Highlighted on Pg. No. 26, 65, 185, 198, 220 & 293

MGM INSTITUTE OF HEALTH SCIENCES

(Deemed University u/s 3 of UGC Act, 1956)
Grade 'A' Accredited by NAAC
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CHOICE BASED CREDIT SYSTEM (CBCS)

(With effect from 2019-20 Batches)

Curriculum for Bachelor of Physiotherapy (BPT)

(Amended upto BOM 63/2021, dated 17/02/2021)

Dr. Rajesh B. Goel
Registrar
MGM Institute of Health Sciences
(Deemed University u/s 3 of UGC Act, 1956)
Navi Mumbai- 410 209

Amended History

1. Approved as per Resolution No. 3.2.2.11 (i), BOM – 57/2019, dated 26/04/2019
2. Amended upto Resolution No. 3.2.4.1, BOM – 59/2019, dated 11/11/2019
3. Amended upto Resolution No. 3.1.2.1, Resolution No. 3.1.2.8.iii, BOM-62/2020, dated 16/09/2020
4. Amended upto Resolution No. 4.3.2.2, Resolution No. 4.3.2.3.i, Resolution No. 4.3.2.3.ii, Resolution No. 4.3.2.4, BOM-63/2021, dated 17/02/2021.

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Vision and Mission of MGM School of Physiotherapy

Vision

MGM Institute of Health Sciences aims to be a top ranking centre of Excellence in Health Science Education, Health Care and Research.

Mission

- Students graduating from the Institute will have the required skills to deliver the quality health care to all the sections of the society with compassion and benevolence, without prejudice or discrimination at an affordablecost.

- As a Research Centre, it shall focus on finding better, safer and affordable ways of diagnosing, treating and preventing diseases. In doing so, it will maintain highest ethicalstandard.

Description of Degree

Name of the Degree Offered: Bachelor in Physiotherapy (BPT)

Duration of Program: 4 ½ years (4 years Academics + 6 months' compulsory rotator Internship).

Program pattern:

First Semester	August
Second Semester	February
Third Semester	August
Fourth Semester	February
Fifth Semester	August
Sixth Semester	February
Seventh Semester	August
Eight Semester	February
Ninth Semester	August

Eligibility Criteria:

- He/she has passed the Higher Secondary (10+2) with Science (PCB) or equivalent examination recognized by any Indian University or a duly constituted Boardwith pass marks in Physics, Chemistry, and Biology.
- Minimum percentage of marks: 50%aggregate.

Medium of Instruction:

English will be the medium of instruction for all the subjects of study and for examinations.

I. Preamble

Physiotherapy or Physical Therapy (PT) 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 bodysystems.

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.

The Chairman, University Grants Commission (UGC) via letter D.O.No.F.1- 1/2015 (CM) dated 8th January, 2015, communicated the decision of the Ministry of Human Resources Development to implement Choice Based Credit System (CBCS) from the academic session 2015-2016 in all Indian Universities to enhance academic standards and quality in higher education through innovation and improvements in curriculum, teaching- learning process, examination and evaluation systems.

Diversity in the system of higher education, and multiple approaches followed by universities towards curriculum, examination, evaluation and grading system has led to the lack of uniformity. While the Universities must have the flexibility and freedom in designing the examination and evaluation methods that best fits the curriculum, syllabi and teaching– learning methods, there is a need to devise a sensible system for awarding the grades based on the performance of students. Presently the performance of the students is reported using the conventional system of marks secured in the examinations or grades or both. The conversion from marks to letter grades and the letter grades used vary widely across the Universities in the country. This creates difficulty for the academia and the employerstounderstandandinfertherelativeperformanceofthestudentsgraduatingfrom

different universities and colleges in the country. Hence the UGC has recommended the implementation of CBCS in Universities.

The grading system is considered to be better than the conventional marks system and hence it has been followed in the top institutions in India and abroad. Introduction of a uniform grading system will facilitate student mobility across institutions within and across countries and also enable potential employers to assess the performance of students. To bring in the desired uniformity, in grading system and method for computing the cumulative grade point average (CGPA) based on the performance of students in the examinations, the UGC has formulated the guidelines and communicated it to all Universities foradoption.

UGC, subsequently, in its notification No.F.1-1/2015 (Sec.) dated 10/4/15 has provided a set of model curricula and syllabi for CBCS program under the Faculties of Arts, Humanities and Sciences providing the academic flexibility for Universities to make changes/ innovation up to 20% in the syllabi of these program. It has also specified that all UG program should be for a minimum of three years' duration. UG Program with 120-140 credits in the 180 annual teaching days' system being designated as regular B. A/B.Sc./B.Com., B.B. A etc., Those UG programs with 140-160 credits or more with fully supported higher number of annual teaching days can be designated as B. A (Hons)/ B.Sc.(Hons) /B.B. A(Hons)/B. Com(Hons) etc.,

Further, the University Grants Commission encourages higher education institutes to integrate learning outcome based framework into the curriculum for undergraduate education which is considered critical for enabling effective participation of young people in knowledge production, participation in knowledge economy, improving national competiveness in a globalized world and equipping young people with skills relevant to global and national standards. Outcome oriented curriculum enhances employability of graduates and enables translation of academic research into innovations for practical use in society andeconomy.

Learning outcomes-based approach specifies what graduates completing BPT program are expected to know, understand and able to do after completing the program. The BPT degree is awarded based on demonstration of achievement of outcomes in terms of knowledge, skills, attitudes and values and academic standards expected of the graduate. The expected learning outcomes help define the graduate attributes, qualification descriptors, program learning outcomes, course learning outcomes, curriculum planning, design, delivery and review of the academicprogram.

MGM Institute of Health Sciences, accredited A grade, has taken a proactive step in adopting the CBCS system for Physiotherapy programs implemented by its constituent unit, MGM School of Physiotherapy.

The duration of Bachelor in Physiotherapy (BPT) program is four and half years offering 184 credits with well-defined learning outcomes. The BPT CBCS Curriculum has been designed

with reference to existing curriculum of state Universities within the country, generic guidelines of University Grant Commission, global guidelines for curriculum, input from experts in the field of Physiotherapy and feedback from stakeholders namely students, teachers, alumni, employers and professionals to remain in consonance with the spirit of choice based credit system and learning objective based curriculum.

II. Introduction:

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

(Definition as per the Maharashtra State Council for Occupational therapy & Physiotherapy, 2004)

`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.

III. Objectives of the Bachelor's in Physiotherapy (BPT)program

This program is formulated to enable student to gain adequate knowledge, skills and clinical hands on experience leading to an ability to establish independent professional practice. The overall content of the curriculum focuses on learning experiences and clinical education experiences for each student that encompasses the following.

1. Ethical, evidence-based, efficient Physiotherapy treatment of adult as well as pediatric patients/clients with an array of conditions (e.g. musculoskeletal, neuromuscular, cardiovascular/pulmonary, integumentary etc.) across the lifespan and the continuum of care, to all people irrespective of gender, caste, nation, states and territories, region, minority groups or othergroups.
2. Ability to prevent movement dysfunction or maintain/restore optimal function and quality of life in individuals with movementdisorders.
3. Ability to operate as independent practitioners, as well as members of health service provider teams, act as first contact practitioners, from whom patients/clients may seek direct services without referral from another health careprofessional.
4. Ability to promote the health and wellbeing of individuals and the general public/society, emphasizing the importance of physical activity andexercise.

5. Prevent impairments, activity limitations, participatory restrictions and disabilities in individuals at risk of altered movement behaviors due to health factors, socio-economic stressors, environmental factors and lifestyle factors.
6. Provide interventions/treatment to restore integrity of body systems essential for movement, maximize function and recuperation, minimize incapacity, and enhance the quality of life, independent living and workability in individuals and groups of individuals with altered movement behaviors resulting from impairments, activity limitations, participatory restrictions anddisabilities.
7. Ability to modify environmental, home and work access and barriers to ensure full participation in one's normal and expected societalroles.
8. Become an essential part of the health and community/welfare services delivery systems, practice independently of other health care/service providers and also within interdisciplinary rehabilitation/habilitation programs, independent professional practice in self-employed set up or employment at the multiple settings such as hospitals, nursing homes, institutions catering services to specific conditions (like paraplegic /geriatric homes), primary as well as rural & urban health care set up, community health , domiciliary practice like residentialareas, education & research centers, fitness /wellness centers like health clubs, occupational health centers g]- Schools including special schools, geriatric care units, and others.
9. Ability to carry out researchprojects

IV. Physiotherapy GraduateAttributes

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:

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 courseobjectives.
2. **Psychomotor Skills:** Physiotherapy students must demonstrate psychomotor skills of locomotor ability to access lecture halls, practical laboratory andclinics.

a. They must possess ability to move with reasonable swiftness in emergency situations to protect the patient (e.g. fromfalling).
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 cardiorespiratorysystems.
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 cardiopulmonaryresuscitation.
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 mobilisationtechniques.
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 patientcare.

3. **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 careteam.
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 implementcare

that is socio-culturally relevant to each patient.

5. **Problem Solving:** Students must demonstrate capacity to extrapolate theoretical knowledge and apply competencies gained to solve non- familiar problems and real lifesituations.
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 withevidence.
7. **Research – Related Skills:** Students should be able to define research problem, formulate hypothesis, manage resources, analyse 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 andcreativity.
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 clinicalsettings.
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 diversegroups.
10. **Awarenessofmoral,ethicalandlegalissues:**Studentsmustdemonstratemoral /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.
11. **Leadership qualities:** Students must demonstrate ability for task allocation, organization of task elements, setting direction, formulating an inspiring vision, team building, to achieve a vision, engaging, knowledge and respect individual values and opinions in order to foster harmonious working relationships with colleagues, peers, andpatients.
12. **Ongoing 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 andchallenges.

V. Qualification Descriptors for Bachelor of Physiotherapy (BPT)program

Students who complete the four and half years Bachelor of Physiotherapy program will be awarded a bachelor's degree. Expected outcomes that a student must demonstrate include:

1. Systematic, extensive and coherent knowledge and skill in Physiotherapy and its applications including critical understanding of established theories, principles and concepts, knowledge of advanced and emerging issues in Physiotherapy, skills in musculoskeletal, neurological, cardio-respiratory Physiotherapy, recent advances and research in Physiotherapy evaluation and treatmentprocedures.
2. Comprehensive information about electrotherapy modalities, exercise equipment, advanced learning material, skills andtechniques.
3. Skill in collecting quantitative and qualitative data, analysis and interpretation of data using appropriate methodology and communicating results to scientific community and beneficiaries for formulating appropriate evidence based health caresolutions.
4. Address self-learning needs related to current and emerging areas of study, use research and professional material, apply knowledge to new concepts and unfamiliar areas and seek solutions in real lifesituations.
5. Demonstrate profession related transferable skills relevant to patient care and employmentopportunities.

VI. Program Outcomes for Bachelor of PhysiotherapyProgram

Students who complete four and half year's undergraduate program in Physiotherapy would earn a Bachelor of Physiotherapy (BPT) degree. The learning outcomes that a student should be able to demonstrate on completion of a degree level program include academic, personal, behavioral, entrepreneurial and social competencies. It is expected that a student completing a particular course must have a level of understanding of the subject and its sub-areas in consonance with the learning outcomes mentioned at the end of that course. Program learning outcomes include Physiotherapy specific skills, generic skills, transferable global skills and competencies that prepare the student for employment, higher education, and research thereby developing students as contributing members for overall benefit to the society.

The program learning outcomes relating to BPT degree program are summarized below:

PO 1	To demonstrate behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
PO 2	To develop healthy Physiotherapist – Patient relationship
PO 3	To demonstrate and relate moral, ethical values and legal aspects concerned with Physiotherapy management
PO 4	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	To apply and outline pathology of medical conditions in context with Physiotherapy, interpret& use medical communication.
PO 6	To apply knowledge of biomechanics of human movement in musculoskeletal, neurological and cardio-respiratory conditions in planning, recommending,and executing Physiotherapy management.
PO 7	To outline and implement Physiotherapy management by co-relating assessment and examination skills of clinical subjects like Orthopedics, General Surgery, Medicine, Neurology, Pediatrics, Dermatology & Gynecology & Obstetrics, Community Medicine and Sociology
PO 8	To demonstrate skill in maneuvers of passive movements, massage, stretching, strengthening, and various manual therapy techniques. Students will integrate Physiotherapy evaluation skills including electro diagnosis on patients to arrive at a Functional/ Physical Diagnosis in musculoskeletal, neurological, cardiovascular and pulmonary conditions.
PO 9	To describe and analyze concepts of energy conservation, global warming and pollution and justify optimal use of available resources.
PO 10	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	To demonstrate and apply basic computer applications for data management, data storage, generating data bases and for research purposes.

