.	**BT 3**
CO 4	**Examine** the principles and techniques of different electrotherapy modalities in the restoration of physical function in condition like nerve injuries.	**BT 4**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**Physical Principles** 1. Structure and properties of matter – solids, liquids and gases, adhesion, surface tension, viscosity, density and elasticity. 2. Structure of atom, molecules, elements and compounds. Election theory, static and current electricity 3. Conductors, Insulators, Potential Difference, Resistance &Intensity Ohm's Law – Its application to AC &DC currents a) Rectifying Devices–Thermionic valves, Semiconductors, b) Transistors, Amplifiers, Transducers Oscillator circuits c) Capacitance, condensers in DC and AC circuit d) Display devices & indicators – analogue & digital **Effects of Current Electricity:** 1. Chemical effects- Ions and electrolytes, Ionisation, Production of a E.M.F by chemical action. 2. Magnetic effects, Molecular theory of magnetism, Magnetic fields, Electromagnetic Induction. 3. Milli ammeter and Voltmeter, Transformers and choke coil Thermal Effects – Joule's Law and Heat production 5. Physical Principals of light and its properties 6. Electromagnetic spectrum – biophysical application **Electrical supply:-** a) Brief outline of main supply of electric current b) Dangers –short circuits, electric shocks c) Precautions – safety devices, earthing, fuses etc. d) First aid & initial management of electric shock **Principles of Application**	20
II	**Low Frequency Currents** a. Introduction to direct, alternating &modified currents b. Production of direct current –Physiological and therapeutic effects of constant current anodal and cathodal Galvanism, Ionisation and their application in various conditions. c. Iontophoresis – Principles of clinical application, indication, contraindication, precaution, operational skills of equipment & patient preparation. d. Modified direct current – various pulses, duration and frequency and their effect on Nerve and Muscle tissue. Production of interrupted and surged current and their effects. e. Modified direct current- Physiological and therapeutic effects, principles of clinical application, indications, contra indications, precautions, operational skills	15

	of equipment& patient preparation. 6. Transcutaneous Electrical Nerve Stimulations(TENS):- a. Types of Low Frequency pulse widths, frequency & intensities used as TENS applications. b. Theories of pain relief by TENS c. Principle of clinical application, effects & users, indicators, contraindications, precautions, operational skills of equipment and patient preparation.	
III	**Electrical Reactions and Electro-diagnostic tests:** 1. Electrical Stimuli and normal behavior of Nerve and muscle tissue. Types of lesion and development of reaction of degeneration Faradic- Intermittent direct current test, Faradic foot bath 2. S.D Curve and its application Chronaxie, Rheobase &pulse ratio	10
IV	**Radiation Therapy:** a. Infra- red rays- Wavelength, frequency, types & sources of IRR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, operational skills of equipment & patient preparation. b. Ultra- violet rays(UVR):- Wavelenght, frequency, types & sources of UVR generation , techniques of irradiation , physiological & therapeutic effects, indications.contraindications, precautions, operational skills of equipment & patient preparation. Dosimetry of UVR.	15
	TOTAL	60

Textbooks:

1. Electrotherapy Explained: Principles &Practice – Low & Reed – Butterworth Heinemann.
2. Clayton's Electrotherapy, (9*t*h ed.) Forster & Palastanga Bailliere Tindall.

Reference Books:

1. Jagmohan Singh, Electrotherapy, Jaypee Brothers, 2nd Ed, 2012.
2. Basant Kumar Nanda, Electrotherapy explained, Jaypee Brothers, 1st Ed, 2006.
3. Principles and Practice of Electrotherapy- Kahn – Churchill Livingston

Level: Semester III

Course: C-5

Title of the Paper: COMMUNITY MEDICINE-I

Subject Code: PHT242C305

L-T-P-C:2-1-0-3 **Total credits: 3**

Course Objectives

- To introduce students to know more on the community medicine.
- Students will able to understand about various influence of social and environmental factors in individual and society.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Relate about different diseases and disorders in the community.	**BT 1**
CO 2	Understanding factors affecting health, influence of occupational disease in community.	**BT 2**
CO 3	apply skills in community regarding occupational health hazards, health problems related to women health	**BT 3**
CO 4	Analyze diseases and disorders in community and different planning or programme in India.	**BT 4**

Course outline :

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	**Health & Disease** □ Definitions: National & International, 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 **Epidemiology** □ Definition and scope. □ Principles of Epidemiology and Epidemiological methods, Uses of Epidemiology	20 hours

II	**Socio-Economical &Cultural Issues related to Morbidity owing to the Physical** Disability & Handicaps of Structural /Neuro-motor &Psycho-somatic origin: • Health problem in vulnerable groups • Pregnant & lactating women, Pelvic floor Dysfunction, Urinary incontinence • Pre-term babies with high risk, Infants &Pre-School Children-Brain Damage, during birth injury	15 hours
III	**Demography and Family Planning** • Family planning-objectives of national family planning programme • Family planning methods: A general idea of advantage and disadvantages of the methods. **Immunization programmes –** children & hospital staff.	15 hours
IV	**Occupational Health:** • Occupational hazards, • Occupational diseases • Prevention of occupational diseases. • Social security and other measures for the protection from occupational hazard accidents and diseases, • Compensation acts.	10 hours

Text Book:

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

Reference Books:

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

Level III

Course: C 6

Title of the Paper: Exercise therapy Lab-I

Subject Code: PHT242C311

Marks/ Credits: 100/2

L-T-P-C: 0-0-2-2 **Total credits: 2**

Course Objectives:

The objective of the course is after student will be able to apply the different types of exercises in different conditions considering the indications and contraindications of the procedure and describe the effects of the techniques.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the fundamentals of muscle and joint function and describe the use of various equipment's and techniques.	**BT 2**
CO 2	**Demonstrate** how to grade the strength of muscle and how to measure the joint range of motion.	**BT 3**
CO 3	**Demonstrate** the technique of different types of movements, massage therapy muscle training and fitness training concepts.	**BT 3**
CO 4	**Analyse** the problem of the patient and plan the treatment required based on problem of the patient.	**BT 4**

COURSE OUTLINE:

Modules	Course Content	Periods
I.	1. To practice the measurement of ROM of joints – upper limb, lower limb & trunk 2. To practice the grading of muscle strength region wise –upper limb, lower limb and trunk. 3. Different massage techniques- upper and lower limb . To study the different types of muscle contraction, muscle work, group action of muscles and co-ordinated movements. 4. To practice the various types of suspension therapy and its application on various parts of body-region wise	20
II.	5. To study the position of joints, muscle work, and stability of various fundamental and derived positions. 6. To study & practice local & general relaxation techniques. 7. To study the structure & function along with application of various equipment in a gymnasium	**20**
	TOTAL	**40**

Text Book:

1. Progressive resisted exercises – by Margaret Hollis,
2. Therapeutic Exercise by Carolyn Kisner
3. Principles of Exercise therapy – Dena M. Gardiner

Reference Books:

1.Therapeutic exercise by Basmijjan& Wolf.

2 Muscle testing by Daniel Kendall

3 Clinical evaluation – Lacote (for isolated assessment of abdominal muscles)

4 Muscle stretching & Auto stretching – Olaf Evjenth

5 Orthopaedic Evaluation – Magee (only for assessment of posture)

Level: Semester III

Course: Core (C7)

Subject: Electrotherapy Lab I

Subject Code: **PHT242C312**

Total marks/ credits: 100 /4

L-T-P-C: **0-0-2- 2** **Total credits: 4**

Course Objective:

The course objective is that after completion of this course the students will be able to acquire the knowledge of application of various electrotherapy modalities and demonstrate the different techniques and describe their effects.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Demonstrate** appropriate diagnostic skill based on the clinical need of the patients	**BT 2**
CO 2	**Apply** the effective electrotherapy treatment methods with privacy and precautions	**BT 3**
CO 3	**Simplify** safe and efficient application of advanced physical agents like IRR & UVR	**BT 4**
CO 4	**Analyze** accurate electro-diagnostic tests and interpret its findings prior to the selection of therapeutic currents	**BT 4**

Course Outline :

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	1. To experience sensory and motor stimulation of nerves and muscles by various types of low frequency currents on self. 2. To locate and stimulate different motor points region wise including the upper and lower limb, trunk & face.	10
II	3. Therapeutic application of different low frequency currents, Faradic foot bath, Faradism under pressure, Ionotophoresis. 4. To study TENS stimulations, its operation and application – region wise	10
III	5. To study the reactions of degeneration of nerves to plot strength duration curves. 6. To find chronaxie and Rheobase.	10
IV	7. To study the different types of Ultra violet units,their operation, assessment of test dose and application of UVR- region wise. 8. To study the various types of Infrared lamps and their application to body region wise.	10
	TOTAL	40

Textbooks:

3. Electrotherapy Explained: Principles &Practice – Low & Reed – Butterworth Heinemann.
4. Clayton's Electrotherapy, (9*t*h ed.) Forster & Palastanga Bailliere Tindall.

Reference Books:

4. Jagmohan Singh, Electrotherapy, Jaypee Brothers, 2nd Ed, 2012.
5. Basant Kumar Nanda, Electrotherapy explained, Jaypee Brothers, 1st Ed, 2006.
6. Principles and Practice of Electrotherapy- Kahn – Churchill Livingstone

Bachelor Degree in Physiotherapy (BPT)

Programme Structure

FOURTH SEMESTER							
Sl.No.	**Subject Code**	**Names of subjects**	**L**	**T**	**P**	**C**	**TCP**
Core Subjects							
1	PHT242C401	PATHOLOGY-II	1	1	0	2	2
2	PHT242C402	COMMUNITY MEDICINE -II	1	1	0	2	2
3	PHT242C403	EXERCISE THERAPY-II	2	1	0	3	3
4	PHT242C404	ELECTROTHERAPY-II	2	1	0	3	3
5	PHT242C405	PHARMACOLOGY-I	1	1	0	2	2
6	PHT242C411	EXERCISE THERAPY LAB-II	0	0	2	2	4
7	PHT242C412	ELECTRO THERAPY LAB-II	0	0	2	2	4
8	PHT242C421	MINOR PROJECT (EXERCISE THERAPY)	0	0	1	1	1
9	PHT242C422	MINOR PROJECT (ELECTRO THERAPY)	0	0	1	1	1
Ability Enhancement Compulsory Courses (AECC)							
10	CEN982A401	COMMUNICATIVE ENGLISH-IV	1	0	0	1	1
Ability Enhancement Elective Courses (AEEC)							
11		Subjects offered by other departments	1	1	0	2	2
Generic Elective							
12	PHT242G401	GE-2	3	0	0	3	3
	TOTAL					21	

Level: Semester IV

Course: C-2

Title of the Paper: PATHOLOGY II

Subject Code: PHT242C401

L-T-P-C:1-1-0-2 **Total credits: 3**

Course Objectives

The objective of the course is to introduce students the Pathology and learn to apply these knowledge into practice and understand about the pathology, including immunity, virology, antiseptics and allergy.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate and explain** the importance and best practices to prevent development of infections in self and patients (universal safety precautions).	**BT 1**
CO 2	**Understand** the Pathogenesis and pathological changes of disease in various body system is understood properly.	**BT 2**
CO 3	**Understanding** the pathology of common diseases that therapists would encounter in their daily practice.	**BT 3**
CO 4	**Analyze** the pathology, including immunity, virology, antiseptics and allergy	**BT 3**

COURSE OUTLINE:

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	1. **Bone and Joints**: Autoimmune diseases, septic arthritis, Osteomyelitis, osteomalacia,Gout, Rickets 2. **Skin**- melanin pigment disorder, vitiligo, Alopacia, skin biopsy,leprosy, SLE, Scleroderma and Psoriasis	**20**
II	. **Urinary system** -commonly encountered in paralytic bladder, common urinary tract infection(brief)- urinary calculi. 4. **Central nervous system** : CNS infections, vascular disorders 5.**Respiratory system:** COPD, pneumonia,, pleuritis, lung collapse-atelectasis	**30**
III	6. **Rheumatoid Arthritis** – epidemiology, causes, sites, pathophysiology, clinical features, diagnosis **7. Haematology**- bleeding and coagulation disorder, lymphoid and myeloid neoplasms 8.**Hepatic diseases**- Cirrhosis-emphasis to systemic effects of portal	**20**

	Hypertension.	
IV	Diseases of muscle: Poliomyelitis, Myopathies,hypertrophy,atrophy, myotonia, muscular dystrophy 10. Congenital heart disease **Cardiovascular system**: Atherosclerosis-Ischemic heart disease-myocardial Infarction—pathogenesis/pathology Hypertension, peripheral vascular disease.	**10**
TOTAL		**60**

Text Book:
General Pathology – Walter & Israel – Churchill Livingstone
Muirs Textbook of Pathology –Anderson – Edward Arnold Ltd.
Textbook of Pathology - Harsh Mohan –Jaypee Brothers
Reference Books:
Pathology: Implications for Physical Therapists – Goodmann and Boissonnault – W.B Saunders

Level: Semester IV

Course: C-2

Title of the Paper: MICROBIOLOGY-II

Subject Code: PHT242C402

L-T-P-C: 1-1-0-2 **Total credits: 2**

Course Objectives

The subject involve the study of common organisms causing disease including nosocromial infections & precautionary measures to protect one from acquiring infections. To understand various types of immune system & its action against various diseases. By understanding microbiology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient.

Course Outcomes :

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Learn** the various bacterial & viral diseases which are contagious.	**BT 1**

CO 2	**Understand** how to protect themselves and their patients from infections during their interactions or treatment.	**BT 2**
CO 3	**Explain** morphology, mode of infection, multiplication of medically important viruses & bacteria with their treatment.	**BT 2**
CO 4	**Demonstrate** the microbiology of common diseases that therapists would encounter in their daily practice.	**BT 3**

Course Outline :

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	• Immunology – definition, classification • Non-specific immunity • Immunity-natural and acquired • Allergy and hypersensitivity – types & examples. • Antigen-antibody reaction	15 hours
II	• Outline of common pathogenic bacteria and diseases produced by them: Treatment and prevention of: a) Respiratory tract infections – types, clinical features. b) Meningitis – definition, types, clinical features	15 hours
III	• Outline of common pathogenic bacteria and diseases produced by them: Treatment and prevention of: A) Enteric Infections B) Anaerobic infections C) Urinary tract infections D) Leprosy, tuberculosis and miscellaneous infections E) Wound infections F) Sexually transmitted diseases G) Hospital acquired infections	15 hours
IV	• Pathogenic yeast's and fungi – types, clinical features, management with antifungal agents • Virology– definition, structure of virus, routes of virus. • Virus infections with special mention of Hepatitis, Poliomyelitis & Rabies.	15 Hours

Text Book:

3) Essential of Medical Microbiology – Bhatia &Lal – Jaypee Brothers.

4) Medical Microbiology –Mims –Jaypee Brothers

Reference Books:

Microbiology : An introduction for the Health Sciences – Ackerman and Richards – W.B. Saunders Co.

Level -Semester IV

Course: C3

Title of the Paper: Exercise Therapy II

Subject Code: PHT242C303

Marks/ Credits: 100/4

L-T-P-C: **2-1-0-3** **Total credits: 3**

Course Objectives:

The objective of the course is after student will be able to apply the different types of exercises in different conditions considering the indications and contraindications of the procedure and describe the effects of the techniques.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the fundamentals of use of therapeutic exercise in various conditions.	**BT 2**
CO 2	**Demonstrate** manual therapeutic techniques used in rehabilitation of patients.	**BT 3**
CO 3	**Demonstrate** various specialized techniques used in physiotherapy like PNF, mobilization and manipulation, and group therapy	**BT 3**
CO 4	**Analyse** normal human posture & various normal musculoskeletal movements during Gait, activities of daily living	**BT 4**

COURSE OUTLINE:

Modules	Course Content	Periods
I.	Therapeutic Exercises 1. Principles, classification, techniques, physiological & therapeutic effects, indications & contraindications of therapeutic exercises. 2. Assessment & evaluation of patient (region wise) to plan a therapeutic exercise programme. 3. Joint Mobility – Aetiology of Joint stiffness, general techniques of mobilization , effects, indications, contraindications & precautions. 4. Muscle Insufficiency – Aetiology of muscle insufficiency (strength, tone, power, endurance & volume), general techniques of strengthening, effects, indications, contraindications & precautions. 5. Neuro-muscular Inco-ordination-Review normal neuromuscular coordination, Aetiology of neuromuscular in co-ordination & genetic therapeutic techniques, effects, indications, contraindications & precautions. 6. Functional re-education – General therapeutic techniques to re- educate ADL function	**15**
II.	Posture, Balance, Gait: 1. Normal Posture – Overview of the mechanism of normal posture. 2. Abnormal Posture – Assessment, Types, Etiogenesis, management including therapeutic exercise. 3. Static and Dynamic Balance – Assessment & management including therapeutic exercises. 4. Gait – Overview of normal gait & its components. 5. Gait deviations – Assessment ,types , etiogenesis, management including therapeutic exercises.	**15**
III.	Hydrotherapy 1. Basic Principles of fluid mechanics, as they relate to hydrotherapy 2. Physiological & therapeutic effects of hydrotherapy including joint motility, muscle strengthening & wound care etc. 3. Types of Hydrotherapy equipment, indications, contraindications, operation skills & patient preparation	**15**
IV.	Special Techniques 1. Introduction to special mobilization & manipulation techniques, effects, indications & contraindications. 2. Conceptual framework, principle of proprioceptive neuromuscular facilitation (PNF) techniques, including indications, therapeutic effects and precautions. 3. Principles of traction, Physiological & therapeutic effects, classification, types, indications, contraindications, techniques of application, operational skills & precautions. 4. Review normal breathing mechanism, types, techniques, indications, contraindications, therapeutic effects & precautions of breathing exercises. 5. Group Therapy – Types, advantages & disadvantages. 6. Exercises for the normal person – Importance and effects of exercise to maintain optimal health & its role in prevention of diseases types, advantages, indications, contraindications & precautions for all age groups. 7. Introduction to Yoga – Conceptual framework, various “asanas”, the body- mind relationship, effects & precautions.	**15**

TOTAL	**60**

Text Book:

1. Therapeutic Exercises Foundation and Techniques – Kisner and Colby-F.A Davis.
2. Principle of Exercise Therapy- Gardiner – C.B.S Delhi.

Reference Books:

1. Practical Exercise Therapy Hollis- Blacwell Scientific Publications.

2. Therapeutic Exercise – Basmajian- Williams

Level: Semester IV

Course: Core (C4)

Subject: Electrotherapy II

Subject Code: **PHT242C404**

Total marks/ credits: 100 /3

L-T-P-C: **2-1-0-3** **Total credits: 3**

Course Objective:

The course objective is that after completion of this course the students will understand the basic aspects of medium & high frequency currents, thermotherapy, cryotherapy & electrodiagnosis & utilize contemporary & recent methods to select the most appropriate method to alleviate pain for patients.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** the biophysical & bio physiological changes which occur with thermotherapy & cryotherapy	**BT 2**
CO 2	**Identify** the construction, Biophysical principles and effects, dangers, safety measures, judicial use, appropriate methods of application,	**BT 3**

	contraindications of the various medium, high frequency equipments & LASER therapy.	
CO 3	**Analyse** the proper clinical applications for hot packs, paraffin bath, fluidotherapy, whirlpool, contrast bath & cryotherapy	**BT 4**
CO 4	**Select** the commonly used electro diagnostic tests like Electromyograph, nerve conduction study in relevant conditions	**BT 5**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	1. Review of Neuro- muscular Physiology including effectsof electrical stimulation. 2. Physiological responses to heat gain or loss on varioustissues of the body. 3. Therapeutic effects of heat, cold and electrical currents. 4. Physics of sound including characteristics and propagation	10
II	1.**Medium frequency currents** (Interferential Therapy, Russian & Rebox currents) – conceptual framework of medium frequency current therapy, production, biophysical effects, types therapeuticseffects, Techniques of application, indications, Contraindications, Precautions, operational skills and patient preparation. **2.High frequency currents** a. S.W.D and M.W.D – Production , biophysical effects, types, Therapeutic effects,techniques of application, indications, contraindications, precautions, operational skills and patient preparation b.High frequency sound waves (Ultrasound) – Production,biophysical effects, types, therapeutic effects, Techniques of application, indications, contraindications, precautions, operational skills and patient preparation	20
III	1.**Superficial heat-** Paraffin wax bath, moist heat, electrical heating pads a. Mechanism of production b.Mode of heat transfer c.Physiological & therapeutic effects d. Indications, contraindications, precautions, operational skills of equipment & patient preparation 2**. Cryotherapy**: Definition, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application with dosage. **3.Contrast bath**: Definition, Principle, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application	15

	4. Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications. 5. Whirlpool bath : Methods of application, Therapeutic uses, Indications & Contraindication	
IV	1. 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. 2.Electro-Diagnosis – a. Instrumentation, definition & basic techniques of E.M.G and E.N.G b. Bio-Feedback – Instrumentation, principles, Therapeutic effects, indications, contraindications, limitations, precautions, operational skills and patient preparation	15
	TOTAL	**60**

Textbooks:

5. Electrotherapy Explained: Principles &Practice – Low & Reed – Butterworth Heinemann.
6. Clayton's Electrotherapy, (9*t*h ed.) Forster & Palastanga Bailliere Tindall.

Reference Books:

7. Therapeutic Heat and cold – Lehman- Williams & Wilkins.
8. Jagmohan Singh, Electrotherapy, Jaypee Brothers, 2nd Ed, 2012.
9. Principles and Practice of Electrotherapy- Kahn – Churchill Livingstone

Level: Semester IV

Course: C-5

Title of the Paper: COMMUNITY MEDICINE-II

Subject Code: PHT242C402

L-T-P-C:2-1-0-3 **Total credits: 3**

Course Objectives

- To introduce students about health programmes in India.

- Students will learn about different disaster management preparation.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Relate to different management of hospital waste in the community level.	**BT 1**
CO 2	Understanding social factors affecting health, influence of family, culture, community on health perspectives	**BT 2**
CO 3	apply skills in the community in various disaster management preparation, mental health problems in different aging.	**BT 3**
CO 4	Analyze health issues related to addiction, nutritional status in different age groups.	**BT 4**

Module	TOPICS & COURSE CONTENT	PERIODS
I	**Hospital waste management** □ Sources of hospital waste, Health hazards, Waste Management **Nutrition and Health** □ Nutritional problems in public health □ Community nutrition programmes	20 hours
II	**Disaster Management** □Natural and man-made disasters □ Disaster impact and response □ Relief phase □ Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness	7 hours
III	**Health Education** □ Concepts, aims and objectives □ Approaches to health education □ Models of health education □ Contents of health education □ Principles of health education □ Practice of health education **Health programmes in India**	15 hours
IV	**Addiction** – Alcoholism, Neuromotor, Psychosomatic disorders and Smoking **Mental Health** □ Characteristics of a mentally healthy person □ Types of mental illness □ Causes of mental ill health □ Preventive aspects □ Mental health services □ Alcohol and drug dependence	18 hours

Text Book:

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

Reference Books:

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

Level: Semester IV

Course: C-6

Title of the Paper: Pharmacology I

Subject Code: PHT242C406

L-T-P-C:1-1-0-2 **Total credits: 2**

Course Objectives:

The objectives of the course is to introduce students about Pharmacology and learn to apply these knowledge into practice and also will know about effects and adverse effects of drugs.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Identify** pharmacological effects of commonly used drugs by patients referred for Physiotherapy	**BT 1**
CO 2	**Understanding** formulation& route of administration	**BT2**
CO 3	**Apply** knowledge about adverse reactions, precautions to be taken & contraindications for conditions.	**BT 3**
CO 4	**Analyse** utilization of drugs.	**BT 4**

Course Outline:

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	1) General action of drug 2) Drug allergy and idiosyncracy	20 hours
II	3. Drug toxicity 4. Metabolic rate of drug	15 hours
III	5. Methods of administration 6. Chemical character of drugs .	10Hours
IV	7.Drugs acting on Central nervous system- anaesthetics, alcohols, alkaloids, narcotics, antipyretics, hypnotics, sedatives, anticonvulsants, stimulants, psychotherapeutics	10 Hours

Text Book:

1.Essentials of Medical Pharmacology – K. D. Tripathi

2 Pharmacology and Pharmaco therapeutics – R.S. Satoskar

3 Pharmacology by Gaddum

Reference Books:

1.Pharmacology principle of Medical practice – by Krantx&Carr

2. Pharmacological basis of Therapeutics – by Goodman, L.S. Gilman A.

Level- Semester IV

Course: C 7

Title of the Paper: Exercise Therapy Lab-II

Subject Code: PHT242C411

Marks/ Credits: 100/2

L-T-P-C: **0-0-2-2** **Total credits: 2**

Course Objectives:

The objective of the course is after student will be able to apply the different types of exercises in different conditions considering the indications and contraindications of the procedure and describe the effects of the techniques

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the fundamentals of use of therapeutic exercise in various conditions.	**BT 2**
CO 2	**Demonstrate** manual therapeutic techniques used in rehabilitation of patients.	**BT 3**

CO 3	**Demonstrate** various specialized techniques used in physiotherapy like PNF, mobilization and manipulation, and group therapy, use of assistive devices ,use of hydrotherapy and traction.	**BT 3**
CO 4	**Analyse** and assess variations in normal human posture & various Gait abnormalities, activities of daily living, Mat exercises .	**BT 4**

COURSE OUTLINE:

Modules	**Course Content**	**Periods**
I.	1.Limb length and limb girth measurement . 2. To study & practice the various techniques of mobilization of joints region wise. 3. To study & practice the various techniques of progressive strengthening exercises of muscles region wise. 4. To study & practice the use of various ambulation aids in gait training. 5. To assess & evaluate ADL's and practice various training techniques 6. To study & practice mat exercises.	20
II.	7. To assess & evaluate normal & abnormal posture & practice various corrective techniques. 8. To assess & evaluate equilibrium/ balance & practice various techniques to improve balance and coordination exercises . 9. To study the structure & functions of hydrotherapy equipment's& their applications 10. To study & practice various traction techniques and stretching exercises . 11. To study & practice various group exercise therapies 12. To practice & experience effects of basic yoga "asanas 13. To study plan & practice exercise programmes for normal person of various age groups**.**	**20**
	Total	**40**

Text Book:

1. Progressive resisted exercises – by Margaret Hollis,
2. Therapeutic Exercise by Carolyn Kisner
3. Principles of Exercise therapy – Dena M. Gardiner

Reference Books:

1.Therapeutic exercise by Basmijjan& Wolf.