VII. Program Specific Outcomes for Bachelor of PhysiotherapyProgram

Physiotherapist as aProfessional

Reflect, learn and teachothers

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 learningneeds.
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 whennecessary.
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.

Learn and work effectively within a multi-professional team

PSO 7	Analyze the roles and expertise of health and social care professionals in the context of working and functioning as a multi-professional team to the delivery of safe and high-quality care.
PSO 8	Demonstrate ability to work with colleagues in ways that best serve the interests of patients, passing on information and handing over care, demonstrating flexibility, adaptability and a problem-solving approach.
PSO 9	Demonstrate ability to build team capacity and positive working relationships and undertake various team roles including leadership and the ability to accept leadership by others.

Physiotherapist as a Scholar and a Scientist

Physiotherapy graduate will be able to apply biomedical scientific principles, method and knowledge relating to: anatomy, physiology, biochemistry, cell biology, pathology, and psychology to Physiotherapy clinical practice.

The graduate will be able to:

PSO 10	Explain normal human structure and functions, examine the correlation between structural and functional impairment.
PSO 11	Explain the scientific basis for common musculoskeletal, neurological, cardio-respiratory, women's health related, geriatric and sports related disorders, compare and contrast Physiotherapy treatment techniques applicable in relevant case scenarios.
PSO 12	Justify selection of appropriate clinical examination and investigation for common clinical conditions and critically analyze clinical findings
PSO 13	Plan appropriate rehabilitation goals for common disorders and design management protocols.
PSO 14	Examinethe role of environmental and occupational hazards in ill-health and discuss ways to mitigate their effects.

Apply scientific method and approaches to Physiotherapy research

PSO 15	Plan, and conduct research experiments to evaluate current practices and design innovative physiotherapy interventions, based on evidence, to provide highest level of healthcare.
PSO 16	Critically appraise the results of relevant qualitative and quantitative studies as reported in scientific literature.
PSO 17	Outline the ethical issues involved in clinical research.

Physiotherapist as a Practitioner

The graduate will be able to

PSO 18	Record a patient's medical history, including family and socialhistory; communicate with relatives or other caretakers where everappropriate.
PSO 19	List patients' questions, their understanding of condition and treatment options, their views, concerns, values, preferences and extent to which patients want to be involved in decision-making regarding their care and treatment.
PSO 20	Assess structural, functional impairments, compare performance and capacity through clinical examination and risk evaluation, prioritize goals, recommend Physiotherapy treatment and carry out independent consultation with a patient.
PSO 21	Examine ethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency
PSO 22	Respond to patients concerns and preferences, and respect the rights of patients to reach decisions with their doctor about their treatment and care and to refuse or limit treatment.

Communicate effectively with patients and colleagues in a health context

PSO 23	Communicate clearly, sensitively and effectively with patients, caregivers, and colleagues from the medical and other professions, by listening, sharing and responding.
PSO 24	Communicate clearly, sensitively and effectively with individuals and groups regardless of their age, social, cultural or ethnic backgrounds or their disabilities including when English is not the patient's first language.
PSO 25	Communicate by spoken, written and electronic methods (including medical records), and be aware of other methods of communication used by patients.
PSO 26	Communicate appropriately in difficult circumstances, such as when breaking bad news, and when discussing sensitive issues, such as alcohol consumption, smoking or obesity, with difficult or violent patients, people with mental illness and with vulnerable population

Provide immediate care in medical emergencies

PSO 27	Assess and recognize the severity of a clinical presentation and a need for immediate emergency care.
PSO 28	Apply basic first aid and cardio-pulmonary resuscitation or direct other team members to carry out resuscitation.

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Use information effectively in a health context

PSO 29	Write accurate, legible and complete clinical records, use computers and other information systems for data storage, retrieval , prepare health promotion material for patients, research and education.
PSO 30	Demonstrate confidentiality, use data protection legislation and codes of practice in all dealings with information.

VIII. Course learning outcomes: are defined within the course content that makes up the program. The courses are structured such that learning is vertically and horizontally integrated into the curriculum. The CBCS curriculum offers a certain degree of flexibility in taking courses. Course learning is aligned to the program learning outcomes and graduate attributes. The BPT program is inclusive of 9 semesters inclusive of 54 core courses and 28 weeks of compulsory rotator internship, (122 Credits), 5 ability enhancement compulsory courses (AECC-12 credits), 6 ability enhancement elective courses (AEEC–6 credits) and 12 discipline specific skill electives (SEC–12 credits) and 2 generic electives (GEC–2 credits). In semester V to VIII practical training will place emphasis on specific skill training on healthy adults as well as patient in order to gain core competences. Supervised clinical training (CLT) is included in each semester (30credits).

Evaluation of the courses vary as appropriate to the subject area, inclusive of formative and summative assessment, ongoing comprehensive assessment in the form of closed and open book tests, objectively structured practical examination (OSPE), objectively structured clinical examination (OSCE), problem based assignments, practical assignments, observation of practical skills, project reports, case reports, viva, seminars, essays, and others.

IX. CBCS Definition andBenefits:

Choice Based Credit System is a flexible system of learning. The distinguishing features of CBCS are the following:

- It permits students to learn at their ownpace.
- The electives are selected from a wide range of elective courses offered by the other UniversityDepartments.
- Undergo additional courses and acquire more than the required number ofcredits.
- Adopt an inter-disciplinary and intra-disciplinary approach inlearning.
- Make best use of the available expertise of the faculty across the departments or disciplines
- Has an inbuilt evaluation system to assess the analytical and creativity skills of students in addition to the conventional domain knowledge assessmentpattern.

9.1 Definitions of Key Words:

i. **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academicyear.

ii. The CBCS provides choice for students to select from the prescribed courses (core, elective or minor or soft skillcourses).

iii. **Course**: Usually referred to, as “papers” is a component of a programme. All courses need not carry the same weight. The courses should define learning objectives and learningoutcomes.Acoursemaybedesignedtocompriselectures/tutorials/

laboratory work/ outreach activities/ project work/ viva/ seminars/ term papers/assignments/ presentations/ self-study etc. or a combination of some of these.

iv. **Credit Based Semester System (CBSS):** Under the CBSS, the requirement for awarding a degree or diploma or certificate is prescribed in terms of number of credits to be completed by thestudents.

v. **Credit:** A unit by which the course work is interpreted. It functions the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work perweek.

vi. **Cumulative Grade Point Average (CGPA):** It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the sum total of the credit points obtained by the student in various courses in all semesters and the sum of the total credits of all courses in all thesemesters.

vii. **Grade Point:** It is a numerical marking allotted to each letter grade on a 10-point scale.

viii. **Letter Grade:** It is an appreciated point of the student's performance in a selected course. Grades are denoted by letters O, A+, A, B, C and RAx.

ix. **Programme:** An educational programme leading to award of a Degreecertificate.

x. **Semester Grade Point Average (SGPA):** It is index of performance of all performance of work in a semester. Its total credit points obtained by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimalplaces.

xi. **Semester:** Each semester will extend for 6 months and will consist of minimumof 130 teaching/learning days, exclusive of examinations and holidays. The odd semesters will be scheduled from August to January and even semesters from February to July.

xii. **Transcript or Grade Card or Certificate**: Based on the grades earned, a grade certificate shall be issued to all the registered students after every semester. The grade certificate will display the course details (code, title, number of credits, grade secured) along with SGPA of that semester and CGPA earned till thatsemester.

X. Semester System and Choice Based CreditSystem

The semester system accelerates the teaching-learning process and enables vertical and horizontal mobility of students in learning. The credit based semester system provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The choice based credit system enables students to take courses of their choice, learn at their own pace, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning.

10.1. Semesters:

An academic year consists of two semesters:

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

10.2 Credits:

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

a. ***1 credit*** **=** 1 hour of lecture perweek
b. ***3 credits*** = 3 hours of instruction perweek
   - ✓ Credits will be assigned on the basis of the lectures (L) / Clinical Training (CT) / laboratory work (P) / Research Project (RP) and other forms of learning in a 15-20-week schedule L - One credit for one hour lecture perweek
c. **P -** One credit for every two hours of laboratory orpractical
d. **CT -** One credit for every three hours of Clinical training/Clinicalrotation/posting
e. **RP** - One credit for every two hours of Research Project per week – Maximum Credit 20-25

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

a. **Types of Courses**: Courses in the programme are of threekinds:

- **CoreCourse**
- **ElectiveCourse**
- **Ability EnhancementCourse**

1. **Core Course:** A course, which should compulsorily be studied by a candidate as a basic requirement to complete the program, is termed as a Core course. There are Core Theory (CT) and Core Practical (CP) Courses in everysemester.
2. **Elective Course:** A course which can be chosen from a very specific or advanced subject of study or which provides an extended scope or which enables exposure to some other domain or expertise, is called an Elective Course. Elective courses may be of twotypes

2a. Discipline Specific Skill Elective (SEC) Course: Elective courses offered by the main subject of study are referred to as Discipline Specific Elective. The Institute may also offer discipline related Elective courses of interdisciplinary nature. An elective may be "Discipline Specific Electives (DSE)" gazing on those courses which add intellectual efficiency to the students.

2b. Generic Elective (GEC) Course: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective.

Dissertation / Project: An Elective/Core course designed to acquire special / advanced knowledge, such as supplement study / support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher / faculty member is called dissertation / project.

3. Ability Enhancement Courses (AEC): The Ability Enhancement (AE) Courses may be of two kinds: Ability Enhancement Compulsory Courses (AECC) and Skill Enhancement Courses(SEC).

"AECC" courses are the courses based upon the content that leads to Knowledge enhancement (i) Environmental Science and (ii) English/MIL Communication. These are mandatory for all disciplines.

Skill Enhancement Courses (SEC): SEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, Indian and foreign languages etc. These courses may be chosen from a pool of courses designed to provide value-based and/or skill-basedknowledge.

2.4 Assigning Credit Hours per Course: While there is flexibility for the departments in allocation of credits to various courses offered, the general formula wouldbe:

- All core courses will be restricted to a maximum of 4credits
- All electives will be restricted to a maximum of 3credits
- All ability enhancement courses will be restricted to a maximum of 2credits
- Projects will be restricted to a maximum of 3credits

Any course requiring more than 4 credit hours for covering the syllabus content will be divided into two courses i.e., 6 Credits Course 1 - 3 credits + Course 2 – 3 credits or 6 Credits Course 1 Theory - 4 credits + Course 2 Lab – 2 credits.

2.5 Assigning total Credits for a Program: The UGC, in its notification No.F.1-1/2015 (Sec.) dated 10/4/15 has provided a set of Model curricula and syllabi for CBCS programs. In conformation with this notification, the BPT program credits for 41/2 years duration will be 184 credits in total, inclusive of clinical rotation/clinical training and researchproject.

XI. Credit Value Per Course & Structure OfSyllabus:

To ensure uniformity in assigning the credits to a course, a structured and unitized syllabus shall be observed. For UG & PG Programs each course will be provided a structured syllabus in the following format:

a) Title of theCourse
b) LearningObjectives
c) Unitsfor

Category	Credits	BPT Syllabus units
Core Theory (CT)	3 – 4	6
Core Practical(CP)	2 – 4	10- 15 experiments/ cases/ spotters
Ability enhancement (AE)	2	4
Skills enhancement (SE)- theory or practicals	2	4
General Elective	2	2
Clinical Training (CLT)	3-15	Structured monitoring and assessment
Research Projects (RP)	18-25	Structured monitoring and assessment
Internship (IN)	Min.15	Structured monitoring and assessment

d) Syllabus Content
e) LearningOutcomes
f) References
    a. Text Books –2
    b. Reference Books –2
    c. Web Resources – 2 WebPortals

Minimum credit allocation will be as per requirements of each course curriculum.