2 Muscle testing by Daniel Kendall

3. Clinical evaluation – Lacote (for isolated assessment of abdominal muscles)

4. Muscle stretching & Auto stretching – Olaf Evjenth

5. Orthopaedic Evaluation – Magee (only for assessment of posture)

Level: Semester IV

Course: Core (C8)

Subject: Electrotherapy Lab II

Subject Code: **PHT242C412**

Total marks/ credits: 100 /4

L-T-P-C: **0-0-2- 2** **Total credits: 4**

Course Objective:

The course objective is that after completion of this course the students will be able to gain knowledge regarding various electrotherapy modalities & understand the indications, contraindication and application of various electrotherapy modalities.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**List** contemporary and recent methods and to select the most appropriate method to moderate and alleviate pain for patients	**BT 1**
CO 2	**Demonstrate** different techniques and describe the dosage parameters & effects of various types of electrotherapy modalities like IFT, SWD, MWD & US & LASER	**BT 2**
CO 3	**Build** appropriate patient education procedures for safe application of superficial thermal agents & cryotherapy.	**BT 3**
CO 4	**Take part** in accurate electro-diagnostic tests & appreciate the use of these tests in research work.	**BT 4**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	1.To study an Intermittent therapy unit, its operation and different methods of application- region wise 2. To study a short-wave diathermy unit, its operation and different methods of application – region wise. 3. To study a Micro wave diathermy unit, its operation unit, its operation and different methods of application – region wise.	20
II	4. To study a Ultrasound unit, its operation, its operation and different methods of application – region wise. 5. To study a laser unit, its operation and different methods of application – region wise.	15
III	1.To study various forms of therapeutic cold application region wise including-ice, cold packs, vapour coolant sprays,etc. 2.To study a hydrocollator unit & paraffin wax bath unit, its operations and therapeutic application of Hot packs & paraffin wax-region wise	5
IV	1. To observe various Electro- myography (EMG) procedures. 2. To observe various Electro- neurography (ENG) procedures. 3. To study a Bio feedback unit, its operation and different methods of application- region wise.	20
	TOTAL	**60**

Textbooks:

7. Electrotherapy Explained: Principles &Practice – Low & Reed – Butterworth Heinemann.
8. Clayton's Electrotherapy, (9*t*h ed.) Forster & Palastanga Bailliere Tindall.

Reference Books:

10. Jagmohan Singh, Electrotherapy, Jaypee Brothers, 2nd Ed, 2012.
11. Basant Kumar Nanda, Electrotherapy explained, Jaypee Brothers, 1st Ed, 2006.
12. Principles and Practice of Electrotherapy- Kahn – Churchill Livingstone

Bachelor Degree in Physiotherapy (BPT)

Programme Structure

FIFTH SEMESTER							
Sl.No.	**Subject Code**	**Names of subjects**	**L**	**T**	**P**	**C**	**TCP**
Core Subjects							
1	**PHT242C501**	**GENERAL SURGERY, OBSTETRICS & GYNAECOLOGY**	**2**	**1**	**0**	**3**	**3**
2	**PHT242C502**	**GENERAL MEDICINE**	**2**	**1**	**0**	**3**	**3**
3	**PHT242C503**	**PHARMACOLOGY-II**	**1**	**1**	**0**	**2**	**2**
4	**PHT242C504**	**CLINICAL ORTHOPAEDICS**	**2**	**1**	**0**	**3**	**3**
5	**PHT242C511**	**CLINICAL EDUCATION-I**	**0**	**0**	**2**	**2**	**0**
Ability Enhancement Compulsory Courses (AECC)							
6	**CEN982A501**	**COMMUNICATIVE ENGLISH-V**	**1**	**0**	**0**	**1**	**1**
Ability Enhancement Elective Courses (AEEC)							
7	**PHT242S501**	**ILD-I**	**2**	**0**	**0**	**2**	**2**
8	**PHT242S502**	**FRENCH-I**	**2**	**0**	**0**	**2**	**2**
9	**PHT242S503**	**C++**	**2**	**0**	**0**	**2**	**2**
10	**PHT242S504**	**ANY OTHER COURSE OFFERED BY OTHER SCHOOLS OF RGU AND OPTED BY STUDENT**	**2**	**0**	**0**	**2**	**2**
Generic Elective							
	TOTAL					**15**	

Level: Semester V

Course: C-1

Title of the Paper: GENERAL SURGERY, OBSTETRICS AND GYNAECOLOGY

Subject Code: PHT242C501

L-T-P-C:2-1-0-3 **Total credits: 3**

Course Objectives

To introduce students the general surgical procedures and enable the students to understand the concepts of various surgical conditions like abdominal surgeries, vascular surgeries , thoracic surgeries and also gynaecological as well obstratical

Course Outcomes

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Relate and understand the basic physiology and mechanism of child birth.	**BT 1**
CO 2	Understand the various surgical procedures done over human body and also which all are the structures being cut and how to manage the post surgical patients	**BT 2**
CO 3	Applyingthe physiotherapy management for various gynecological problems in adolescence and adult conditions like infections, urogenital dysfunction and prolapse of uterus	**BT 3**
CO 4	Analyze about the developmental anatomy of embryonic and fetal periods.	**BT 3**

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods
I.	1. Infection and inflammation-acute / chronic-signs, symptoms, complications & management. 2. Wounds and ulcers– classification, healing, management. 3. Abdominal Surgeries: Surgical anatomy of Anterior Abdominal wall; Surgical approaches; Common abdominal surgeries like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy, Neprectomy, Prostectomy. 4. Thoracic surgeries**:** Thoracotomy - Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications. A) Lung surgeries**:** Pnumonectomy Lobectomy, Segmentectomy – Indications, Physiological changes and Complications Thoracoplasty	**20**

	Pleurectomy Pleurodesis and Decortication of the Lung. Intercostal Drainage System B) Cardiac surgeries: An overview of the Cardio-Pulmonary Bypass Machine Extracardiac Operations: Closed Heart surgery, Open Heart surgery. Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications Chest Injuries, evaluation, management.	
II	**Peripheral vascular diseases:** Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases: □ Atherosclerosis □ Arteriosclerosis □ Buergers □ Raynauds □ Varicose veins & DVT **Burns and Plastic Surgery:** □ Burns- causes, classification, ward management, post burn contractures, various Reconstructive & plastic surgeries □ Skin grafts/flaps- pedicle/ Tube /Muscle flap Types, indications with special emphasis to burns/ wounds, ulcers, post surgical head, neck, face defects and reconstruction. □ Hypertropic scar & keloid – management c]-Principles of tendon transfers-with special emphasis to hand, foot & facial paralysis **Emergency Surgical Procedures:** Indications, steps, post operative care: Tracheostomy,Burr-hole Craniotomy,Cranioplasty, Deep brain stimulation, Shunting, Laminectomy, Hemilaminectomy, Microvascular decompression surgery, Embolization, Ablative surgery - Thalamotomy and Pallidotomy, Coiling of aneurysm and Clipping of aneurysm, Neural implantation	**20**
III	**1. Anatomy of female genital system and pelvic floor** **2. Pregnancy:** Normal Gestations, Maternal Physiology in Pregnancy, Musculoskeletal disorders in Pregnancy, Antenatal Care,Prenatal and Perinatal Complications,Labour- Stages, Normal & Complications, Pain relief in Labour, Post Natal – Puerperium, Lactation. **3. Menopause:** Physiology, Complications, Effect on Various systems, Management **4. Uro-genital dysfunction** □ Uterine prolapse – classification & management (Conservative /Surgical) □ Cystocoele, Rectocoele, Enterocoele □ Urinary Incontinence: Types, Causes, Assessment and Management. □ Pelvic Inflammatory Diseases □ Polycystic Ovarian Disease (PCOD)	**20**
IV	1 **Surgical Procedures involving child birth** □ Caesarian Section □ Episiotomy **Definition, Indications and Management of the following surgical procedures;** □ Dilatation and Curettage	**20**

	□ Hysterectomy – Total Abdominal and Vaginal Salphigectomy and oopherectomy Neoplasm of Female reproductive organs – surgical management □ Menstrual cycle and its Disorders □ Methods of family planning □Sterility – management □ Multiple gestations	
TOTAL		**60**

Text Book:

1.Clinical& Operative surgery by S. Das

2. Text book of Gynecology – by Dutta – New Central Book Agency

3 Text book of Obstetrics - by Dutta – New Central Book Agency

4.Under-graduate Surgery by Nan

Reference Books:

1. Bailey & Love's short practice of Surgery-21st edn.

Level: Semester V

Course: C-2

Title of the Paper: GENERAL MEDICINE

Subject Code: PHT242C502

L-T-P-C: 2-1-0-3 **Total credits: 3**

Course Objectives

To introduce students the causes, clinical presentation and treatment of various disease of the human body . The course will also enable students to understand the disease pathology and plan strategies to manage them.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate** to the understanding of regarding various diseases affecting the human body,	**BT 1**
CO 2	**Understand** the clinical manifestation and the signs and symptoms	**BT 2**
CO 3	Applying the management by understanding the various treatment strategies for the diseases.	**BT 3**
CO 4	**Analyze** the disease pathology and plan strategies to manage them.	**BT 3**

COURSE OUTLINE:

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	1. Introduction of modes of transfer of communicable diseases & general preventive measures. 2. Bacterial Diseases: Tuberculosis, Leprosy, Rhematic fever, Tetanus, Typhoid fever, Diphtheria, Pneumonia, Bacillary Dysentry and Measles. 3. Viral Diseases: Simplex and zoster, Varicella, Measles Mumps, Hepatitis B &C,AIDS&Inflenza. 4. Metabolic and Deficiency Diseases: Diabetes, Anemia, Vitamin & Nutritional, Deficiency diseases, diseases of the endocrine glands	**20**
II	. Diseases of Respiratory System: Asthma, Bronchitis, Massive collapse of lungs, Bronchiectasis Bronchial, Pneumonia, lung abseess, Emphysema, Empyema, Paralysis of diaphragm & vocal	**20**

	cords, chronic infection of larynx and trachea, Abnormalities of trachea, infract of lungs, chronic passive congestion, chronic obstruction pulmonary disease, chest wall deformities. 2. Diseases of Circulatory System: Thromobsis, Embolism, Gangrene, Valvular diseases Hemorrhage, Heart Malformation, various diseases of arteries, diseases of blood forming organs, Anemia, Leukemia, Leucocytosis, Peripheral vascular diseases, diseases of the lymphatic systems.Diseases of the heart-Hypertension, Hypotension, Aortic aneurysm, Endocarditis, Pericarcitis, Aortic Regurgitation, Cardiac Failure, coronary heart diseases, congenital heart malformation and its manifestation.	
III	1. Disease of skin:-Characteristics of normal skin, abnormal changes, types of skin lesions. 2. Conditions – Leprosy, Acne , Boil, Carbuncles, Impetigo , Infections of skin, Herpes, Urticaria, Psoriasis, Skin disorders associated with circulatory disturbances, Warts, Com. Defects in Pigmentation Psoriasis Leucoderma, Fungal infections, Alopecia, Dermatitis Eczema, Skin – Allergies, Venereal.	**20**
IV	1. Diseases of Digestive System: Pharyngitis, spasm of the Oesophagus, Diverticulum stenosis, Gastric ulcer, HemetemesisPeloric stenosis, Dyspepsia, Vomiting, Diarrhoea, Doudenal ulcer etc. 2. Diseases of Liver: Jaundice Cirrhosis of liver, Abscess of liver, Ascitis. 3. Diseases of kidney :Plyuria, Hematuria, Uremia, Anuria, Nephritis, Urinary infections, Urinary calculi of application- region wise.	**20**
TOTAL		**60**