Structure of CBCS BPT Curriculum

Semester I		Semester II		Semester III	
Course Code	**Core Course**	**Course Code**	**Core Course**	**Course Code**	**Core Course**
BPT001	Human Anatomy-I CT	BPT007	Human Anatomy II -CT	BPT015	Kinesiology CT
BPT002	Human Anatomy-I CP	BPT008	Human Anatomy II-CP	BPT016	Clinical Applications of Kinesiology CP
BPT003	Human Physiology-I CT	BPT009	Human Physiology –II CT	BPT017	Electrotherapy CT
BPT004	Human Physiology-I CP	BPT010	Human Physiology –II CP	BPT018	Electrotherapy CP
BPT005	Kinesiotherapy-I CT	BPT011	Kinesiotherapy-II-CT	BPT019	Pharmacology CT
BPT006	Kinesiotherapy-I CP	BPT012	Kinesiotherapy-II-CP	BPT020	Psychology & Psychiatry CT
BPTCLT001	Clinical Training	BPT013	Thermal Agents CT	BPTCLT003	Clinical Training
		BPT014	Thermal Agents CP		
		BPTCLT002	Clinical Training		
Semester IV		**Semester V**		**Semester VI**	
Course Code	**Core Course**	**Course Code**	**Core Course**	**Course Code**	**Core Course**
BPT021	Physiotherapy Skills CT	BPT028	Medical and surgical aspects of Musculoskeletal conditions	BPT033	Medical and surgical aspects of Neurological disorders
BPT022	Physiotherapy Skills CP	BPT029	Medical and surgical aspects of Cardiovascular, Respiratory disorders and general medical conditions	BPT034	Physiotherapy for women and child care Theory
BPT023	Electro-Diagnostics CT	BPT030	Diagnosis of movement dysfunction and ICF Theory	BPT035	Physiotherapy for women and child care Practical
BPT024	Electro-Diagnostics CP	BPT031	Diagnosis of movement dysfunction and	BPT036	Public Health and preventive Physiotherapy

			ICF Practical		Theory
BPT025	Pathology & Microbiology CT	BPT032	Public Health	BPT037	Public Health and preventive Physiotherapy Practical
BPT026	Sociology CT	BPTCLT005	Clinical Training	BPT038	Physiotherapy in Geriatric care Theory
BPT027	Research Methodology CT			BPT039	Physiotherapy in Geriatric care Practical
BPTCLT004	Clinical Training			BPT040	Introduction to Evidence Based Physiotherapy Theory
				BPT041	Introduction to Evidence Based Physiotherapy Practical
				BPTCLT006	Clinical Training
Semester VII		**Semester VIII**		**Semester IX**	
Course Code	**Core Course**	**Course Code**	**Core Course**	**Course Code**	**Core Course**
BPT042	Musculoskeletal Physiotherapy I Theory	BPT048	Musculoskeletal Physiotherapy II Theory	BPTCLT009	Core Clinical Training
BPT043	Musculoskeletal Physiotherapy I Practical	BPT049	Musculoskeletal Physiotherapy II Practical	BPTCLT010	Core Clinical Training
BPT044	Cardiovascular and Respiratory Physiotherapy I Theory	BPT050	Cardiovascular and Respiratory Physiotherapy II Theory	BPTCLT011	Core Clinical Training
BPT045	Cardiovascular and Respiratory Physiotherapy I Practical	BPT051	Cardiovascular and Respiratory Physiotherapy II Practical	BPTCLT012	Core Clinical Training
BPT046	Neurophysiotherapy I Theory	BPT052	Neurophysiotherapy II Theory	BPT055	Research Project
BPT047	Neurophysiotherapy I Practical	BPT053	Neurophysiotherapy II Practical		
BPTCLT007	Clinical Training	BPT054	Research Project Synopsis		
		BPTCLT008	Clinical Training		

XII. Selection of Generic Elective and Skills EnhancementCourses:

The students should apply in the prescribed format and should reach the CBCS coordinator before the start of the semester. All candidates must register for the courses of the said semester.

List of Ability Enhancement Compulsory Courses AECC (Credits=3)			
SrNo	Elective Code	Title	Semester
1	AECC001	Biophysics and medical electronics	1
2	AECC002	Environmental Science I	1
3	AECC003	English and Communication Skills	1
4	AECC004	Biochemistry	2
5	AECC005	Environmental Science II	2

List of Ability Enhancement Elective Course (Credits=2)			
Sr No	Elective Code	Title	Semester
1	AEEC001	Ergonomics and health promotion	3
2	AEEC002	Personality development & Learning styles	3
3	AEEC003	Biostatistics and SPSS	4
4	AEEC004	Medical ethics, Human rights and professional values	4
5	AEEC005	Diagnostic Radiology	5
6	AEEC006	Pulmonary Function Test	5

List of Generic Elective Course (Credits=2)			
Sr No	Elective Code	Title	Semester
1	GEC001	2D motion capture	5
2	GEC002	Device Innovation and IPR	5

List of Skill Based Discipline Specific Elective Courses (Credits=2)			
Sr No	Elective Code	Title	Semester
1	SEC001	Indian Human Movement Science I–Yoga	3
2	SEC002	Indian Human Movement Science II– Dance & Sports	4
3	SEC003	Clinical Biomechanics	6
4	SEC004	Vestibular rehabilitation	6

5	SEC005	Hand rehabilitation	7
6	SEC006	Foot rehabilitation	7
7	SEC007	Aquatic Therapy	7
8	SEC008	Sports Physiotherapy	7
9	SEC009	Neurodevelopemental techniques	8
10	SEC010	PT in ICU	8
11	SEC011	Splinting & Bracing	8
12	SEC012	Integumentary Physiotherapy	8

Elective courses from Swayam/ NPTEL platform [www. https://swayam.gov.in &http://nptel.ac.in] maybe included in the above pool as and whenneeded.

XIII. Framework of BPTCurriculum

Semester I

Semester I (20 weeks teaching : 36 hrs per week)																		
			Credits per week				Hours per week			Hours per semester				Marks				
Course Code	Course Title	Course Description	T	P	CLT	Total Credits	T	P	CLT	T	P	CLT	Total hours	IA Theory	Semester Examination Theory	IA Practical	Semester Examination Practical	Total
BPT001	Human Anatomy I Theory	Core Theory	3			3	3			60			60	20*	80			100
BPT002	Human Anatomy I Practical	Core practical		2		2		4			80		80			20*	80	100
BPT003	Human Physiology I Theory	Core Theory	3			3	3			60			60	20*	80			100
BPT004	Human Physiology I Practical	Core Practical		1		1		2			40		40			20*	80	100
BPT005	Kinesiotherapy I Theory	Core Theory	2			2	2			40			40	20*	80			100
BPT006	Kinesiotherapy I Practical	Core Practical		2		2		4			80		80			20*	80	100
AECC001	Biophysics and medical electronics	Ability Enhancement compulsory course	2	1		3	2	2		40	40		80		40 #		10 #	50
AECC002	Environmental Sciences I	Ability Enhancement compulsory course	1			1	1			20			20		10#			10
AECC003	English and Communication Skills	Ability Enhancement Compulsary Course	3			3	3			60			60		40 #			40
BPTCLT001	Introduction to basic skills in patient care I	Clinical Training			3	3			10			200	200				20#	20
		Total	14	6	3	23	14	12	10	280	240	200	720					720
			* Internal Assessment (IA) Examination will be conducted for 40 marks and be calculated out of 20 for inclusion in Semester Examination															
			# Examination will be conducted at Constituent unit level															

Semester II

Semester 1I (20 weeks teaching : 36 hrs per week)																		
			Credits per week				Hours per week			Hours per semester				Marks				
Course Code	Course Title	Course Description	T	P	CLT	Total Credits	T	P	CLT	T	P	CLT	Total hours	IA Theory	Semester Examination Theory	IA Practical	Semester Examination Practical	Total
BPT007	Human Anatomy II Theory	Core Theory	3			3	3			60			60	20*	80			100
BPT 008	Human Anatomy II Practical	Core Practial		2		2		4			80		80			20*	80	100
BPT009	Human Physiology II Theory	Core Theory	3			3	3			60			60	20*	80			100
BPT010	Human Physiology II Practical	Core Practical		1		1		2			40		40			20*	80	100
BPT011	Kinesiotherapy-II Theory	Core Theory	2			2	2			40			40	20*	80			100
BPT012	Kinesiotherapy-II Practical	Core Practical		2		2		4			80		80			20*	80	100
BPT013	Thermal Agents Theory	Core Theory	2			2	2			40			40		40 #			40
BPT014	Thermal Agents Practical	Core Practical		1		1		2			40		40				40 #	40
AECC004	Biochemistry	Ability Enhancement compulsary course	3			3	3			60			60		40 #			40
AECC005	Environmental Sciences II	Ability Enhancement compulsory course	1	1		2	1	2		20	40		60		40 #		20#	60
BPTCLT002	Introduction to basic skills in patient care II	Clinical training			2	2			8			160	160				20#	20
		Total	14	7	2	23	14	14	8	280	##	160	720					800
* Internal Assessment (IA) Examination will be conducted for 40 marks and be calculated out of 20 for inclusion in Semester Examination																		
# Examination will be conducted at Constituent unit level																		

Semester III

Semester III (20 weeks teaching : 36 hrs per week)																			
			Credits per week				Hours per week			Hours per semester				Marks					
Course Code	Course Title	Course Description	T	P	CLT	Total Credits	T	P	CLT	T	P	CLT	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Total	
BPT015	Kinesiology	Core Theory	3			3	3			60			60	20*	80			100	
BPT016	Clinical applications of Kinesiology	Core Practical		2		2		4			80		80			20*	80	100	
BPT017	Electrotherapy Theory	Core Theory	2			2	2			40			40	20*	80			100	
BPT018	Electrotherapy Practical	Core Practical		1		1		2			40		40			20*	80	100	
BPT019	Pharmacology	Core Theory	3			3	3			60			60	10 **	40			50	
BPT020	Psychology & Psychiatry	Core Theory	3			3	3			60			60		40 #			40	
SEC001	Indian Human Movement Science I -Yoga therapy	Skill Elective Course	1	1		2	1	2		20	40		60		40 #		20#	60	
AEEC001/ AEEC002	Ergonomics and health promotion/ Personality development and learning styles	Ability Enhancement Elective Course Theory	2			2	2			40			40		40 #			40	
BPTCLT003	Basic skills in patient care I	Clinical Training			4	4			14			280	280				40#	40	
		Total	14	4	4	22	14	8	14	280	160	280	720					630	
			* Internal Assessment (IA) Examination will be conducted for 40 marks and be calculated out of 20 for inclusion in Semester Examination																
			** Internal Assessment (IA) Examination will be conducted for 20 marks and be calculated out of 10 for inclusion in Semester Examination																
					# Examination will be conducted at Constituent unit level														

Semester IV

Semester IV (20 weeks teaching:36 hrs per wk)																		
			Credits per week				Hours per week			Hours per semester				Marks				
Course Code	Course Title	Course Description	T	P	CLT	Total Credits	T	P	CLT	T	P	CLT	Total hours	IA Theory	Semester Examination Theory	IA Practical	Semester Examination Practical	Total
BPT021	Physiotherapy Skills Theory	Core Theory	2			2	2			40			40	20 *	80			100
BPT022	Physiotherapy Skills Practical	Core Practical		2		2		4			80		80			20 *	80	100
BPT023	Electrodiagnostics Theory	Core Theory	2			2	2			40			40	20 *	80			100
BPT024	Electrodiagnostics Practical	Core Practical		2		2		4			80		80			20 *	80	100
BPT025	Pathology & Microbiology	Core Theory	4			4	4			80			80		40 #			40
BPT026	Sociology	Core Theory	2			2	2			40			40		40 #			40
BPT027	Research Methodology	Core Theory	2			2	2			40			40		40 #			40
SEC002	Indian Human Movement Science II- Dance & Sports	Skill Elective Course Theory and Practical	1	1		2	1	2		20	40		60		40 #		20#	60
AEEC003/004	Biostatistics and SPSS / Medical Ethics, Human rights & professional values	Ability Enhancement Elective Course Theory and	1	1		2	1	2		20	40		60		40 #		20#	60
BPTCLT004	Basic skillsin patient careII	Clinical Training			3	3			10			200	200				40#	40
	Total		14	6	3	23	14	12	10	280	240	200	720				Total	680
			*Internal Assessment(IA) Examination will be conducted for 40 marks and be calculated out of 20 for inclusion in Semester Examination															
			# Examination will be conducted at Constituent unit level															