Text Book:
1. Davidson’s Principles and Practices of Medicine – Edward – Churchill Livingstone
2. Hutchinson’s Clinical Methods – Swash- Bailliere Tindall
3. A short Textbook of Medicine- Krishna Rao- Jaypee Brothers
4. A short textbook of Psychiatry – Ahuja Niraj – Jaypee Brothers

Reference Books:
1.API - Text book of Medicine – 5th edition
2 Golwalla – Medicine for students

Level: Semester V

Course: C-3

Title of the Paper: Pharmacology -II

Subject Code: PHT242C503

L-T-P-C: 2-1-0-3 **Total credits: 3**

Course Objectives:

The objectives of the course is to introduce students about Pharmacology and learn to apply these knowledge into practice and will know about effects and adverse effects of drugs.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Identify** pharmacological effects of commonly used drugs by patients referred for Physiotherapy	**BT 1**
CO 2	**Understanding** formulation& route of administration	**BT2**
CO 3	**Apply** knowledge about adverse reactions, precautions to be taken & contraindications for conditions.	**BT 3**
CO 4	**Analyse** utilization of drugs.	**BT 4**

COURSE OUTLINE:

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
1	1. Drugs acting on peripheral nervous system – stimulating and inhibiting cholinergic and anticholinergic activity 2. Drugs acting on Neuromuscular junction and muscles	20 hours
2	1. Drugs acting on cardiovascular system 2. Drugs acting on respiratory system	10 hours
3	1. Chemotherapeutic agents 2. Hormones	10 Hours
4	1. Drugs affecting endocrine functions 2. Vitamins	10 Hours

Text Book:

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

Reference Books:

1.Medical Pharmacology by Drill

2 Pharmacology principle of Medical practice – by Krantx&Carr

3 Pharmacological basis of Therapeutics – by Goodman, L.S. Gilman A.

Level: Semester V

Course: Core (C4)

Subject: Clinical Orthopaedics

Subject Code: **PHT242C504**

Total marks/ credits: 100 /4

L-T-P-C: **2-1-0-3** **Total credits: 3**

Course Objective:

The objectives of this course is that after lectures & demonstrations, in addition to clinical exposure, the student will be able to demonstrate an understanding of orthopaedic conditions causing disability and their management. And also the students will have an understanding of the medical / surgical management of various orthopaedic conditions including traumatic and nontraumatic.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** the Patho-physiology, clinical manifestations & conservative/Surgical management of various traumatic & non traumatic cases of the Musculo-skeletal system **.**	**BT 2**
CO 2	**Demonstrate** the skill of clinical examination & interpretation of the preoperative cases & all the post-operative cases.	**BT 3**
CO 3	**Apply** the theoretical knowledge to read & interpret salient features of the X-ray of the spine &other extremities, also pathological/ biochemical studies pertaining to orthopaedic conditions.	**BT 3**
CO 4	**Analyse** to correlate the radiological findings with the clinical findings of various orthopedic conditions.	**BT 4**

Course Outline:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	1. Introduction to Orthopedics: Introduction to orthopedic terminology,Types of pathology commonly delt with, clinical examination, common investigations X- rays& imaging techniques and outline of non operative management 2. Principles of operative treatment: List indications, Contraindication and briefly outline principles of Athrodesis, Arthroplasty, Osteotomy, Bone grafting, Tendon- Transfers and Arthroscopy. 3. Sprains and Muscle strains: List common sites of sprains and muscle strains describe the clinical manifestations and treatment Viz. tennis elbow, golfer's elbow, Dequervan's disease, tenovaginities, trigger finger, carpal turnel syndrome and plantar fasciitis 4. Sports Injuries: Injuries related to common sports their classification and management	20 hours
II	**Fractures and dislocations:** General Principles, Outline the following. • Types of fractures including patterns ,Open and close fractures and fracture- dislocations. • Differences between dislocation subluxation. • General & Local signs & symptoms of fractures & dislocation. • Principle of management of fratures& dislocations. • Prevention & treatment of complication including : Fracture- disease • ,Volkman'sischeamic contracture, Sudeek's Atrophy Carpal Tunnel Syndrome.MyositisOssificans and shoulder- hand syndrome. • Fracture healing. **Upper Limb Fracture & Dislocations:** □ Enumerate major long bone fractures and joint injuries. □ Briefly describe their clinical features, principles of management and complications **Lower Limb Fracture & Dislocations:** □ Enumerate major long bone fractures and joint injuries. □ Briefly describe their clinical features, principles of management and complications. **Spinal Fractures and Dislocations:** Outline the mechanism, clinical features, principles of management and complications of spinal injuries. **Recurrent Dislocations:** Outline the mechanism, clinical features, principles of management and complications of recurrent dislocation of the shoulder and petalla.	15 hours
III	1. Amputations a) Classify amputations: List indication for surgery. b) Outline pre-operative, operative and prosthetic management. c) Outline prevention and treatment of complications. 2. Bone & Joint Infections: Outline the etiology, clinical features, management and complications of septic arthritis osteomyelitis. Tuberculosis (including spinal TB) 3. Bone Joint Tumors: Classify and outline the clinical feature, management and complications of the following(benign/malignant bone and joint tumors, osteomas, osteosarcomas, osteoclastomas, Ewing's sarcoma, multipiemyeloma.	5 hours
IV	1. Chronic Arthritis: Outline of pathology: Clinical features, mechanism of deformities, management and complications of Rheumatoid arthritis, Osteoarthritis of major joints and spine, Ankylosing spondylitis.	20 hours

	2. Neck & Back Pain, Painful Arc syndrome, Tendonitis, Facitis& Spasmodic Torticolls .Outline the above including clinical features and management. 3. Spinal Deformities: Classify spinal deformities and outline the salient clinical features, management and complications of Scoliosis, Kyphosis and Lordosis. 4. Poliomyelitis: Describe the pathology, microbiology, prevention, management and complications of polio. Outline the treatment of residual paralysis including use of orthoses. Principles of muscle transfer and corrective surgery 5. Congenital Deformities: Outline the clinical features and management of CTEV, CDH, flat foot, vertical talus, limb deficiency radial club hand and femoral, tibial and tibula deficiencies meniagomyeloceleArthogryphosis multiplex congentia and Osteogensisimferfecta. 6. Peripheral Nerve Injuries: Outline the clinical features and management, including re- constructive surgery of • Radial, madian and ulnar nerve lesions. • Sciatic and lateral popliteal lesions. • Brachial Plexus injuries including Hrbs, Klumpke'scruchpalsy. 7. Hand injuries: Outline of clinical features, management and complications of skin and soft tissue injury, tendon injury, bone and joint injury. 8. Leprosy: Outline of clinical features, management and complications of neutritis, muscle paralysis, tropic ulceration and hand & feet deformities.	

Text Book:

1.Text book of Orthopedics.—Maheswari.

2 Textbook of Orthopedics and Traumatology— M.N.Natarajan

Reference Books:

1.Apley`s textbook of Orthopaedics

2 Outline of Fractures - John Crawford Adams.

3 Outline of Orthopedics.— John Crawford Adams.

Level: Semester V

Course: Core (C5)

Subject: Clinical Education- I

Subject Code: **PHT242C511**

Total marks/ credits: 100 /4

L-T-P-C: **0-0-2-2** **Total credits: 2**

Course Objective:

- Every enrolled student has to carry out clinical posting in various clinical establishment in and around Guwahati.
- To enable each student the practical exposure of the various clinical subjects taught and their applications in terms of patient communication and treatment.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** various orthopaedic conditions and their symptomology to patients and management.	**BT 2**
CO 2	**Apply** the their skills to assess, evaluate, diagnose and manage different patients from different departments like orthopaedics, neurology, paediatrics.	**BT 3**
CO 3	**Construct** the framework for exercise therapy and electrotherapy protocols.	**BT 3**
CO 4	**Analyse** the pathology of the traumatic and non traumatic orthopaedic conditions and their various treatment protocols both medical and surgical aspects.	**BT 4**

Description:

Every enrolled student has to carry out clinical posting in various clinical establishment in and around Guwahati. In the clinical posting all the students will learn to assess, evaluate, diagnose and manage different patients from different department. The students will learn the expertise to frame exercise therapy and electrotherapy protocols. The students will be enable to provide evidence based practice.

Bachelor Degree in Physiotherapy (BPT)

Programme Structure

SIXTH SEMESTER							
Sl.No.	**Subject Code**	**Names of subjects**	**L**	**T**	**P**	**C**	**TCP**
Core Subjects							
1	**PHT242C601**	**CLINICAL CARDIOLOGY AND PULMONARY DISORDERS**	**2**	**1**	**0**	**3**	**3**
2	**PHT242C602**	**NEUROLOGY AND NEUROSURGERY**	**2**	**1**	**0**	**3**	**3**
3	**PHT242C603**	**SPORTS AND SPORTS PHYSIOLOGY**	**2**	**1**	**0**	**3**	**3**
4	**PHT242C604**	**PEDIATRICS AND PSYCHIATRY**	**2**	**1**	**0**	**3**	**3**
5	**PHT242C611**	**CLINICAL EDUCATION-II**	**0**	**0**	**2**	**2**	**0**
Ability Enhancement Compulsory Courses (AECC)							
6	**CEN982A601**	**COMMUNICATIVE ENGLISH-VI**	**1**	**0**	**0**	**1**	**1**
Ability Enhancement Elective Courses (AEEC)							
7	**PHT242S601**	**ILD-2**	**2**	**0**	**0**	**2**	**2**
8	**PHT242S602**	**FRENCH-2**	**2**	**0**	**0**	**2**	**2**
9	**PHT242S603**	**LATEX**	**2**	**0**	**0**	**2**	**2**
10	**PHT242S604**	**ANY OTHER COURSE OFFERED BY OTHER SCHOOLS OF RGU AND OPTED BY STUDENT**	**2**	**0**	**0**	**2**	**2**
Generic Elective							
	TOTAL					**19**	

Course: C1

Title of the Paper: CLINICAL CARDIOLOGY AND PULMONARY DISORDERS

Subject Code: PHT242C604

Marks/ Credits: 100/3

L-T-P-C: 2-1-0-3 **Total credits: 3**

Course Objectives:

The objective of the course is to help students to understand the pathophysiology of various cardiovascular and respiratory conditions and based on identify the cardio respiratory dysfunction.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the pathophysiology of various cardio respiratory disorders	**BT 2**
CO 2	**Application** of the different skills to restore the cardio respiratory dysfunction	**BT 3**
CO 3	**Demonstrate** different techniques and have an idea on use of adjuncts along with physiotherapy techniques.	**BT 3**
CO 4	**Analyse** the various cardio-respiratory dysfunctions based on signs and symptoms of the disease.	**BT 4**

COURSE OUTLINE:

Modules	**Course Content**	**Periods**
I.	Examination of Cardiovascular System ECG – Normal & Variations due to ischemia &infarction Stress Test	**10**
II.	DISEASES OF THE CARDIO-VASULAR SYSTEM Definition, Etiology, Clinical Features, Complications, Management of the following Cardio-vascular diseases: I.H.D.–Myocardial infarction Valvular Heart Disease – i) Congenital ii) Acquired Infective endocarditis ,Myocarditis ,cardiomyopathy Rheumatic Fever & Rheumatic Heart Disease Infective Endocarditis	**20**

III.	Examination of Respiratory System Introduction of clinical examination–Breath sounds, X ray chest, ABG, PFT	**15**
IV.	DISEASES OF THE RESPIRATORY SYSTEM Patterns of Respiratory Diseases: Obstructive & Restrictive Definition, Aetiology, Clinical Features, Complications, Management of Diseases of the respiratory system : Common Infectious diseases like Tuberculosis, Pneumonia, Lung Abscess, Bronchiectasis. Obstructive Lung Diseases like Bronchitis, Emphysema, Bronchial Asthma, Cystic Fibrosis. Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydro pneumothorax, Empyema. Respiratory Failure: Definition, Types, Causes, Clinical Features, Diagnosis and Management Interstitial Lung Diseases Occupational lung diseases like Silicosis Asbestosis, Pneumoconiosis	15
TOTAL		**60**

Text Book:

1. Principles& Practice of Medicine – 16thedn - by Davidson

2. Golwalla – Medicine for students

Reference Books:

1. API - Text book of Medicine – 5th edition

2. Clinical Medicine :- P. J. Mehta

3. Chattergee, Cariology an illustrated Text book , Jaypee,1st ed, 2012.

4. Beachey, Respiratory care- Anatomy and physiology :foundation, CBS ,3rd ed, 2013.

5. George Mathew & Praveen Aggarwal – Manual for UG, Medicine ed, 2015.

Level: Semester VI

Course: C-2

Title of the Paper: NEUROLOGY AND NEUROSURGERY

Subject Code: PHT242C602

L-T-P-C:2-1-0-3 **Total credits: 3**

Course Objectives

To introduce students the Etiology, Pathophysiology, Signs & Symptoms & Management of the various Neurological. The objectives of this course is that after 60 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of neurological conditions causing disability and their management.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate** and evaluate the patients with certain neurological disorders	**BT 1**
CO 2	**Explain** the neuro anatomical basis of brain for various clinical neurological conditions.	**BT 2**
CO 3	**Identify** the causes, signs, symptoms, clinical management of the Cerebrovascular Accidents, head and Spinal Cord Injury	**BT 3**
CO 4	**Analyzing the** Neurophysiological basis of neurological conditions	**BT 3**

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	**Periods**
I.	Cerebro –vascular accidents Define: Stroke, TIA, RIA, Stroke in evolution, Lacunar infarct. Risk Factors, Causes, Investigations, Differential Diagnosis, Management- Medical & Surgical, Complications Movement Disorders Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders : □ Parkinson's disease □ Dystonia □ Chorea □ Ballismus, □ Athetosis □ Tics, Myoclonus □ Wilson's disease Polyneuropathy □ Classification of Polyneuropathies	**20**

	□ Causes, clinical features, management of GBS, Diabetic and Alcoholic Neuropathy	
II	Disorders & Diseases of muscle □ Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. □ Classification, etiology, signs & symptoms of Muscular dystrophy and Myotonic dystrophy 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 □ Post-irradiation lumbosacral polyradiculopathy. Multiple Sclerosis Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications	**20**
III	Infections of brain and spinal cord Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders: □ Meningitis □ Encephalitis □ Neurosyphilis □ Herpes □ HIV infection □ Poliomyelitis and Post-polio syndrome □ Leprosy □ Tetanus Higher cortical, neuro psychological and neurobehavioral disorders □ 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 Dementia, Alzheimer's disease. □ Causes & investigations of Coma, criteria for diagnosis of Brain death. Cerebellar & Co-ordination disorders □ Congenital Ataxia □ Friedrich's Ataxia □ Tabes dorsalis Disorders of lower cranial nerves & Special Senses Etiology, clinical features, investigations, and management of following disorders □ Trigeminal neuralgia □ Lesions in facial nerve: Facial palsy, Bell's palsy, Hemi facial spasm □ Glossopharangial neuralgia □ Lesionns of Vagus, Spinal accessory nerve, Hypoglossal nerve.	**20**

	□ Disorders of special senses	
IV	Disorders of Myoneural Junction Etiology, classification, signs & symptoms, investigations, management, of following Disorders: □ Myasthenia gravis □ Eaton-Lambert syndrome □ Botulism Spinal cord Disorders □ Functions of tracts :Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders: □ Spinal Cord Injury , □ Epidural abscess, □ Transverse myelitis, □ Spina bifida, □ Conus medullaris syndrome □ Bowel & Bladder Dysfunction Head injury Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications. Brain tumors and spinal tumors Classification, clinical features, investigations, medical and surgical management.	**20**
TOTAL		**60**

Text Book:
1.Davidson's Principles and Practice of Medicine
2 Illustrated Neurology & Neurosurgery: Lindsay

Reference Books:
1.Brains Diseases of Nervous System
2 Textbook of Neurology- Victor Adams

Level: Semester VI

Course: Core (C3)

Subject: Sports and Sports Physiology

Subject Code: **PHT242C603**

Total marks/ credits: 100 /4

L-T-P-C: **2-1-0-3** **Total credits: 3**

Course Objective:

- To make the student able to identify, discuss & analyse, the musculoskeletal dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis.

- Also to allow students to plan or propose lay down rehabilitation protocol for sports specific injuries focusing an early rehabilitation to injuries.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** and **identify** the physiological changes that occur pertaining to individual sports and their effects on various systems of the body.	**BT 2**
CO 2	**Identify** various sports injuries for individual sports and their management. .	**BT 2**
CO 3	**Apply** various therapeutic interventions and exercises to sports persons following injuries and medical/surgical management.	**BT 3**
CO 4	**Analyse and plan** rehabilitation guidelines for sports injuries and prepare customised protocol for healthy and fit sportsmen.	**BT 4**

Course Outcome:

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	1. Training the aerobic and anaerobic energy system 2. Physiological responses, changes & adaptations to various exercises - aerobic exercises & anaerobic exercises in Pulmonary, Cardiovascular, Neuromuscular system, Hormones	20 hours

II	1. Detraining effects of cardiovascular, musculoskeletal and nervous system 2. Sports specific training and cross training.	15 hours
III	**Musculoskeletal injuries** □ 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 and Head • Thorax and Abdomen • Peripheral nerve injuries, injuries to muscles, ligament, tendon, bone, synovial joint structure(with physiological response to injury)	5 hours
IV	**Cardiopulmonary** □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. Heat stroke and Heat illness. **Body composition** □ Different Body composition Various methods to estimate body composition : water displacement method, under water weighing method, skinfold method, surface anthropometry, bioelectrical impedence analysis, ultrasound assessment of fat, arm X-ray assessment of fat, CT assessment of fat	20 hours

Text Book:

1.Sport and physical therapy – Bernhardt Donna, Churchill Livingstone, London 1995

2. Sports physiotherapy :Applied science and practice – Maria Zuluaga

Reference Books:

1.Brownstein, B. Functional movement in Orthopaedic and Sports Physical Therapy: Evaluation, Treatment and Outcomes.New York; London: Churchill Livingstone, 1997 ISBN: 0443075301

2. Cash, M. Sport and Remedial Massage Therapy.London: Edbury, 1996 ISBN: 0091809568

Level: Semester VI

Course: C-4

Title of the Paper: PEDITRICS AND PSYCHIATRY

Subject Code: PHT242C604

L-T-P-C:2-1-0-3 **Total credits: 3**

Course Objectives

- This course will enable a student to learn about etiology, pathophysiology, signs & symptoms & management of the various Neurological and Paediatric conditions
- The student will learn about normal development &growth of a child, importance of immunization & breast-feeding & psychological aspect of development.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Relate to the neuro-anatomy, neurophysiology and neurological and paediatric condition.	**BT 1**
CO 2	Understanding factors related to developmental delay in paediatric condition.	**BT 2**
CO 3	Apply in the function of a neonate or a child in relation to neurological, psychological aspect of development.	**BT 3**
CO 4	Analyze different nutritional disorders and mental disorders in child .	**BT 4**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	1. Normal development & growth 2. Breast feeding and immunization 3. **Prenatal, Perinatal and Postnatal problems and management (**Birth injuries): Neck, shoulder dystocia, Brachial plexus injury, Fractures 4. Congenital abnormalities and management 5.Problems and management of LBW infants	20 hours
2	**Developmental Delay:** Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications **Respiratory conditions of childhood:** Pneumonias in children – Bacterial & Tubercular, Empyema, Asthma **Orthopedic and Neurological disorders in childhood, Clinical features and management ;** □ Cerebral palsy	15 hours

	Meningitis Encephalitis Hydrocephalus Ataxia Arnold-chiari malformation Basilar impression & Cerebral malformations Dandy walker syndrome Down's syndrome Floppy infant GBS Poliomyelitis Epilepsy Neural tube defects in Paediatrics Muscular dystrophies & Neuropathy **Nutritional disorders of childhood** Rickets and scurvy, PEM (Kwashiorkar and Marasmus) Infections – Congenital & Neonatal, Mental retardation Coma in Paediatrics and Acute rheumatic fever	
3	1. Psychiatric History, classification and mental status examination 2. Organic mental disorders (delirium, dementia, organic amnestic syndrome and other organic mental disorders) 3. Mood disorders (manic episodes, depressive episodes, bipolar mood disorders) 4. Neurotic stress related and somatoform disorders (Anxiety disorder, phobic anxiety disorders, obsessive compulsive disorders, adjustment disorders, dissociative disorders, somatoform disorders post-traumatic stress Disorder 5. Schizophrenia, delusional disorders and schizoaffective disorders.	5 hours
4	1. Substance use disorders, sexual disorders, sleep disorders and eating disorders. 2. Child psychiatry, (mental retardation, developmental disorders, attention deficit, hyperkinetic disorder, enuresis, conduct disorders) 3. Disorders of adult personality and behavior (specific personality disorders, habit and impulse disorders, gender identity disorders) 4. Stress, psychosomatic disorders, suicide, Psychopharmacological management	20 hours

Text Book:

1.Davidson's Principles and Practice of Medicine

2 Textbook of Neurology- Victor Adams

Reference Books:

1.Illustrated Neurology & Neurosurgery: Lindsay

2 Brains Diseases of Nervous System

Level: Semester VI

Course: Core (C5)

Subject: Clinical Education- II

Subject Code: **PHT242C611**

Total marks/ credits: 100 /4

L-T-P-C: **0-0-2-2** **Total credits: 2**

Course Objective:

- Every enrolled student has to carry out clinical posting in various clinical establishment in and around Guwahati.
- To enable each student the practical exposure of the various clinical subjects taught and their applications in terms of patient communication and treatment.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** various orthopaedic conditions and their symptomology to patients and management.	**BT 2**
CO 2	**Apply** the their skills to assess, evaluate, diagnose and manage different patients from different departments like orthopaedics, neurology, paediatrics.	**BT 3**
CO 3	**Construct** the framework for exercise therapy and electrotherapy protocols.	**BT 3**
CO 4	**Analyse** the pathology of the traumatic and non traumatic orthopaedic conditions and their various treatment protocols both medical and surgical aspects.	**BT 4**

Description:

Every enrolled student has to carry out clinical posting in various clinical establishment in and around Guwahati. In the clinical posting all the students will learn to assess, evaluate, diagnose and manage different patients from different department. The students will learn the expertise to frame exercise therapy and electrotherapy protocols. The students will be enable to provide evidence based practice.

Bachelor Degree in Physiotherapy (BPT)

Programme Structure

SEVENTH SEMESTER							
Sl.No.	**Subject Code**	**Names of subjects**	**L**	**T**	**P**	**C**	**TCP**
Core Subjects							
1	**PHT242C701**	**COMMUNITY BASED REHABILITATION**	**2**	**1**	**0**	**3**	**3**
2	**PHT242C702**	**ETHICS IN PHYSIOTHERAPY& BASIC FIRST AID**	**2**	**1**	**0**	**3**	**3**
3	**PHT242C703**	**PHYSIOTHERAPY IN ORTHOPAEDICS CONDITION**	**2**	**1**	**0**	**3**	**3**
4	**PHT242C704**	**PHYSIOTHERAPY IN NEURO AND PSYCHOSOMATIC CONDITIONS**	**2**	**1**	**0**	**3**	**3**
5	**PHT242C711**	**COMMUNITY BASED REHABILITATION LAB**	**0**	**0**	**2**	**2**	**4**
6	**PHT242C712**	**PHYSIOTHERAPY IN ORTHOPAEDICS CONDITION LAB**	**0**	**0**	**2**	**2**	**4**
7	**PHT242C713**	**PHYSIOTHERAPY IN NEURO AND PSYCHOSOMATIC CONDITIONS LAB**	**0**	**0**	**2**	**2**	**4**
8	**PHT242C714**	**CLINICAL EDUCATION-III**	**0**	**0**	**6**	**6**	**12**
Ability Enhancement Compulsory Courses (AECC)							
9	**CEN982A701**	**COMMUNICATIVE ENGLISH-VII**	**1**	**0**	**0**	**1**	**1**
Ability Enhancement Elective Courses (AEEC)							
DISCIPLINE SPECIFIC-DSE (ANY TWO)							
10	**PHT242D701**	**PRINCIPLES OF BIOENGINEERING**	**4**	**1**	**0**	**5**	**5**
11	**PHT242D702**	**BASIC RADIOPHYSICS**	**4**	**1**	**0**	**5**	**5**
	TOTAL					**29**	