Semester V

Semester V (20 weeks teaching:36 hrs per wk)																		
			Credits per week				Hours /week			Hours per semester				Marks				
Course Code	Course Title	Course Description	T	P	CLT	Total Credits	T	P	CLT	T	P	CLT	Total hours	IA Theory	Semester Examination Theory	IA Practical	Semester Examination Practical	Total
BPT028	Medical and surgical aspectsof Musculoskeletal conditions	Core Theory	4			4	4			80			80	20*	80			100
BPT029	Medical and surgical aspects of Cardiovascular, Respiratory disorders and general medical conditions	Core Thoery	4			4	4			80			80	20*	80			100
BPT030	Diagnosis of movement dysfunction and ICF Theory	Core Theory	1			1	1			20			20	20*	80			100
BPT031	Diagnosis of movement dysfunction and ICF Practical	Core Practical		1		1		2			40		40			20	80	100
BPT032	Public Health	Core Theory	3			3	3			60			60	10 **	40			50
GEC001/ GEC002	2D motion capture / Device Innovation and IPR	Generic Elective Theory and Practical	1	1		2	1	2		20	40		60		40 #		20#	60
AEEC005/ AEEC006	Diagnostic Radiology/ Pulmonary Function Test	Ability Enhancement Elective Course Theory and Practical	1	1		2	1	2		20	40		60		40 #		20#	60
BPTCLT005	Basic skills in patient care III	Clinical Training			5	5			16			320	320				40#	40
		Total	14	3	5	22	14	6	16	280	120	320	720				Total	610
			* Internal Assessment (IA) Examination will be conducted for 40 marks and be calculated out of 20 for inclusion in Semester Examination															
			** Internal Assessment (IA) Examination will be conducted for 20 marks and be calculated out of 10 for inclusion in Semester Examination															
			# Examination will be conducted at Constituent unit level															

Semester VI

BPT CBCS Curriculum 2019-2020																			
Semester VI (20 weeks teaching:36 hrs per wk)																			
			Credits per week				Hours /week			Hours per semester				Marks					
Course Code	Course Title	Course Description	T	P	CLT	Total Credits	T	P	CLT	T	P	CLT	Total hours	IA Theory	Semester Examination Theory	IA Practical	Semester Examination Practical	Total	
BPT033	Medical and surgical aspects of Neurological disorders	Core Theory	4			4	4			80			80	20*	80			100	
BPT034	Physiotherapy for women and child care Theory	Core Theory	2			2	2			40			40	20*	80			100	
BPT035	Physiotherapy for women and child care Practical	Core Practical		2		2		4			80		80			20*	80	100	
BPT036	Public Health and preventive Physiotherapy Theory	Core Theory	2			2	2			40			40	10 **	40			50	
BPT037	Public Health and preventive Physiotherapy Practica	Core Practical		1		1		2			40		40			10 *	40	50	
BPT038	Physiotherapy in Geriatric care Theory	Core Theory	1			1	1			20			20		40 #			40	
BPT039	Physiotherapy in Geriatric care Practical	Core Practical		1		1		2			40		40				20 #	20	
BPT040	Introduction to Evidence Based Physiotherapy Theory	Core Theory	1			1	1			20			20		40 #			40	
BPT041	Introduction to Evidence Based Physiotherapy Practical	Core Practical		1		1		2			40		40				20#	20	
SEC003/ SEC004	Clinical Biomechanics / Vestibular Rehabilitation	Skill Based Elective Course Theory and Practical	1	1		2	1	2		20	40		60		40 #		20#	60	
BPTCLT006	Basic skills in patient care IV	Clinical Training			4	4			13			260	260				40#	40	
	Total		11	6	4	21	11	12	13	220	240	260	720					620	
			* Internal Assessment (IA) Examination will be conducted for 40 marks and be calculated out of 20 for inclusion in Semester Examination																
			** Internal Assessment (IA) Examination will be conducted for 20 marks and be calculated out of 10 for inclusion in Semester Examination																
			# Examination will be conducted at Constituent unit level																

Semester VII

Semester VII (20 weeks teaching:36 hrs per wk)																		
			Credits per week				Hours per week			Hours per semester				Marks				Total
Course Code	Course Title	Course Description	T	P	CLT	Total Credits	T	P	CLT	T	P	CLT	Total hours	IA Theory	Semester ExaminationTheory	IA Practical	Semester ExaminationPractical	
BPT042	Musculoskeletal Physiotherapy I Theory	Core Theory	3			3	3			60			60	20*	80			100
BPT043	Musculoskeletal Physiotherapy I Practical	Core Practical		1		1		2			40		40			20*	80	100
BPT044	Cardiovascular and Respiratory Physiotherapy I	Core Theory	3			3	3			60			60			20*	80	100
BPT045	Cardiovascular and Respiratory Physiotherapy I Practical	Core Practical		1		1		2			40		40			20*	80	100
BPT046	Neurophysiotherapy I Theory	Core Theory	3			3	3			60			60	20*	80			100
BPT047	Neurophysiotherapy I Practical	Core Practical		1		1		2			40		40			20*	80	100
SEC005/ SEC006	Hand rehabilitation/Foot Rehabilitation	Skill based elective	1	1		2	1	2		20	40		60		40 #		20#	60
SEC007/ SEC008	Aquatic Therapy/ Sports Physiotherapy	Skill based elective	1	1		2	1	2		20	40		60		40 #		20#	60
BPTCLT007	Basic skills in patient care V	Clinical Training			5	5			15			300	300				40#	40
		Total	11	5	5	21	11	10	15	220	200	300	720					760
	* Internal Assessment (IA) Examination will be conducted for 40 marks and be calculated out of 20 for inclusion in Semester Examination																	
	# Examination will be conducted at Constituent unit level																	

Semester VIII

Semester VIII (20 weeks teaching:36 hrs per wk)																			
			Credits per week					Hours /week			Hours per semester				Marks				
Course Code	Course Title	Course Description	T	P	RP	CLT	Total Credits	T	P/RP	CLT	T	P/RP	CLT	Total hours	IA Theory	Semester Examination Theory	IA Practical	Semester Examination Practical	Total
BPT048	Musculoskeletal Physiotherapy II Theory	Core Theory	3				3	3			60			60	20*	80			100
BPT049	Musculoskeletal Physiotherapy II	Core Practical		1			1		2			40		40			20*	80	100
BPT050	Cardiovascular and Respiratory Physiotherapy II Theory	Core Theory	3				3	3			60			60	20*	80			100
BPT051	Cardiovascular and Respiratory Physiotherapy II	Core Practical		1			1		2			40		40			20*	80	100
BPT052	Neurophysiotherapy II Theory	Core Theory	3				3	3			60			60	20*	80			100
BPT053	Neurophysiotherapy II Practical	Core Practical		1			1		2			40		40			20*	80	100
BPT054	Research Project Synopsis	Research			1		1		2			40		40				20#	20
SEC09/ SEC010	Neurodevelopmental techniques /PT in ICU	Skill Based Elective Course Theory andPractical	1	1			2	1	2		20	40		60		40 #		20#	60
SEC011/ SEC012	Splinting and Bracing /Integumentary Physiotherapy	Skill based elective course	1	1			2	1	2		20	40		60		40 #		20#	60
BPTCLT008	Basic skills in patient care VI	Clinical Training				4	4			13			260	260				40#	40
		Total	11	5		4	21	11	12	13	220	240	260	720					780
	* Internal Assessment (IA) Examination will be conducted for 40 marks and be calculated out of 20 for inclusion in Semester Examination																		
			# Examination will be conducted at Constituent unit level																

Internship - Semester IX

BPT CBCS 2019 - Internship - 26 weeks /40 hours per week supervised clinical practice					
Course Code	**Course Description**	**Clinical Postings**	**Credits**	**Hours**	**Semester Examination #**
					Marks
BPTCLT009	**Core Clinical Training**	Musculoskeletal PT	3	260	10
BPTCLT010	**Core Clinical Training**	Cardiovascular and Respiratory PT	3	260	10
BPTCLT011	**Core Clinical Training**	Neurophysiotherapy	3	260	10
BPTCLT012	**Core Clinical Training**	Public Health Promotion	1	80	10
BPT055	**Research Project**	Research Project	2	180	40
		Total	12	1040	80
# Examination will be conducted at Constituent unit level					

XIV. Rules and Regulation for Examination of Bachelor of Physiotherapy Program under MGM School of Physiotherapy offering CBCS Pattern

1. **Title of the courses offered: Bachelor ofPhysiotherapy**

2. **Duration of the course:** Four and half years, including one year of Internship forUG course.

3. **Medium of instruction:** The medium of instruction and examination shall be inEnglish

4. **Letter Grades and GradePoints:**

MGMSOP has adopted the UGC recommended system of awarding grades and CGPA under Choice Based Credit Semester System for all the UG/PG courses.

4.1 MGMSOP would be following the absolute grading system, where the marks are compounded to grades based on pre-determined classintervals.

4.2 The UGC recommended 10-point grading system with the following letter grades will befollowed:

Table 1: Grades and Grade Points:

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

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

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

5. CBCS Grading System - Marks EquivalenceTable

5.1 Table 2: Grades and Grade Points

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

5.2 Table 3: Cumulative Grades and Grade Points

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

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

6.1 For all category of courses offered (Theory, Practical, Discipline Specific Elective ; Generic Elective [GEC] and Ability Enhancement Courses [AEEC/AECC]; Skills Enhancement Courses [SEC] Theory or Practical & RP (Research Project), assessment will comprise of Internal Assessment (IA) in the form of continuous comprehensive evaluation and mid-semester exam, end–semester examination or college exam asapplicable.

6.2 Courses in programs wherein Theory and Practical/Clinical are assessed jointly (UG or PG), the minimum passing head has to be 50% Grade each for theory and practical's separately. RA grade in any one of the components will amount to reappearing in both components. i.e. theory andpractical.

6.3 Evaluation for a course with clinical rotation or clinical training or internship will be done on a continuousbasis.

7. Eligibility to appear for the end-semester examinations for a courseincludes:

7.1 Candidates having ≥ 75% attendance and obtaining the minimum 40% in internal assessment in each course to qualify for appearing in the end-semester university examinations.

7.2 The students desirous of appearing for university examination shall submit the application form duly filled along with the prescribed examinationfee.

7.3 Incomplete application forms or application forms submitted without prescribed fee or application form submitted after due date will be rejected and student shall not be allowed to appear forexamination.

8. PassingHeads

8.1 Passing head for core theory and practical courses will be 50% inclusive of internal assessment.

8.2 Elective subjects – The minimum prescribed marks for a pass in elective subject will be 50%. The marks obtained in elective courses will be communicated to the university before the commencement of the universityexamination.

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

10 The maximum duration for completing the program will be 8 years (minimum duration of program x 2) i.e. (4x2) = 8 years for UG program & (2x2) = 4 years for PG program, failing which his/her registration will be cancelled. Full fees of entire program of 4 or 2 years as the case may be liable to be paid by thestudents.

11 Carry overbenefit:

11.1 A student will be allowed to keep term for Semester II irrespective of number of heads of failure in SemesterI.

11.2 A student will be allowed to keep term for Semester III if she/he passes each Semester I and II OR fails in not more than 2 courses each in semester I andII.

11.3 Student will be allowed to keep term for Semester IV irrespective of number of heads of failure in Semester III. However, student must mandatorily have passed each course of Semester I and II in order to appear for Semester IVexam.

11.4 Student will be allowed to keep term for Semester V, if she/he passes Semester I,II, III and IV OR has passed in all courses of Semester I and II and fails in not more than two courses each of Semester III and IV.