Level: Semester VII

Course: C-1

Title of the Paper: COMMUNITY BASED REHABILITATION

Subject Code: PHT242C701

L-T-P-C: 2-1-0-3 **Total credits: 3**

Course Objectives

The objective of this course is that student will be able to have a community based perspective with Physiotherapeutic approach. Student will be able to identify rehabilitation methods to prevent disabilities & dysfunctions due to various disease conditions & plan & set treatment goals & apply the skills gained in rehabilitating & restoring functions.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Idea** about the members of rehabilitation team and their role in Rehabilitating the patient.	**BT 1**
CO 2	**Explain** the assessment of geriatrics, pregnancy & Disability evaluation in various conditions and their rehabilitation.	**BT 2**
CO 3	**Apply** the knowledge Identify the environmental and occupational hazards and their control.	**BT 3**
CO 4	**Provide** physiotherapeutic rehabilitation in various conditions related elderly, pregnancy, industrial worker etc. conditions for relief of pain, relaxation, conditioning and posture in community level.	**BT 3**

Course Outcome:

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	**Community Health** WHO definition of health & disease, Health care delivery system – 3 tier System *Rehabilitation: definition, types and Team * Community: Definition, Community based approach, * Community entry strategies, Community initiated v/s Community oriented programme Introduction to CBR: Definition, Historical review, Concept, Need, Objectives, Scope, Members, Models CBR strategies in Health Promotion -	20 hours

	Principles of CBR, Difference between Community v/s Institutional Based Rehabilitation, Extension services and mobile units: Introduction, Need, Camp approach Planning and management of CBR programme - Disaster management and role of PT Disability : Evaluation, types & prevention & role of physiotherapy. Rehabilitation in Amputation. National policies for rehabilitation of disabled, architectural barrier for disabled and their modification.	
II	**Women's Health** Introduction to Woman's Health and Anatomy of pelvic floor. Anatomical and physiological variations associated with pregnancy and menopause. Antenatal, perinatal and postnatal physiotherapy and PT advice on labor positions, pain relief and PT Management of various problems faced in this period Uro-genital dysfunctions: Infections, Prolapse, Polycystic Ovarian Disease, incontinence and their therapeutic interventions. Common Gynecological surgeries and role of physiotherapy Physical fitness in women during pregnancy & menopause. **Geriatrics** Theories of Aging. Anatomical and Physiological changes of aging in – • Musculoskeletal system. • CNS • CVS • RS • Metabolic, Endocrine, Immune System Assessment in geriatrics Role of physiotherapy in geriatrics fitness (Institutionalized & Community dwelling elders), Falls and its prevention in Geriatrics. Rehabilitation for Parkinson's disease, Alzheimer's, stroke etc.	15 hours
III	**Industrial Health** I – Ability Assessment Job description Job demand analysis Task analysis Ergonomic evaluation Injury prevention Employee fitness programme II – Disability management – Acute case Concept of functional capacity assessment Work conditioning Work hardening III – Environmental stress in the industrial area a. Occupational Hazards: Physical agents- Heat, cold, light, noise, Vibration, U.V. radiation, Ionizing radiation, Chemical agents-Inhalation, local action & ingestion, Mechanical hazards- overuse, fatigue.	5 hours

	□ Psychological hazards – monotonic, dissatisfaction in job, anxiety of work completion with quality, mechanical stress in various occupations for eg. □□Sedentary table work –eg. in executives, clerk, □□Inappropriate seating arrangement- eg. vehicle drivers □□Constant standing- eg. watchman, Defense forces, surgeons, □□Over- eg. exertion in laborers.	
IV	**Solidarity and cooperation** □ Solidarity in health care & Physiotherapy □ Ethical perspective o Solidarity as instrumental value o Solidarity as moral value □ Threats to solidarity in present-day societies **Social responsibility and health, Sharing of benefits** □ Highest attainable standard of health as a fundamental human right o Universal Declaration of Human Rights o WHO Constitution o Duty, obligation and responsibility physiotherapists for Highest attainable standard of health as a fundamental human right o Responsibilities for governments and various sectors of society o Health and contemporary challenges to global justice • Access to essential health services • The protection of vulnerable populations • Providing health care services across national boundaries □ Sharing of benefits o Models of benefit-sharing agreements • Fair and equitable options for research subjects • Biopiracy and fair sharing of benefits of genetic resources • Patents and intellectual property • Valid options for promoting fair and equitable access to new diagnostic and therapeutic modalities or to products stemming from them o Integration of capacity-building components to externally funded research and other initiative	20 hours

Text Book:

1. S. Sunder - Textbook of Rehabilitation.

2. Waqar Naqvi - Physiotherapy in Community Health & Rehabilitation.

Reference Books:

1. P. K. Mahajan & M. C. Gupta – Textbook of Preventive & Social Medicine
2. K. Park – Park ’s Textbook of Preventive & Social Medicine.

Level: Semester VII

Course: C-2

Title of the Paper: ETHICS IN PHYSIOTHERAPY& BASIC FIRST AID

Subject Code: PHT242C702

L-T-P-C:2-1-0-3 **Total credits: 3**

Course Objectives

- The course outline will enable a students to understand the various ethical and legal aspects governing the physiotherapy profession.
- The students also know regarding the first aid related to any emergency medical care.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Relate to moral values and meaning of ethics	**BT 1**
CO 2	Understanding ethical and legal issues in patient care, obtain informed consent, community responsibility, good communication with the patient and family members.	**BT 2**
CO 3	apply skills for good interpersonal communication with patient and community and psychomotor skills for physiotherapist-patient relationship.	**BT 3**
CO 4	Analyze screening and diagnosis of disease in patient within the community	**BT 4**

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	1. Concepts of morality, Ethics & Legality-rules of professional conduct & their Medico-legal &moral implications-The need of Council Act for Physiotherapy. 2. Constitution & Functions of the Indian association of Physical therapy	20 Hours
II	3.Functioning of the World Confederation of Physical therapy [W.C.P.T.] & its various branches-Special Interest groups 4. Role of W.H.O.& WCPT	15 hours
III	Introduction to First Aid – □ Assessment, immediate actions and the priorities. □ Bandages – Types, binders, splints & slings. □ Promoting safety consciousness. □ Instruments used in First Aid (First Aid kit). First Aid - □□RTA including fractures and spinal cord injuries □□Cardiac arrest,Respiratory failure	5 hours

	Burns Shock- Electric, Hypovolemic and control ofBleeding, Poisoning	
IV	Examination of Vital Signs. Snake Bite,Drowning, Hypothermia and Hyperthermia Medical Triage- concept of Emergency: Definition, Importance and rules Code tags and triage terminology Transportation of the injured	20 hours

Text Book:

1. Ethical issues : Vol 1 : Prespectives for Physiotherapist
2. First aid for basic sciences

Reference Books:

1. Essentials of community physiotherapy and ethics.
2. First aid and emergency nursing

Level: Semester VII

Course: C-3

Title of the Paper: Physiotherapy in Orthopaedics conditions

Subject Code: PHT242C703

L-T-P-C: 2-1-0-3 **Total credits: 3**

Course Objectives

- The objectives of this course is that student will be able to identify disability due to musculoskeletal dysfunction. To set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situations to restore musculoskeletal function.

Course Outcomes:

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Identify,** the Musculoskeletal Dysfunction in terms of Biomechanical, Kinesiology & Biophysical basis & correlate the same with the provisional diagnosis, routine radiological & Electrophysiological investigations. .	**BT 1**
CO 2	**Explain** appropriate Functional diagnosis with clinical reasoning.	**BT 2**
CO 3	**Apply** the planning & 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.	**BT 3**
CO 4	**Provide** appropriate advise Ergonomic prescription for the relief of pain, restoration / Maintenance of function & rehabilitation for maximum functional independence in A.D.L. at home & work place .	**BT 3**

Course Outcome:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**Fractures and dislocation of the spine, extremities – classification, management & complications.** PT assessment and management of upper limb fractures and dislocations.	20 Hours

	□ PT assessment and management of lower limb fractures and dislocations including pelvis. □ PT assessment and management of spinal fractures □ PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and mal-union, RSD, myositis ossificans, AVN, pressure sores etc. □ Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period. **Physiotherapy Management of Deformities** □Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. □ Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum. **Infectious diseases of the bone & joints** □Osteomyelitis – acute and chronic □ Septic arthritis and Pyogenic arthritis □ TB spine and major joints - knee and hip	
II	**Degenerative and Inflammatory conditions** □Osteoarthritis - emphasis mainly on knee, hip and hand □ Rheumatoid Arthritis □ Ankylosing spondylitis □ Gout □ Perthes disease **Management of Peripheral Nerve Injury** **Amputation** □Definition, levels, indications, types, PT assessment, aims, management pre □ And post operatively. □ PT management with emphasis on stump care and bandaging. □ Prosthesis Prescription and Training **Traction** □ Effect, Types, Modes, Indications, Contraindications, Dosage	15 hours
III	**Spinal conditions** PT assessment, aims, and conservative & surgical management and home program of the following conditions - □ Cervical spondylosis □ Lumbar spondylosis □ Intervertebral disc prolapse □ Spinal canal stenosis □ Spondylolisthesis □ Spondylolysis □ Coccydynia **Peripheral Joints** PT assessment, aims, and conservative & surgical management and home program of all the peripheral joint (upper and lower limb) injuries and reconstruction surgeries	5 hours
IV	PT Management for □ Sacro-iliac joint dysfunction □ Sacralisation	20 hours

	Lumbarisation, Tumours of the bone. **Orthopedic surgeries** Pre and post operative PT assessment, goals, precautions and PT management of following surgeries such as: Arthrodesis Osteotomy	

Text Book:

1.Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz

2.Orthopedic Physical therapy – by Donatelli.

Reference Books:

1.Outline of orthopedics – Adams Hamblen

2. Apley`s textbook of Orthopaedics

Level: Semester VII

Course: C-4

Title of the Paper: PHYSIOTHERAPY IN NEURO AND PSYCHOSOMATIC CONDITIONS

Subject Code: PHT242C704

L-T-P-C:2-1-0-3 **Total credits: 3**

Course Objectives

The objectives of this course are to introduce the neurological disorders effecting human body systems and understand the physiotherapy management of the same. After following this course students will also gain knowledge regarding Psychosomatic disorders. The lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of neurological conditions causing disability and their management.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate the** Neurophysiological basis of neurological conditions which drives to evaluate the patients with certain disorders	**BT 1**
CO 2	**Explain** the causes, signs, symptoms, clinical management of the Cerebrovascular Accidents, head and Spinal Cord Injury	**BT 2**
CO 3	**Identify, analyse and apply** the neuro anatomical basis of brain for various clinical neurological conditions.	**BT 3**
CO 4	**Analyzing** the demyelinating, degenerative disease of the brain, diseases like myopathies, infections and peripheral neuropathy	**BT 3**

COURSE OUTLINE:

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	1. Structure and function of Nervous System 2. Theories of motor control & motor learning 3. Neurological Assessment □ Assessment of Higher mental functions, Cranial Nerves, □ Sensory system, Motor system, Reflexes, Co-ordination, □ Balance, functional abilities, neuropathic pain and investigation.	20
II	4. Understanding sensory system & Organization of sensory strategies for efficient motor output. 5. Skills of sensory – motor learning & Neuro-muscular skeletal training 6. Application of skills of Co-ordination & Balancing exercises by using techniques based on Neuro-physiological principles	20
III	7. Application of transfer & functional re-education exercises-Postural exercises, & Neurological Gait Assessment and management/ training	20

	8. Principles of Application of Neuro therapeutic skills like PNF, NDT, Brunnstrom&Rood 's approaches. 9. Principles and methods of using tools of Therapeutic gymnasium such as Vestibular ball, tilt board, bolsters, etc. in neurological conditions	
IV	Evaluation & physiotherapy assessment with appropriate reasoning for planning & implementation of treatment technique for following neurological conditions: i. Cerebrovascular Accidents: □ Hemiplegia, □ Disorders of cerebral circulation □ Space occupying lesions ii. Disorders of spinal cord □ Spinal Cord Injury □ Syringomyelia, □ Transverse myelitis □ Sub-acute combined degeneration of spinal cord iii. Traumatic Head Injury iv. Infections of Nervous System □ Meningitis □ Encephalitis □ Neurosyphilis □ Tabes dorsalis □ Poliomyelitis and Post Polio Residual Paralysis □ Leprosy v. Demyelinating diseases of the nervous system Multiple sclerosis vi. Lesions of Extra-pyramidal system & Basal ganglia Parkinson's Disease □ Spasmodic torticolis □ Athetosis, □ Chorea & Dystonia vii. Degenerative disorders □ Motor Neuron Diseases □ Hereditary Ataxia □ Peroneal muscle atrophy, S.M.A viii. Disorders of Peripheral nerves □ Traumatic Nerve Injury, Tumors, □ Infective & Metabolic lesions of nerves ix. Disorders of muscles and neuromuscular junction □ Muscular Dystrophies □ Myasthenia Gravis & myasthenia syndrome x. Polyneuropathy □ Classification of Polyneuropathies □ GBS, Diabetic and Alcoholic Neuropathy xi.Cerebellar& Co-ordination disorders , Congenital Ataxia, Friedrich Ataxia	20
TOTAL		60