11.5 Student will be allowed to keep term for Semester VI, irrespective of number of heads of failure in Semester V. However, student must mandatorily have passed each course of Semester I, II, III and IV in order to appear for Semester VIexam.

11.6 Student will be allowed to keep term for Semester VII, if she/he passes Semester I, II, III, IV, V and VI OR has passed in all courses of Semester I, II, III and IV and fails in not more than two courses each of Semester V andVI.

11.7 A student will not be allowed to appear for the Semester VIII examination unless she/he has cleared all previousexaminations.

11.8 Student will be allowed to commence internship if he/she passes Semester VIII examination.

12 Grace Marks for UGCourses:

12.1 A student shall be eligible for grace marks, provided he/she appeared in all the papers prescribed for the examination.

12.2 Maximum up to 5 grace marks may be allowed for passing, spread over between subjects.

12.3 No grace marks will be awarded in internalevaluation.

13 University End-SemesterExamination

13.1 There will be one final university examination at the end of everysemester.

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

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

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

13.5 Notwithstanding any circumstances, a deficiency of attendance at lectures or practical maximum to the extent of 10% - may be condoned by the Principal / Director.

13.6 If a student fails either in theory or in practical, he/ she have to re-appear forboth.

13.7 There shall be no provision of re-evaluation of answer sheets. Student may apply to the university following due procedure for recounting of theory marks in the presence of the subjectexperts.

13.8 Internal assessment shall be submitted by the Head of the Department to the University through Director of MGMSOP at least two weeks before commencement of University theoryexamination.

14. Supplementary examination: The supplementary examination will be held in the next semester. Eligibility to appear for supplementary examination will be as per rule number11.1-11.8.

15. Re-Verification

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

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

16.1 : Theory Question Paper Pattern for Core Subjects in UniversityExaminations Under CBCS - 80 Marks

Question type	No. of questions	Marks/ Question	Question X marks	Total marks
Section 1				
Short answer questions	8	5	8x5	40
Section 2				
Medium long answerquestion	4	10	4 x 10	40
				Total= 80

16.2 : Theory Question Paper Pattern For Core Subjects in University Examinations Under CBCS - 40Marks

Question type	No. of questions	Marks/ Question	Question X marks	Total marks
Section 1				
Short answer questions	4	5	4 x 5	20
Section 2				
Medium long answer question	2	10	2 x 10	20
				Total= 40

General Instructions (Theory):

A. Time duration of each Theory Paper will be of Three (3) Hrs or 1 1/2 hrs as the case maybe.
B. Total Marks of each Theory Paper will be 80 Marks / 40Marks.
C. There will be TWO Sections in Question Paper. Section 1 will be short answer questions and Section 2 will be medium long answer questions. There will be internaloption.
D. Both the Sections arecompulsory.
E. Both the sections are to be written in the separate answersheet

16.3 Practical Question Paper Pattern for University Examinations Under CBCS - 80 Marks (May vary as per courserequirement)

Exercise	Description	Marks
Q No 1	Long Practical exercise/Case	30
Q No 2	Short Practical exercise/Case/OSPE/OSCE	20
Q No 3	Spots (4 x 5 marks)	20
QNo 4	Journal	10
		Total = 80

16.4 Practical Question Paper Pattern for University Examinations Under CBCS - 40 Marks (May vary as per courserequirement)

Exercise	Description	Marks
Q No 1	Long Practical exercise - 1	1 x15=15
Q No 2	Short station exercise/OSPE/OSCE	3x5M=15
Q No 3	VIVA	5 M
QNo 4	Journal	5 M
		Total = 40 M

General Instructions (Practical):

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

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

C. Candidate should not leave the practical hall without the permission ofexaminer.

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

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

16.5 Internal examination pattern (Mid-Semester Theory) : 40marks

Question type	No. of questions	Marks/question	Question Xmarks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

16.6 Internal Examination Pattern (Mid-Semester Practical): 40marks

(May vary as per course requirement)

Long Practical exercise/case	20 marks
Short station /OSPE/OSCE	10 marks
Viva	5 marks
Log book	5 marks
Theory and practical	Total = 40 M

G.16.7 Internal examination pattern (Mid-Semester Theory) : 20marks

Question type	No. of questions	Marks/question	Question X marks	Total Marks
Long essays	1	10	1x10	**10**
Short answers	2	5	2x5	**10**

Marks should be submitted by respective departments at least 15 days prior to onset of university examination to the university.

16.6 Internal Examination Pattern (Mid-Semester Practical): 20 Marks
(May vary as per courserequirement)

Short Exercise /Case/OSPE/OSCE	10 marks
Viva	5 marks
Log book	5 marks
Theory and practical	Total = 20 M

Note – Internal assessment marks will be summative of continuous comprehensive evaluation and mid semester exam and will be converted to as per determined weightage for submission to theUniversity.

16.7 College ExaminationPattern

Question Type	No. of questions	Marks/question	Question x marks	Total marks
Short answers	8	5	8 x 5	40

16.8 Assessment of Seminar (50Marks)

Description	Marks
Submission of seminar report	25
Subject knowledge	5
Concept and Methodology	5
Presentation	5
VIVA	10 M
	Total = 50 M

16.9 Clinical Evaluation

Clinical Placement Area	Duration in Weeks	Assignment/Case Documentations
Musculoskeletal PT	6	3
Neurophysiotherapy	6	3
Cardiovascular & Pulmonary PT	6	3

- Presentation of required number of cases to the respective clinical supervisors and documentation in the Log book for each posting is mandatory, failing which the particular posting will berepeated.
- Attendance is mandatory at all clinical postings with a permission of only one official leave per month. Interns remaining absent for more than the permitted leaves and without prior intimation to the clinical supervisors, candidate will have to compensate the days absent after completion of the rotatory internship placementschedule.
- Appropriate dress code to be followed at all the clinical postingareas.

16.10 Ongoing Comprehensive Evaluation:

On completion of each unit of a course evaluation in the form of multiple choice questions, essays, case reports etc may be undertaken. Marks of all evaluation will be added along with the following summative evaluation and mid – semester marks to obtain the internal assessment score.

Summative Evaluation

Sr No	Criteria	5	4	3	2	1
1	Punctuality and dress code					
2	Attitude towards patients & colleagues					
3	Urge for Learning/ Initiative					
4	Accountability/Responsibility					
5	Administrative ability (Records/Maintenance of equipments)					
	Total Score/ 25					

Remarks:-

Signature ofClinical Supervisor Date:-

16.11 CaseEvaluation

Sr No	Criteria	5	4	3	2	1
1	Attitude –Towards patient, self-introduction Relevant history taken					
2	Physical Assessment Skills Choice of tests Testing of all functional impairments ICF					
3	Cognitive- problem solving clinical decision & reasoning					
4	Planning treatment- short term goals					
5	Long term goals – revaluation					
6	Explanation of home program to patient and relatives					
7	Skills of Treatment maneuvers					
8	Skills of equipment handling					
9	Documentation of case					
10	Timely submission of assignment					
	Total Score					

Remarks: -

Signature ofClinical Supervisor Date:-

16.12 Research ProjectReport:-

BPT student should submit a suitable research project topic forwarded by the guide to MGM School of Physiotherapy by September in Semester VII. Following approval of ethics & scientific committee, work should be carried out in subsequent semesters and internship. Completed project report should be submitted at least a month before end of internship.

17. Research Project report Evaluation Guidelines for BPTprogram:

The research project report allows the student to develop and display in-depth understanding of a theme in International Studies, as well as an in-depth understanding of the appropriate research tools, approaches and theories applicable to that theme. The dissertation should be based on a well-defined and clear research question of scholarly significance, and that the dissertation develops a theoretically and methodologically informed and evidence-based answer to that question.

Criteria for evaluating a research project report: The following guidelines and criteria should be applied when assessing a dissertation.

Guidelines to Prepare Internship Research Proposal & Project

1. **Selection of ResearchProblem:**
   Select your interest area of research, based on felt need, issues, social concern.
   a. State the problem in brief, concise,clear.
   b. State the purpose of selected study &topic.
   c. State the objectives ofproposal/project.
   d. Prepare conceptual framework based on operationaldefinition.
   e. Write scope of researchproposal/project.

2. **Organizing Review ofLiterature**
   a. Study related and relevant literature which helps to decide conceptual framework and research design to be selected for thestudy
   b. Add specific books, bulletins, periodicals, reports, published dissertations, encyclopaedia and textbooks
   c. Organize literature as per operationaldefinition
   d. Prepare summary table for review ofliterature

3. **Research Methodology: To determine logical structure & methodology for researchproject.**

a. Decide and state approach of study i.e. experimental ornon-experimental
b. Define/find out variables to observe effects on decided items &procedure
c. Prepare simple tool or questionnaire or observational checklist to collectdata.
d. Determined sample and samplingmethod
e. Mode of selection ii) Criteria iii) Size of sample iv) Plan when, where andhow data will becollected.
f. Test validity of constructedtool
g. Check reliability by implementing tool before pilot study(10% of samplesize)
h. Conduct pilot study by using constructed tool for 10% selected samplesize

4. Data collection: To implement preparedtool

a. Decidelocation
b. Time
c. Write additional information in separate exercise book to support inferences and interpretation

5. Data analysis and processingpresentation

a. Use appropriate method of statistical analysis i.e. frequency andpercentage
b. Use clear frequency tables, appropriate tables, graphs andfigures.
c. Interpretation ofdata:
d. In relation toobjectives
e. Hypothesis
f. Variable of study orproject
g. Writing concisereport

6. Writing ResearchReport

a. **Aims**:
i. To organize materials to write projectreport
ii. To make comprehensive full factualinformation
iii. To make appropriate language and style ofwriting
iv. To make authoritative documentation by checking footnotes, references & bibliography
v. To use computers & appropriatesoftware

b. Points toremember

i. Develop thinking to write researchreport
ii. Divide narration of nursing researchreport
iii. Use present tense and activevoice
iv. Minimize use of technicallanguage
v. Use simple, straightforward, clear & conciselanguage
vi. Use visual aids in form of table, graphs &figures

vii. Treat dataconfidentially
viii. Review & rewrite ifnecessary

Evaluation Criteria for Project Report

Sr. No	Criteria	Rating					Remark
		1	2	3	4	5	
I	**Statement of the problem**						
	1. Significance of the problemselected						
	2. Framing of title andobjectives						
II	**Literature Review**						
	1. Inclusion of related studies on the topic andits relevance						
	2. Operationaldefinition						
III	**Research Design**						
	1. Use of appropriate researchdesign						
	2. Usefulnessoftheresearchdesigntodrawthe inferences among study variables/ conclusion						
IV	**Sampling Design**						
	1. Identification & description of thetarget population						
	2. Specification of the inclusion &exclusion criteria						
	3. Adequate sample size, justifying thestudy design to draw conclusions						
V	**Data Collection Procedure**						
	1. Preparation of appropriatetool						
	2. Pilot study including validity & reliabilityof tool						
	3. Use of appropriate procedure/ method fordata collection						
VI	**Analysis of Data & Interpretation**						
	1. Clear & logical organization of thefinding						
	2. Clear presentation of tables(title, table& column heading)						
	3. Selection of appropriate statisticaltests						
VII	**Ethical Aspects**						
	1. Use of appropriate consentprocess						
	2. Use of appropriate steps to maintainethical aspects & principles						

VIII	**Interpretation of the finding**						
	& appropriate discussion of the results						
IX	**Conclusion**						
	Summary & recommendations						
X	**Presentation/ Report Writing**						
	Organization of the project work including language & style of presentation						

Signature of the Evaluator

18. Eligibility for award ofdegree

18.1A candidate shall have passed in all the subjects of all semester's I-VIII, completed internship and submitted research project report to be eligible for award of BPT degree.

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

18.2The RA grade once awarded in the grade card of the student is not deleted even when he/she completes the course successfully later. The grade acquired later by the student will be indicated in the grade sheet of the subsequent semester in which the candidate has appeared for clearance in supplementaryexams

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

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

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

19. Guidelines for Clinical Internship or Researchinternship:

19.1Internship may be commenced only on completion of all course work. The internship may be observed only at the clinical postings and areas of extension activitiesofMGMSchoolofPhysiotherapy,NaviMumbai.Noexternalpostings

will be considered during internship. Students are expected to act in a responsible and professional manner at all times during their postings.

19.2 Eligibility for appearing for Internship: On completion of all course work, a candidate is permitted by the Director/Principal to join internship during the beginning of the semester i.e., Odd/Even.

19.3 Responsibilities during internship: During the internship period candidates should show at least 90% attendance. They must engage in practice/ skill based learning of professional conduct. Their learning outcomes must be maintained and presented in the form of logbooks/ case studies/ research project report. The appropriate formats for the postings/ clinical rotations/ research assignments will be are prescribed asrequired.

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

XV. Computation of SGPA andCGPA

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

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

$$SGPA\ (Si) = \sum(Ci \times Gi) / \sum Ci$$

where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course.

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

$$CGPA = \sum(Ci \times Si) / \sum Ci$$

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

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

Illustration of Computation of SGPA and CGPA

Course	Credit	Grade Letter	Grade Point	Credit Point (Credit x Grade)
Course 1	3	A	8	3 X 8 = 24
Course 2	4	B+	7	4 X 7 = 28
Course 3	3	B	6	3 X 6 = 18
Course 4	3	O	10	3 X 10 = 30
Course 5	3	C	5	3 X 5 = 15
Course 6	4	B	6	4 X 6 = 24
	20			139
Illustration for SGPA Thus, SGPA = 139/20 = 6.95				

Semester 1	**Semester 2**	**Semester 3**	**Semester 4**
Credit : 20 SGPA : 6.9	Credit : 22 SGPA : 6.8	Credit : 25 SGPA : 6.6	Credit : 26 SGPA : 6.0
Semester 5	**Semester 6**		
Credit : 26 SGPA : 6.3	Credit : 25 SGPA : 8.0		
Illustration for CGPA			

Thus,

$$CGPA = \frac{20 \times 6.9 + 22 \times 6.8 + 25 \times 6.6 + 26 \times 6.0 + 26 \times 6.3 + 25 \times 8.0}{6.75/B+} =$$

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ii. Transcript: Based on the above recommendations on Letter grades, grade points and SGPA and CGPA, the transcript for each semester and a consolidated transcript indicating the performance in all semesters may be issued.

Sample Transcript

MGM School of Physiotherapy Constituent unit of MGM Institute of Health Sciences Sector 1&2, Kamothe, Navi Mumbai				
Choice Based Credit System Grade Card				
Name of Candidate			**Date of Birth:**	
Program	**Bachelor of Physiotherapy (BPT)**		**PRN Number:**	
Semester	**Semester I**		**Month & Year:**	
Institute	**MGM School of Physiotherapy, Navi Mumbai**			
BPT001	**Core Theory**	**Human Anatomy I Theory**	**Letter Grade**	**Result**
BPT002	**Core Practical**	**Human Anatomy I Practical**		
BPT003	**Core Theory**	**Human Physiology I Theory**		
BPT004	**Core Practical**	**Human Physiology IPractical**		
BPT005	**Core Theory**	**Kinesiotherapy I Theory**		
BPT006	**Core Practical**	**Kinesiotherapy I Practical**		
AECC001	**Ability Enhancement Compulsory Course**	**Biophysics and medical electronics**		
AECC00	**Ability Enhancement Compulsory Course**	**Environmental Sciences I**		
AEEC003	**Ability Enhancement Compulsory Course**	**English and Communication Skills**		
Credits registered				
Credits earned				
Grade point averaged				
Date:			**Signature:**	

XVII. CourseRegistration

17.1. After admission to a Program, a student identity number is generated. This PRN number may be used in the process of registration for a course.

17.2 The registration process is a registration for the courses in a semester. The registration card is generated after a student completes the choice of electives. Every student shall register for the stipulated number of Courses/Credits semester wise even if electives are not prescribed in their regulations for the said semester. Every student must register for Elective/Ability Enhancement Courses semester-wise for the courses he/she intends to undergo in that semester within two weeks of commencement of thesemester.

The list of students registered for each elective will be communicated to the HoDs/ Course Chairpersons. Students will be requested to authenticate the chosen electives by appending their signature in acceptance with approval by the HoDs/ Course Chairpersons. A soft copy of the registered students will be submitted to the elective course offering departments for their official use.

XVIII. Re - Entry after Break ofStudy:

The University regulations for readmission are applicable for a candidate seeking re-entry to a program.

a) Students admitted the program and absenting for more than 3 months mustseek readmission into the appropriate semester as per universitynorms.
b) The student shall follow the syllabus in vogue (currently approved / isbeing followed) for theprogram.
c) All re-admissions of students are subject to the approval of theVice-Chancellor.

XI. Ranking

The first two ranks of the programme will be decided on the basis of grades of CGPA in the courses (core and DE courses only). In case of a tie, marks % [of core and DE coursesonly] will be taken intoaccount.

XII. Classification of Successful Candidates

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

Consolidated Grade Card - BPT Program			
Letter Grade	% Marks Range	Grade point	CGPA RANGE
O	80 & Above	10	9.01 – 10
A+	75-80	9	8.01 - 9.00
A	60-74	8	7.01 - 8.00
B+	55-59	7	6.01- 7.00
B	50-54	6	5.01- 6.00
F/RA (Reappear)	Less than 50	0	4.51 – 5.00
Ab (Absent)		0	
Not Completed (NC)		0	
Repeat the course (RC = <50% in attendance or Internal Assessment)		0	

A successful candidate will be:

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

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

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

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

Bachelor of Physiotherapy (BPT) Semester-I (0-6 months)

Course Code	Course Title	Course Description	Theory Hours	Practical Hours	Clinical Hours	Credits
BPT001	Human Anatomy I	Core Theory	60	-	-	3
BPT002	Human Anatomy I	Core Practical	-	80	-	2
BPT003	Human Physiology I	Core Theory	60	-	-	2
BPT004	Human Physiology I	Core Practical	-	40		2
BPT005	Kinesiotherapy I	Core Theory	40		-	2
BPT006	Kinesiotherapy I	Core Practical		80	-	2
AECC001	Biophysics and medical electronics	Ability Enhancement Compulsory Course	40	40	-	3
AECC002	Environmental Sciences I	Ability Enhancement Compulsory Course	20	-	-	1
AECC003	English and Communication Skills	Ability Enhancement Compulsory Course	60	-	-	3
BPTCLT001	Introduction to basic skills in patient care I	Clinical Training	-	-	200	3

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Human Anatomy-I** **Theory**
Course Code	**BPT-001**
Course Description	**Core Theory**
Semester	**Semester I**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
CO 1	describe anatomical aspects of muscles, bones, joints, their attachments of thoraxand upper quadrant & to understand and discuss analysis of movements with respect tobones, joints and soft tissues related to musculoskeletal system of thorax, & upperextremity.
CO 2	describe structures of the cardio vascular & respiratory system, mechanism of respiration and the course of blood vessels, structure of rib cage & its contents with special emphasis to lungs, tracheo-bronchial tree, respiratory muscles & heart
CO 3	describe source & course of major arterial, venous & lymphatic system, related to upper quadrant, thorax and heart.
CO 4	describe various structures of the genitor-urinary system, abdomen, pelvic organs and sense organs and apply knowledge to living anatomy

Unit	Topics	No. of Hrs.
1	**General anatomy** a. Introduction, Skin, fascia, vessels, Bone, joint, muscles & nerves Imaging techniques	**09**
2	**General Histology** a. Epithelium b. Connectivetissue c. Muscle d. Bone and cartilage e. Nerve andvessels	**05**
3	**Embryology**	**05**
4	**Musculoskeletal anatomy (dissection / pro-section mandatory)**	**15**

	a. Superior extremity with shoulder girdle.	
5	**Cardiovascular system (Including Lymphatics) and Respiratory system** a. Thoracic wall, Mediastinum b. Heart and major bloodvessels c. Lungs d. Respiratory muscles, Diaphragm, Intercostals, Accessorymuscles e. Lymphatics f. Applied Anatomy	**12**
6	**Systemic Anatomy** a. Urinarysystem b. Reproductive system, (special emphasis to Female organs & Pelvic floor muscles supporting system foruterus) c. Abdominalmuscles d. Organs of gastro-intestinal system e. Sensory organs – Ear ,Eye	**14**
Total		**60**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section1				
Short Answer Questions (from units 1,2,4,5,6)	5 out of 6	3	3x 5	40
Brief answer questions(from units 1,2,4,5,6)	3 out of 4	5	5 x 3	
Long Answer Question (from units 4,5)	1 out of 2	10	1 x 10	
Section 2				
Short Answer Questions (from units 1,2,4,5,6)	5out of 6	3	3x 5	40
Brief answer questions(from units 1,2,4,5,6)	3 out of 4	5	5 x 3	
Long Answer Question (from units 4,5)	1 out of 2	10	1 x 10	
				Total= 80

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short Answer Questions (from units 1,2,4,5,6)	5 out of 6	3	3 x 5	40
Brief answer questions (from units 1,2,4,5,6)	3 out of 4	5	5 x 3	
Long Answer Question (from units 4,5)	1 out of 2	10	1 x 10	
				Total= 40

RECOMMEMDED TEXT BOOKS

1. Snell RS. Clinical anatomy: an illustrated review with questions and explanations. Lippincott Williams & Wilkins;2004.
2. Chaurasia BD. Human anatomy Volume- I, II & III, CBS Publisher; 2004. Singh Vishram Textbook of Anatomy Head, Neck, and Brain; Volume III;2014
3. Singh I. Textbook of human neuroanatomy. Jaypee Brothers Publishers;2006.
4. Kadasne'S T.B.Of Anatomy Vol.1 Upper And Lower Extremities2009
5. Singh V. Textbook of clinical neuroanatomy. Elsevier Health Sciences;2014.
6. Dutta AK. Essentials of human anatomy, head andneck.

RECOMMEMDED REFERENCE BOOKS

1. Johnson TB, Whillis J. Gray's Anatomy: Descriptive and Applied. Longman;1958.
2. Eroschenko VP, Di Fiore MS. DiFiore's atlas of histology with functional correlations. Lippincott Williams & Wilkins;2013.
3. DiFiore's Atlas of Histology with FunctionalCorrelations
4. Wells K. Kinesiology, ed. 3, Philadelphia,1960.
5. Snell RS. Neuroanatomy: a review with questions and explanations. Little, Brown; 1992 Jan.
6. Singh V. Textbook of clinical neuroanatomy. Elsevier Health Sciences; 2014 Aug14.
7. Romanes GJ. Cunningham's manual of practicalanatomy.

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Human Anatomy-I Practical**
Course Code	**BPT-002**
Course Description	**Core Practical**
Semester	**Semester I**
Credit per Semester	**2 credits**
Hours per Semester	**80 hours**

Course Learning Outcomes: The student will be able to	
CO 1	identify anatomical aspects of muscles, bones, joints, their attachments of thorax and upper quadrant & to understand and discuss analysis of movements with respect to bones, joints and soft tissues related to musculoskeletal system of thorax, & upper extremity.
CO 2	identify structures of the cardio vascular & respiratory system, mechanism of respiration and the course of blood vessels, structure of rib cage & its contents with special emphasis to lungs, tracheo-bronchial tree, respiratory muscles & heart
CO 3	Identify source & course of major arterial, venous & lymphatic system, related to upper quadrant, thorax and heart.
CO 4	identify various structures of the genitor-urinary system, abdomen and pelvic organs and apply knowledge to living anatomy
CO 5	demonstrate the movements of various joints , name and identify the origin/insertion, nerve /blood supply, root value & function of various skeletal muscles (upper extremity, abdominal wall & pelvic floor) with special emphasis to extremities, find various surface land-marks.