Text Book:

1. Physical rehabilitation by Susan O Sullivan
2. Davidson's Principles and Practice of Medicine
3. Illustrated Neurology & Neurosurgery: Lindsay

Reference Books:
1.Brains Diseases of Nervous System
2.Textbook of Neurology- Victor Adams

Level: Semester VII

Course: C-5

Title of the Paper: COMMUNITY BASED REHABILITATION LAB

Subject Code: PHT242C711

L-T-P-C: 0-0-2-2 **Total credits: 4**

Course Objectives:

The objectives of the course is to learn various rehabilitation technique from the perspective of the community. The students will also learn how to make lifestyle easy for a disabled person within the patient's limitation at the community level.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the assessments for various conditions.	**BT 1**
CO 2	**Explain** the assessment of geriatrics & others disabled conditions.	**BT 2**
CO 3	**Demonstrate** evaluation of disability or dysfunction seen in the community.	**BT 3**
CO 4	**Apply** their skill of management in rehabilitation in various conditions in community set up.	**BT 3**

DETAILED SYLLABUS:

SUPERVISED CLINICAL TRAINING:

All the works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Case Presentation & Documentation:

Evaluation and treatment planning, presentation and documentation of minimum : **TEN** cases in
oObstetrics :- 2 cases
oGynaecology :- 2 cases
oGeriatrics :- 2 cases
oIndustrial health :- 2 cases
oFittness :- 1 case
oDisability evaluation :- 1 Case

Text Book:

1.Industrial Therapy – by Glenda Key

2. Community Based Physiotherapy – Waqar Naqvi

3. textbook of Rehabilitation – S. Sunder

4. Preventive &Social Medicine –by Park

Reference Books:

1.Text book of community medicine &Community Health – by Bhaskar Rao

2.Disability 2000 - RCI.

3. Legal Rights of disabled in India-by GautamBannerjee.

Level: Semester VII

Course: C-5

Title of the Paper: Physiotherapy in Orthopaedic Conditions Lab

Subject Code: PHT242C712

L-T-P-C: 0-0-2-2 **Total credits: 2**

Course Objectives:

The objective of this course is to make the students understand about the assessment, evaluation and examination of various patients with orthopaedic problems. The students will also manage the treatment methodology for different bone and joint disorders.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the assessments for various conditions.	**BT 1**
CO 2	**Explain** the assessment of geriatrics & others disabled conditions.	**BT 2**
CO 3	**Demonstrate** evaluation of disability or dysfunction seen in the community.	**BT 3**
CO 4	**Apply** their skill of management in rehabilitation in various conditions in community set up.	**BT 3**

Course Outline:

SUPERVISED CLINICAL TRAINING:
All the works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination.
□ Evaluation & treatment planning: its presentation & documentation of Minimum **te**n cases in the following heads –
1. Upper Limb Fractures (Including hand injury),
2. Lower limb Fractures.
3. Soft tissue lesion (any),
4. Spine Fractures with/without Neurological condition
5. Degenerative arthritis of skeletal joint
6. Musculo – skeletal condition of Hand & foot.

Text Book:

1.Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz

2.Orthopedic Physical therapy – by Donatelli.

3.Orthopedic assessment by David Magee

Reference Books:

1.Outline of orthopaedics – Adams Hamblen

2. Apley`s textbook of Orthopaedic

Level: Semester VII

Course: C-7
Title of the Paper: PHYSIOTHERAPY IN NEURO AND PSYCHOSOMATIC CONDITIONS LAB
Subject Code: PHT242C713
L-T-P-C:0-0-2-2 **Total credits: 2**

Course Objectives

The objective of this course is to make the students understand about the assessment, evaluation and examination of various patients with neurological and psychosomatic disorders. Integrate the understanding gained by the students in clinical neurology with the skills gained in exercise therapy, electro therapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to pathology in the nervous system.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relating** tbe lectures and demonstrations, practical and clinical, the student will be able to identify disability due to neurological dysfunction.	**BT 1**
CO 2	**Explain** the students understand about the assessment, evaluation and examination of various patients with neurological and psychosomatic disease.	**BT 2**
CO 3	**Demonstrate** and apply their skills in exercise therapy, electro therapy and massage in clinical situation to restore neurological function	**BT 3**
CO 4	**Analyzing** the clinical neurology with the skills gained in exercise therapy, electro therapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to pathology in the nervous system.	**BT 3**

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods
I.	1. Evaluation & treatment planning; its presentation & documentation of minimum ten cases in following: □ U.M.N. lesion □ L.M.N. lesion, □ Paediatric Neuro case	**10**
II	2.Application of Neuro therapeutic skills like PNF, NDT, Brunnstrom & Rood 's approaches	**10**
III	3. Application of transfer & functional re-education exercises- Postural exercises, & Neurological Gait Assessment and management/ training 4. Application of Neuro therapeutic skills like PNF, NDT, Brunnstrom & Rood 's approaches. 5. Principles and methods of using tools of Therapeutic gymnasium such as Vestibular ball, tilt board, bolsters, etc. in neurological conditions	**10**
IV	6.Principles and methods of using tools of Therapeutic gymnasium such as Vestibular ball, tilt board, bolsters, etc. in neurological conditions	**10**
TOTAL		**10**

Text Book:

1. Physical rehabilitation by Susan O Sullivan
1.Davidson's Principles and Practice of Medicine
2 Illustrated Neurology & Neurosurgery: Lindsay

Reference Books:

1.Brains Diseases of Nervous System
2 Textbook of Neurology- Victor Adams

Level: Semester VII

Course: Core (C5)

Subject: Clinical Education- II

Subject Code: **PHT242C711**

Total marks/ credits: 100 /4

L-T-P-C: **0-0-2-2** **Total credits: 2**

Course Objective:

- Every enrolled student has to carry out clinical posting in various clinical establishment in and around Guwahati.
- To enable each student the practical exposure of the various clinical subjects taught and their applications in terms of patient communication and treatment.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** various orthopaedic conditions and their symptomology to patients and management.	**BT 2**
CO 2	**Apply** the their skills to assess, evaluate, diagnose and manage different patients from different departments like orthopaedics, neurology, paediatrics.	**BT 3**
CO 3	**Construct** the framework for exercise therapy and electrotherapy protocols.	**BT 3**
CO 4	**Analyse** the pathology of the traumatic and non traumatic orthopaedic conditions and their various treatment protocols both medical and surgical aspects.	**BT 4**

Description:

Every enrolled student has to carry out clinical posting in various clinical establishment in and around Guwahati. In the clinical posting all the students will learn to assess, evaluate, diagnose and manage different patients from different department. The students will learn the expertise to frame exercise therapy and electrotherapy protocols. The students will be enable to provide evidence based practice.

Bachelor Degree in Physiotherapy (BPT)

Programme Structure

8TH SEMESTER							
SL.NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**L**	**T**	**P**	**C**	**TCP**
CORE SUBJECTS							
1	**PHT242C801**	**CLINICAL REASONING, EVIDENCE BASED PHYSIOTHERAPY, ADMINISTRATION AND TEACHING SKILLS**	**1**	**1**	**0**	**2**	**2**
2	**PHT242C802**	**PHYSIOTHERAPY IN SPORTS INJURIES**	**2**	**1**	**0**	**3**	**3**
3	**PHT242C803**	**PHYSIOTHERAPY IN CARDIO RESPIRATORY, GENERAL SURGERY, OBSTETRICS AND GYNAECOLOGICAL CONDITIONS**	**2**	**1**	**0**	**3**	**3**
4	**PHT242C811**	**PHYSIOTHERAPY IN SPORTS INJURIES LAB**	**0**	**0**	**2**	**2**	**4**
5	**PHT242C812**	**PHYSIOTHERAPY IN GENERAL SURGERY, OBSTETRICS AND GYNAECOLOGY LAB**	**0**	**0**	**2**	**2**	**4**
6	**PHT242C813**	**PHYSIOTHERAPY IN CARDIO RESPIRATORY CONDITIONS LAB**	**0**	**0**	**2**	**2**	**4**
7	**PHT242C814**	**CLINICAL EDUCATION-IV**	**0**	**0**	**6**	**6**	**15**
8	**PHT242C821**	**RESEARCH PROJECT**	**0**	**0**	**2**	**2**	**4**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)							
9	**CEN982A801**	**COMMUNICATIVE ENGLISH-VIII**	**1**	**0**	**0**	**1**	**1**
ABILITY ENHANCEMENT ELECTIVE COURSES (AEEC)							
DISCIPLINE SPECIFIC-DSE (ANY TWO)							
10	**PHT242D801**	**OCCUPATIONAL THERAPY**	**4**	**1**	**0**	**5**	**5**
11	**PHT242D802**	**ORTHOTICS AND PROSTHETICS**	**4**	**1**	**0**	**5**	**5**
		TOTAL					

Level: Semester VIII

Course: C-1

Title of the Paper: CLINICAL REASONING, EVIDENCE BASED PHYSIOTHERAPY

Subject Code: PHT242C801

L-T-P-C:1-1-0-2 **Total credits: 2**

Course Objectives

- The objectives of the course are to introduce students about evidence based physiotherapy practice.
- Students will also be able to understand about administration and teaching skills and role of physiotherapy as health care providers

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Relate to the meaning of ethics and evidence which will be needed in treatment plan.	**BT 1**
CO 2	Understanding the condition and treatment options, their views, concerns, values, preferences and extent to which patients want to be involved in	**BT 2**
CO 3	apply on behavioral skills in communicating with patients, relatives, society at large and co-professionals	**BT 3**
CO 4	Analyze in different condition in the community and manage a record which will helpful in future.	**BT 4**

Course Outline :

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	1. Introduction to Evidence Based Practice: Definitions, Evidence Based Physiotherapy Practice 2. Time management - career development in Physiotherapy.	20hours
II	1. Administration - principles-based on the Goal & functions - at large hospital set up/domiciliary services/private clinic /academic. 2. Methods of maintaining records	10 hours

III	1. Privacy and confidentiality o Definitions of 'privacy' and 'confidentiality' with reason in physiotherapy o Justified breaches of confidentiality- • Sharing information for patient care • Using interpreters • Teaching medical students • Mandatory reporting Serious danger to others • Patient or guardian consent 2. Equality, justice and equity o Definitions of 'equality', 'justice' and 'equity' o The right to health care & Physiotherapy o Disparities in health status o Roles of Physiotherapists in establishing health care priorities and allocating scarce health care resources as direct health care providers.	15 hours
IV	1. Non-discrimination and non-stigmatization: What is discrimination and stigmatization? 2.Respect for cultural diversity and pluralism o Definition of culture and cultural diversity o Definition and value of pluralism o Limits to the consideration for cultural specificities Human dignity, human rights and fundamental freedoms	15 hours

Textbooks:

1.Practical evidence based Physiotherapy by Robert Herbert

Reference Books:

1. Electrotherapy : evidence based physiotherapy

Level: Semester VIII

Course: Core (C2)

Subject: Physiotherapy in Sports Injuries

Subject Code: **PHT242C802**

Total marks/ credits: 100 /4

L-T-P-C: **2-1-0-3** **Total credits: 3**

Course Objective:

- The objectives of the course are to acquire knowledge of the various sports injuries.
- To allow the physiotherapist to rehabilitate the various sports injuries.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** and **classify** various types of sports injuries and therapeutic methods.	**BT 2**
CO 2	**Identify** various sports injuries and able to clinically diagnose them.	**BT 3**
CO 3	**Apply** knowledge to deal with on field sports injuries during a sports event.	**BT 3**
CO 4	**Apply** various techniques for treating and managing the sports injuries.	**BT 4**

Course Outline:

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	1. Electrotherapy in sports injuries 2. Training the aerobic and anaerobic energy system 3. Physiological responses, changes & adaptations to various exercises - aerobic exercises & anaerobic exercises in Pulmonary, Cardiovascular, Neuromuscular system, Hormones	20hours
II	1. Detraining effects of cardiovascular, musculoskeletal and nervous system 2. Sports specific training and cross training. 3. **Various Body measurements:** Gross size and mass, length and height measurement, circumference of body parts, Skinfold thickness measurements	10 hours
III	**Musculoskeletal injuries** Pre–participation examination	15 hours

	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 and Head • Thorax and Abdomen • Peripheral nerve injuries, injuries to muscles, ligament, tendon, bone, synovial joint structure(with physiological response to injury)	
IV	**Cardiopulmonary** 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. Heat stroke and Heat illness. **Body composition** Different Body composition Various methods to estimate body composition : water displacement method, under water weighing method, skinfold method, surface anthropometry, bioelectrical impedence analysis, ultrasound assessment of fat, arm X-ray assessment of fat, CT assessment of fat	15 hours

Text Book:

1. Sports Physiotherapy by Maria Zuluga

2. Sport and physical therapy – Bernhardt Donna, Churchill Livingstone, London 1995.

3. Bird, S. R., Black, N. Sports Injuries: Causes, Diagnosis, Treatment and Prevention. Cheltenham: Stanley Thomes, 1997.

Reference Books :

1. Brownstein, B. Functional movement in Orthopaedic and Sports Physical Therapy: Evaluation, Treatment and Outcomes.New York; London: Churchill Livingstone, 1997

2. Cash, M. Sport and Remedial Massage Therapy.London: Edbury, 1996

Level -Semester VII

Course: C 3

Title of the Paper: PHYSIOTHERAPY IN CARDIO RESPIRATORY, GENERAL SURGERY, OBSTETRICS AND GYNAECOLOGICAL CONDITIONS

Subject Code: PHT242C803

Marks/ Credits: 100/3

L-T-P-C: 2-1-0-3 **Total credits: 3**

Course Objectives:

- The objective of the course is to help students to identify cardio respiratory dysfunction through assessment and investigations and demonstrate all the techniques required to restore the cardio respiratory function.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the pathophysiology of various cardio respiratory disorders	**BT 2**
CO 2	**Application** of the different skills to restore the cardio respiratory dysfunction	**BT 3**
CO 3	**Demonstrate** different techniques and have an idea on use of adjuncts along with physiotherapy techniques.	**BT 3**
CO 4	**Analyse** the various cardio-respiratory dysfunctions based on signs and symptoms of the disease.	**BT 4**

COURSE OUTLINE:

Modules	**Course Content**	**Periods**
I.	Thoracic Surgery Pre and post-operative management by physiotherapy of the following conditions:- 1. Lobectomy, Pneumonectomy, Thoracotomy, thoracoplasty. Management of General, Gynecology and Obstetrics surgery 1. Common abdominal surgeries 2. Common operation of reproductive system, including surgical intervention for child delivery. Ante natal &post natal, physiotherapy. 3. Common organ transplant surgeries- heart ,lung	15

II.	Wounds, Burns &Plastic surgery Review of pathological changes and principle of pre and post-operative management by physiotherapy of the following conditions: 1. Wounds, ulcers, pressure sores. 2. Burns & their complications. 3. Common reconstructive surgical proceeding of the management of wounds, ulcers, burns & consequent contractures & deformities. .	**10**
III.	1. Assessment of Cardio-Vascular and Respiratory system. 2. Anatomical and Physiological differences between the Adult and Pediatric lungs 3. Interpretation of radiological & Biochemical Investigations & correlate the same with clinical findings. 4. Functional diagnosis of cardio respiratory dysfunction (ECG, PFT, serum enzymes, ABG, ABI) 5. Physiotherapy techniques to increase lung volume □ Positioning and Mobilization □ Breathing exercises □ Neurophysiological Facilitation of Respiration □ Mechanical aids –Incentive Spirometer, CPAP, IPPB 6.Physiotherapy techniques to decrease work of breathing □ Energy Conservation and Positioning □ Breathing re-education – Breathing control techniques □ Mechanical aids – IPPB, CPAP, BiPAP 7.Physiotherapy techniques to clear secretions □ Hydration, Humidification & Nebulisation, □ Mobilization and Breathing exercises □ Postural Drainage □ Manual techniques – Percussion, Vibration and Shaking, Rib Springing, □ ACBT, Autogenic Drainage □ Mechanical Aids – PEP, Flutter, Acapella, RC Cornet, IPPB □ Facilitation of Cough and Huff & Suctioning 8.Drug Therapy	20
IV.	1.Pulmonary Rehabilitation 2. Oxygen therapy and Mechanical Ventilation 3. Physiotherapy management for cardiac disorders 4. Cardiac Rehabilitation 5. Cardio-pulmonary resuscitation	15
	TOTAL	**60**

Text Book:

- Clinical & Operative surgery by S. Das
- Text book of Gynecology – by Dutta – New Central Book Agency
- Text book of Obstetrics - by Dutta – New Central Book Agency
- Cash`s Text book for Physiotherapists in Chest, Heart & Vascular diseases- Jaypee bros. Publication
- Cash`s text book in General Medical & Surgical conditions for Physio therapists
- Chest Physical therapy &Pulmonary rehabilitation-by Donna Frownfilter
- Brompton`s hospital guide 5 Physical Rehabilitation - O'sullivan

Reference Books:

- Bailey & Love's short practice of Surgery-21st edn.
- Cardiopulmonary Physical therapy by Irwin Scott.
- Physiotherapy in respiratory care – Alexandra Hough

Course: C4

Title of the Paper: PHYSIOTHERAPY IN SPORTS INJURIES LAB

Subject Code: PHT242C811

Marks/ Credits: 100/3

L-T-P-C: **0-0-2-2** **Total credits: 2**

Course Objectives:

The objectives of the course are to have an understanding of the assessment, evaluation and examination related to sports injuries . To enable students to learn various sports rehabilitation methodology and protocols.

Course Outcomes:

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understanding** assessment, evaluation and examination related to sports injuries .	**BT 2**
CO 2	**Application** of the different skills treat sports injuries and their associated dysfunction.	**BT 3**
CO 3	**Demonstrate** different the rehabilitation phases with weekly protocols of exercises to patients.	**BT 3**
CO 4	**Analyse** sports person's status to return to activities by monitoring the progression of various phases of rehabilitation.	**BT 4**

COURSE OUTLINE:

SUPERVISED CLINICAL TRAINING:
All the works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination
Evaluation & treatment planning; its presentation & documentation of minimum **ten cases** in following:
□ Evaluation of Physical Fitness: Assesement of strength,power, endurance (muscular & cardiac), VO_2max, flexibility, reaction time and pulmonary function.
□ Assessment of lower limb complex: Pelvis, hip, thigh, knee, leg, ankle and foot
□ Assessment of upper limb complex: Shoulder girdle, shoulder, arm, elbow, forearm, wrist and hand
□ Taping

Text Book:

1. Sports Physiotherapy by Maria Zuluga

2. Sport and physical therapy – Bernhardt Donna, Churchill Livingstone, London 1995.

3. Bird, S. R., Black, N. Sports Injuries: Causes, Diagnosis, Treatment and Prevention. Cheltenham: Stanley Thomes, 1997.

Reference Books :

1. Brownstein, B. Functional movement in Orthopaedic and Sports Physical Therapy: Evaluation, Treatment and Outcomes.New York; London: Churchill Livingstone, 1997

2. Cash, M. Sport and Remedial Massage Therapy.London: Edbury, 1996.

Course: C 5

Title of the Paper: PHYSIOTHERAPY IN CARDIO RESPIRATORY, GENERAL SURGERY, OBSTETRICS AND GYNAECOLOGICAL CONDITIONS LAB

Subject Code: PHT242C812

Marks/ Credits: 100/2

L-T-P-C: **0-0-2-2** **Total credits: 2**

Course Objectives:

- The objective of the course is to help students to identify cardio respiratory dysfunction through assessment and investigations and demonstrate all the techniques required to restore the cardio respiratory function.

Course Outcomes:

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the pathophysiology of various cardio respiratory disorders	**BT 2**
CO 2	**Application** of the different skills to restore the cardio respiratory dysfunction	**BT 3**
CO 3	**Demonstrate** different techniques and have an idea on use of adjuncts along with physiotherapy techniques.	**BT 3**
CO 4	**Analyse** the various cardio-respiratory dysfunctions based on signs and symptoms of the disease.	**BT 4**

COURSE OUTLINE:

Modules	Course Content	Periods
I.	1. Skill to palpate all pulses, rhythm, rate, volume & Heart rate/pulse rate discrepancy 2. Skill to assess B.P. at various sites, & its Physiological variation, & to assess Ankle- Brachial Index 3. Skill of exercise testing- a)6/12 min walk, b)symptom limited 4. Interpretation of : a) tread mill & Ergo-cycle test findings b) Biochemical analysis-serum enzymes, C.P.K levels, L.D.H., S.G.O.T., S.G.P.T., Troponin T, Lipid profile, electrolyte balance c) Chest X-ray, d) P.F.T.-obstructive/ restrictive/reversibility e) A.B.G. f) R.P.E.-Borg scale g) Quality of life questionnaires 5. ICU apparatus and equipment's	20
II.	1.Physiotherapy techniques to increase lung volume □ Positioning and Mobilization □ Breathing exercises □ Neurophysiological Facilitation of Respiration □ Mechanical aids –Incentive Spirometer, CPAP, IPPB 2.Physiotherapy techniques to decrease work of breathing □ Energy Conservation and Positioning □ Breathing re-education – Breathing control techniques 3.Physiotherapy techniques to clear secretions □ Hydration, Humidification & Nebulization, □ Mobilization and Breathing exercises □ Postural Drainage □ Manual techniques – Percussion, Vibration and Shaking, Rib Springing, □ ACBT, Autogenic Drainage □ Mechanical Aids – Flutter, Acapella □ Facilitation of Cough and Huff & Suctioning 4.Cardio-pulmonary resuscitation	**20**
	TOTAL	**40**

Text Book:

- Clinical & Operative surgery by S. Das
- Text book of Gynecology – by Dutta – New Central Book Agency
- Text book of Obstetrics - by Dutta – New Central Book Agency
- Cash`s Text book for Physiotherapists in Chest, Heart & Vascular diseases- Jaypee bros. Publication
- Cash`s text book in General Medical & Surgical conditions for Physio therapists
- Chest Physical therapy &Pulmonary rehabilitation-by Donna Frownfilter
- Brompton`s hospital guide 5 Physical Rehabilitation - O'sullivan

Reference Books:

- Bailey & Love's short practice of Surgery-21st edn.
- Cardiopulmonary Physical therapy by Irwin Scott.
- Physiotherapy in respiratory care – Alexandra Hough

Level: Semester VIII

Course: Core (C5)

Subject: Clinical Education- IV

Subject Code: **PHT242C813**

Total marks/ credits: 100 /4

L-T-P-C: **0-0-2-2** **Total credits: 2**

Course Objective:

- Every enrolled student has to carry out clinical posting in various clinical establishment in and around Guwahati.
- To enable each student the practical exposure of the various clinical subjects taught and their applications in terms of patient communication and treatment.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** various orthopaedic conditions and their symptomology to patients and management.	**BT 2**
CO 2	**Apply** the their skills to assess, evaluate, diagnose and manage different patients from different departments like orthopaedics, neurology, paediatrics.	**BT 3**
CO 3	**Construct** the framework for exercise therapy and electrotherapy protocols.	**BT 3**
CO 4	**Analyse** the pathology of the traumatic and non traumatic orthopaedic conditions and their various treatment protocols both medical and surgical aspects.	**BT 4**

Description:

Every enrolled student has to carry out clinical posting in various clinical establishment in and around Guwahati. In the clinical posting all the students will learn to assess, evaluate, diagnose and manage different patients from different department. The students will learn the expertise to frame exercise therapy and electrotherapy protocols. The students will be enable to provide evidence based practice.

SYLLABUS (8th Semester)		
PAPER NAME:RESEARCH PROJECT		SUBJECT CODE: PHT242C821
SCHEME OF EVALUATION: (P)	CREDIT UNIT-2	L-T-P-C:0-0-2-2

Course Objective	Teaching Learning Process	Learning Outcome	Course Evaluation
This course will train the student how to perform a research in any Physiotherapy field	● Individual and Group Presentation ● Case Study	Every candidate pursuing BPT degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The result of such a work shall be submitted in the form of research project	● Continuous Evaluation: 15%- (Assignment, Class Test, Viva, Seminar, Quiz : Any Three) ● Mid- Term Examination: 10% ● Attendance: 5% ● End Term Examination: 70%

DETAILED SYLLABUS:

Every candidate shall submit to the Registrar (Academic) of the university in the prescribed proforma, a synopsis containing particulars of proposed research project work on or before the dates notified by the university. The research project is aimed to train an undergraduate student in research methods and techniques. Every candidate pursuing BPT degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The result of such a work shall be submitted in the form of research project (in the eighth semester). Any change in the dissertation topic or guide should be informed to the authorities of this university for its approval. No change in the dissertation topic or guide shall be made after the approval of the Research & Recognition Committee of the university.