Unit	**Topics**	**No of Hrs**
1	**General anatomy**	**5**
2	**General Histology**	**5**
3.	**Musculoskeletal anatomy** Superior extremity – with Radiological, Living Anatomy and Osteology	**30**
4	**Respiratory System** - Respiratory system, Thoracic cage and respiratory muscles, diaphragm, Lung & Pleura, Trachea & Bronchopulmonary segments, Mediastinum - with Radiological, Living Anatomy and thorax osteology	**15**
5	**Circulatory System** - Types of blood vessels, Heart & Pericardium,Coronary Circulation, Overview of mediastinum, Blood vessels of Thorax with radiological and livinganatomy	**10**
6	**Systemic Anatomy** – with Radiological & Living Anatomy and abdomen and pelvis	**15**

	osteology	
Total Hours		**80**

Practical question paper pattern for University Semester Examinations under CBCS - 80 marks

Exercise	Description	Marks	Total = 80
Q No 1	Spots (general, upper limb, cardiorespiratory, radiology anatomy)	2M x 10 = 20	20
Q No 2	OSPE 2 supervised stations (upper limb anatomy) 2 unsupervised stations (cardiorespiratory anatomy)	10 M x 4= 40	40
Q No 3	Viva	10	10
Q No 4	Journal	10 M	10

Internal Examination Pattern (Practical): 40 Marks

Spots /OSPE	25marks
Viva	10marks
Journal	05 marks
Total	40marks

Internal Assessment marks will be weighted out of 20 marks, for theory and practical, respectively

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Human Physiology I** **Theory**
Course Code	**BPT-003**
Course Description	**Core Theory**
Semester	**Semester I**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
CO 1	describe relative contribution of each organ system in maintenance of the Milieu Interior (Homeostasis)
CO 2	describe physiological functions of various systems, with special reference to Musculo-skeletal, Neuro-motor, Cardio-respiratory, Excretory, & relate alterations in function with aging
CO 3	Acquire the skill of basic clinical examination, with special emphasis to Cardiovascular & Respiratory system

Unit	Topics	No. of Hrs.
1	**General Physiology** **a.** Structure of cellmembrane. **b.** Transport across cellMembrane **c.** Homeostasis	**04**
2	**Blood** a. Overview ofBlood b. BloodComposition c. Plasma, Red Blood Cells, White Blood Cells,Platelets d. Normal values of Blood e. Homeostasis (Coagulation orClotting) f. ABO, Group System Surface Antigens, Inheritance -Incompatibility in Blood/Plasma Transfusions, Hemolytic Disease of the Newborn-Diseases of theBlood	**08**
3	**Muscle** a. Structure b. Properties-classification-excitation/contraction Muscle Coupling-Motor unit- E.M.G. Factors affecting musclecontraction c. Neuro-muscular transmission work-Involuntary muscle properties-muscles of heart–Neurophysiology	**8**

4	**Nerve- Neuron AHC / Neuroglialcells** a. Structure b. Classification & Properties of nervefibres c. Resting Membrane Potential Actionpotential d. Propagation of nerve impulse degeneration &regeneration e. Reaction of degeneration(retrograde)	**6**
5	**Respiratory System** a. Introduction, mechanics ofrespiration b. Pulmonary volumes andcapacities c. Anatomical and physiological dead space,surfactant d. Perfusion, ventilation-perfusionratio e. Gas exchange and transport ofgases f. Nervous and chemical control ofrespiration, g. Pulmonary functiontest h. Physiological changes at altitude / acclimatization, hypoxiaand abnormalrespiration. i. Effect of exercise on respiratorysystem	**14**
6	**Cardiovascular system** a. Structure and properties of cardiacmuscle b. Cardiac cycle, Heart rateregulation c. Factors affecting bloodpressure d. Cardiac output, Peripheralresistance e. Venous return, Regional circulation, coronarycirculation f. NormalECG g. Shock h. Effects ofexercise	**14**
7.	**Excretory system** a. Kidneys, Renal blood flow and JJ apparatus, Glomerular filtrationrate b. Body fluid and Electrolyte balance, Urine formation,Micturition, c. Neural control, Neurogenicbladder	**06**
Total		**60**

Theory question paper pattern for University Semester Examination under CBCS - 80 marks

Question type	No. of questions	Marks/ Question	Question X marks	Total marks
Section1				
Short Answer Questions(from units 1,2,4,5,6,7)	5 out of 6	3	3x 5	40
Brief answer questions(from units 1,2,4,5,6)	3 out of 4	5	5 x 3	
Long Answer Question (from units 3,4,5)	1 out of 2	10	1 x 10	
Section 2				
Short Answer Questions(from units 1,2,4,5,6,7)	5out of 6	3	3x 5	40
Brief answer questions(from units 1,2,4,5,6)	3 out of 4	5	5 x 3	
Long Answer Question (from units 3,4,5)	1 out of 2	10	1 x 10	
				Total= 80

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short Answer Questions(from units 1,2,4,5,6,7)	5 out of 6	3	3x 5	40
Brief answer questions(from units 1,2,4,5,6)	3 out of 4	5	5 x 3	
Long Answer Question (from units 3,4,5)	1 out of 2	10	1 x 10	
				Total= 40

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Human Physiology I** **Practical**
Course Code	**BPT-004**
Course Description	**Core Practical**
Semester	**Semester I**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Unit	Topics	No. of Hrs.
1	Haematology – (demonstration only)	6
2	Graphs I. Skeletal muscle-properties-pre / after load-fatigue-Starling'slaw II. Cardiac muscle-properties-effect of Ach &Adrenaline III. Ergography	10
3	Blood Pressure – Effects of change in posture & exercise	4
4	Spirometry - Lung volumes ii. Timed vital capacity	2
5	Examination of Pulse	4
6	Clinical Examination - i. Respiratory system ii. Cardiovascular system,ECG	12
7	Stethography i. Voluntary hyperventilation	1
8	Spots	1
Total		**40**

EXAMINATION SCHEME

Practical question paper pattern for University Semester Examination under CBCS - 80marks

Exercise	Description	Marks
Q No 1	OSPE (4 stations- Cardiorespiratory)	10 M x 4= 40
Q No 2	Spots	2 M x 10= 20
Q No 3	Viva	10
Q No 4	Journal	10
		Total = 80

Internal examination pattern (practical): 40 Marks

Exercise	Description	Marks
Q No 1	Clinical	20
Q No 2	Spots /OSPE	20
Total		**Total= 40**

Internal Assessment marks will be weighted out of 20 marks, for theory and practical, respectively

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOKS

1. Review of Medical Physiology –Ganong
2. Samson&Wright"sAppliedPhysiology
3. Textbook of Medical Physiology – Bern and Levy

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Kinesiotherapy– I**
Course Code	**BPT005**
Course Description	**Core Theory**
Semester	**Semester I**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	define the various terms used in mechanics, biomechanics & kinesiology
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.
CO 3	explain the concepts of physical, social and mental health, differentiate between physical activity and fitness, describe factors affecting physical fitness, and importance of regular monitoring of fitness for prevention of non communicable diseases
Psychomotor	
At the end of the course, the candidate will be able to:	
CO 4	demonstrate use of various equipments of the Therapeutic Gymnasium
CO 5	demonstrate movements in terms of anatomical planes and axes, demonstrate various starting & derived positions used in therapeutics.
CO 6	apply therapeutic skills of massage
CO 7	Demonstrate assessment of basic evaluation like sensations, reflexes & vital parameters
CO 8	Acquire the diagnostic skill of objective assessment of Range of Motion of the upper quadrant, head and neck by Goniometry

Unit.	Topics	No. of Hrs.
1	**Application of Biomechanics in Human Anatomy** a. Types of Muscles- A natomical &Physiological b. Types of muscle work /Contraction c. Muscle Action: Roles as Agonist, Antagonist, Fixators,Synergist d. Active & Passiveinsufficiency e. Range of muscle work, Angle of pull – with importance to efficiencyof muscle work and stability ofjoint	5
2	**Classification of Movements** a. Definition andclassification b. Principles ofmovements c. Effects, uses and Techniques (active: assisted, free, assisted- resisted, resisted & passive)	5
3	**Starting Positions & Derived Positions** a. Application of stability b. BOS, Gravity and muscle work in relation to variouspositions	5
4	**Therapeutic Gymnasium** a. Use of therapy accessories such as Pulleys Springs, Shoulder wheel, Walkingaids, Finger ladder, Therapeutic balls, Weights, Resistance bands, tubes, & wands b. Applied mechanics of all aboveaccessories	5
5	**Assessment of Vital Parameters** a. BloodPressure b. Heart Rate/ Pulserate c. RespiratoryRate d. Chestexpansion e. Assessment of Reflex testing f. LimbGirth	5
6	**Goniometry- Diagnostic application for identification of movement dysfunction** Overview of surface anatomy a. Bony land marks of skeletal system --Reference points for identification of vertebral level, Carpal & Tarsal bone Land marks for identification of articular surface & peri- articular structures ofjoints b. Definition and Types ofGoniometers c. Principles d. Techniques for individual joints with biomechanical principles Uses – upper quadrant	5
7	**Soft Tissue maneuvers**	5

	a. Types ofmanoeuvres b. Physiological principles ofeach c. Therapeuticuses d. Indications andcontraindications e. Pre-session preparation – Type of media used for manipulation;Environment f. Starting positions – used for model as well astherapist. g. Skills on Upper limb, Face, Scalp andNeck.	
8	**Concept of Health, Exercise and Fitness** a. Definition of health-Physical, social and mentalhealth b. Physical activity and Fitness, Factors affecting physicalfitness c. Energy sources for exercise , Physiological effects and benefits of exerciseon bodysystems d. Importance of testing fitness and regularmonitoring e. Role of physical activity in preventing non communicablediseases	5
Total		**40**

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Kinesiotherapy– I**
Course Code	**BPT006**
Course Description	**Core Practical**
Semester	**Semester I**
Credit per Semester	**2 credits**
Hours per Semester	**80 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
CO 1	name different types of muscles, palpate the muscles and able to recognize different types of muscle action
CO 2	demonstrate assisted, resisted and passive movements
CO 3	apply concept of base of support and gravity, starting positions & derived positions. Identify muscle work in various position
CO 4	demonstrate use of different equipment of therapeutic gymnasium
CO 5	assess BP, HR, chest expansion, limb girth, reflex testing
CO 6	use goniometry for assessment of upper limb range of motion, identify joint fulcrum ,position of movable and fixed arms, identify factors affecting joint motion
CO 7	perform different types of soft tissue maneuvers with understanding of indications and contraindications of each technique on upper limb, face, scalp and neck.

Unit	**Topics**	**No. of Hrs.**
1	**Classification of Movements** Active, active-assisted, free, assisted- resisted, resisted & passive	10
2	**Starting Positions & Derived Positions** BOS, Gravity and muscle work in relation to various positions	10
3	**Therapeutic Gymnasium** Pulleys Springs, Shoulder wheel, Walking aids, Finger ladder, Therapeutic balls, Weights, Resistance bands, tubes, & wands.	10
4	**Assessment of Vital Parameters** Blood pressure, pulse rate, respiratory rate, chest expansion, reflex testing	10

5	**Goniometry – Upper quadrant**	15
6	**Soft Tissue maneuvers** Skills on upper limb , face, scalp and neck	15
7	**Fitness program**	10
Total		**80**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions (from unit 1-8)	8 out of 10	5	8x5	40
Section 2				
Long answer question (from 1-8)	4 out of 5	10	4 x 10	40
				Total= 80

Practical question paper pattern for University Semester Examination under CBCS - 80 marks

Exercise	Description	Marks
Q No 1	Exercise- (from unit 5,6,7- upper quadrant goniometry/ soft tissue maneuvers/fitness)	30
Q No 2	2 OSPE stations (from unit 2,3- starting positions & derived positions/therapeutic gymnasium)	2 x 10=20
Q No 3	2 OSPE stations (from unit 4- assessment of vital parameters)	2 x 10=20
QNo 4	Journal	10
		Total = 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers(unit 1-8)	4	5	4 x 5	20
Long answers (unit 1-8)	2	10	2 x 10	20
Total				**Total= 40**

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	Exercise- (from unit 5,6,7- upper quadrant goniometry/ soft tissue maneuvers/fitness)	15
Q No 2	1 OSPE stations (from unit 2,3- starting positions & derived positions/therapeutic gymnasium)	10
Q No 3	1 OSPE stations (from unit 4- assessment of vital parameters)	10
QNo 4	Journal	5
		Total= 40

Internal Assessment marks will be weighted out of 20 marks, for theory and practical, respectively

RECOMMENDED TEXT BOOKS

1. Gardiner MD. The principles of exercise therapy. G. Bell;1957.
2. Licht SH, editor. Massage, manipulation, and traction. E. Licht;1960.
3. Kisner C, Colby LA, Borstad J. Therapeutic exercise: Foundations and techniques.Fa Davis; 2017 Oct18.
4. Hollis M. Massage for therapists: a guide to soft tissue therapy. Wiley-Blackwell; 2009.
5. Hollis M, Cook PF, editors. Practical exercise therapy. Wiley-Blackwell;1999.
6. PracticalExercisetherapyMargaretHollis,PhyllisFletcherCook Wiley
7. Norkin CC, White DJ. Measurement of joint motion. A guide to goniometry.1995
8. Levangie PK, Norkin CC. Joint Structure and function: acomprehensive analysis. 3rd. Philadelphia: FA. Davis Company.2000.
9. Houglum PA, Bertoti DB. Brunnstrom's clinical kinesiology. FA Davis;2011.
10. World Health Organisation; Global Strategy on Diet, Physical Activity andHealth
11. McArdle WD, Katch FI, Katch VL. Exercise physiology: nutrition, energy, andhuman performance. Lippincott Williams & Wilkins;2010..

13. Kennedy-Armbruster C, Yoke M. Methods of group exercise instruction.Human
14. Kinetics; 2014.

RECOMMENDED REFERENCE BOOK

1. ACSM's Guidelines for Exercise Testing and Prescription
2 Kisner C, Colby LA, Borstad J. Therapeutic exercise: Foundations and techniques. Fa Davis; 2017

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Biophysics and medical electronics**
Course Code	**AECC001**
Course Description	**Ability Enhancement Compulsory Course - Theory**
Semester	**Semester I**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
CO 1	Explain various terms used in relation to biophysics, mechanics, biomechanics & kinesiology. Explain the physics principles & Laws of Electricity, & Electro magnetic spectrum
CO 2	Discuss effects of environmental &man made electromagnetic field at the cellular level & outline risk factors on prolongedexposure.
CO 3	Describe the Main electrical supply, Electric shock, examine precautions to be taken for prevention of electric shock
CO 4	Identify and describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc & the simple instruments used to test / calibrate these components (such as potentiometer, oscilloscope, multimeter) of the circuit ; & identify such components.

Unit	**Topics**	**No. of Hrs.**
1	**Basic Physics:** a. Structure of atom, Isotopes, States ofmatter; b. Compound formation-(covalentformation), c. Properties of Electric lines offorces **Biophysics- Mechanics & Application to human Body** a. Definition and terminologies: Mechanics (Statics & Dynamics), Biomechanics, Kinetics,Kinematics(Osteokinematics,Arthrokinematics,OpenChain&Closed Chainkinematics) b. Axes /planes, c. Laws of inertia &motion,	20

	d. Gravity, C.O.G., L.O.G. andB.O.S. e. Equilibrium – Types and affectingfactors f. MechanicsofForcesWork,Energy,Power,Friction,Momentum,Parallelogramof Forces g. Torque h. Pendulum i. Mechanical and Anatomicalpulleys j. Levers k. Fluid mechanics related to Hydrotherapy (physics, statics &dynamics)	
2	**Theory of Electricity**: a. Production of ElectricCharge b. Characteristics of charged electricalbody	4
3	**Main supply:** a. Types: A.C./ D.C. b. Distribution/ Grid system wiring of the house, colour coding ofelectrical supply to theapparatus c. Testing ofmains	4
4	**Magnetism:** a. Nature andTypes b. Molecular theory ofMagnetism c. Property ofMagnet d. Magnetic effect of electric current – ElectroMagnets e. Meters for measuringA.C.	4
5	**Electro Magnetic Spectrum** a. Electro Magnetic Radiation, Laws Governing E.M.R: Laws of Reflection, Refraction, Absorption, Attenuation, Cosine Law, Inverse Square Law, Grothus Law	4
6.	**Shock** a. Definition b. Types (Electric Shock & Earthshock) c. Severity, Causes, Effects &Precaution d. Types of Plugs &Switches e. Fuse	2
7.	**Earthing and its importance**	2
	Total	**40**

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Biophysics and medical electronics**
Course Code	**AECC001**
Course Description	**Ability Enhancement Compulsory Course – Practical**
Semester	**Semester I**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Sr. No.	Topics	No. of Hrs.
1	List, describe, draw various electrical components like diodes & triodes, rheostat, capacitor, potentiometer, switches, plugs and pulse generator	10
2	Apply technique of testing of mains supply	10
3	Draw free body diagrams, force vectors during walking and further applications	20
Total		**40**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Evaluation will beconducted at level of the constituent unit

Examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answer questions	8	5	5 x 8	40
Total				**Total= 40**

Examination pattern (practical): OSPE 10 marks

Question type	Marks/question	Total marks
Station 1	5	5
Station 2	5	5
Total		**10**

RECOMMENDED TEXT BOOKS

1. Kitchen S, Bazin S, editors. Clayton's electrotherapy. Bailliere Tindall Limited;1996.
2. Robertson V, Ward A, Low J, Reed A, MCSP D. Electrotherapy explained:principles and practice. Elsevier Health Sciences; 2006
3. Kahn J. Principles and practice of electrotherapy. Saunders;2000.
4. Bellis E. Electrotherapy: evidence-basedpractice.
5. Gardiner MD. The principles of exercise therapy. G. Bell;1957.
6. Norkin CC, White DJ. Measurement of joint motion: a guide to goniometry. FA Davis; 2016

RECOMMENDED REFERENCE BOOK

1. Nelson RM, Hayes KW, Currier DP, editors. Clinical electrotherapy. Prentice Hall;1999.
2. Clinical Electrotherapy -- Nelson &Currier
3 .Biomechanics – CynthiaNorkins

Ability Enhancement Compulsory Course (AECC)	
Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Environmental Sciences I**
Course Code	**AECC002**
Credit per Semester	**1 credit**
Hours per Semester	**20 hours**

Course Learning Outcomes	
CO1	describe ecosystem and its structural and functional aspects, examine interconnectedness among all the biotic and abiotic components of environment and dynamic nature of ecological processes in maintaining equilibrium in nature.
CO2	List Earth's resources, their generation, extraction and impact of human activities on earth's environment, to examine effectivemanagementstrategies, and criticalinsight on major sustainability issues.

Units	Topics	No. of Hrs.
Unit 1: Introduction to environmental studies		
1.	Multidisciplinary nature of environmental studies; components of environment – atmosphere, hydrosphere, lithosphere and biosphere.	**5**
2.	Scope and importance; Concept of sustainability and sustainable development.	
Unit 2: Ecosystems		
3.	Structure and function of ecosystem. Energy flow in an ecosystem: food chain, Food web, Ecological succession.	**5**
4.	Case studies of the following ecosystems: a) Forestecosystem b) Grasslandecosystem c) Desertecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans,estuaries)	
Unit 3: Natural Resources: Renewable and Non-renewable Resources		
5.	Land Resources and land use change; Land degradation, soil erosion and desertification.	**10**
6.	Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.	

7.	Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).	
8.	Heating of earth and circulation of air; air mass formation and precipitation	
9.	Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies	
Total		**20**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Evaluation will beconducted at level of the constituent unit

Examination pattern (theory): Multiple choice questions :**10 marks**

Question type	No. of questions	Marks/question	Question X marks	Total marks
Multiple choice questions	10	1	1 x 10	10
Total				**Total= 10**

Books:

1. Plumwood V, Low N. Global Ethics andEnvironment..
2. Gleick PH. Water in crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press. 473p. 1993;9.
3. Principles of conservation biology Martha J Groom; Gary K Meffe; C Ronald Carroll Sunderland, Mass. : Sinauer Associates,©2006.
4. Odum, E.P., Odum, H.T. & Andrews, J. 1971. Fundamentals of Ecology. Philadelphia: Saunders.
5. Pepper, I.L., Gerba, C.P. &Brusseau, M.L. 2011. Environmental and Pollution Science. AcademicPress.
6. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. Environment. 8th edition. John Wiley &Sons.
7. Rosencranz, A., Divan, S., & Noble, M. L. 2001. Environmental law and policy in India. Tripathi 1992.

8. Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. OUP.
9. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, NewDelhi.
10. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley &Sons.
11. Warren, C. E. 1971. Biology and Water Pollution Control. WBSaunders.

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**English and Communication Skills**
Course Code	**AECC003**
Course Description	**Ability Enhancement Compulsory Course – Theory**
Semester	**Semester I**
Credits per semester	**3 credit**
Hours per semester	**60 hours**

Course Learning Outcomes: The student will be able to	
CO 1	apply basics of grammar and writing skills
CO 1	apply and communicate ideas orally and in writing with a high level of proficiency
CO 2	use appropriate expressions in varied situations and topics of interest
CO 3	demonstrate independence in using basic language structure in oral and written
CO 4	apply correct usage of English grammar in writing and speaking
CO 5	speak in English both in terms of fluency and comprehensibility

Sr. No.	**Topics**	**No. of Hrs.**
1	**Basics of Grammar** – Vocabulary, Synonyms, Antonyms, Prefix and Suffix, Homonyms, Analogies and Portmanteau words	6
2	**Basics of Grammar – Part II** – Active, Passive, Direct and Indirect speech, Prepositions, Conjunctions and Euphemisms	6
3	**Writing Skills -** Letter Writing, Email, Essay, Articles, Memos, one word substitutes, note making and Comprehension	6
4	Writing and Reading, Summary writing, Creative writing, news paper reading	6
5	Practical Exercise, Formal speech, Phonetics, semantics andpronunciation	6
6	**Introduction to communication skills** Communication process, Elements of communication, Barriers of communication and how to overcome them, Nuances for communicating with patients and their attendersin hospitals	6
7	**Speaking** Importance of speaking efficiently, Voice culture, Preparation of speech. Secrets of	6

	good delivery, Audiencepsychology,handling , Presentation skills, Individual feedback for each student, Conference/Interview technique	
8	**Listening** Importance of listening , Self assessment, Actionplanexecution, Barriers in listening, Good and persuasivelistening	6
9	**Reading** What is efficient and fast reading, Awareness of existing reading habits, Tested techniques for improving speed, Improving concentration and comprehension through systematic study	6
10	**Non Verbal Communication** Basics of non-verbal communication, Rapport building skills using neuro- linguistic programming (NLP), Communication in Physiotherapy practice	6
Total		**60**

Text books:

1. Lock G. Functional English grammar: An introduction for second language teachers. Cambridge University Press;1996
2. Van Servellen G. Communication skills for the health care professional: Concepts,practice, and evidence. Jones & Bartlett Publishers; 2009.

Examination Scheme

This course will not be assessed as Semester University Examination. Evaluation will beconducted at level of the constituent unit

Theory question paper pattern for assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
				Total= 40

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Basic Skills in patient care**
Course Code	**BPTCLT001**
Course Description	**Clinical Training**
Semester	**Semester I**
Credits per semester	**3 credits**
Hours per semester	**200 hours**

Students will be introduced to basic skills in patient care such as history taking, reading patient files and communication skills.

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	10
Q No 2	OSPE Station 2	10
		Total = 20

*Students will be evaluated as per their level of knowledge level.

Bachelor of Physiotherapy (BPT) Semester-II (7-12 months)

Code	Course type	Title	Theory Hours	Practical Hours	Clinical Hours	Credits
BPT007	Core Theory	Human Anatomy II Theory	60	-	-	3
BPT008	Core Practical	Human Anatomy II Practical	-	80	-	2
BPT009	Core Theory	Human Physiology II	60	-	-	3
BPT010	Core Practical	Human Physiology II	-	40		1
BPT011	Core Theory	Kinesiotherapy II	40	-	-	2
BPT012	Core Practical	Kinesiotherapy II		80		2
BPT013	Core Theory	Thermal Agents	40	-	-	2
BPT014	Core Practical	Thermal Agents		40		1
AECC004	Ability Enhancement Compulsory Course	Biochemistry	60	-	-	3
AECC005	Ability Enhancement Elective Course	Environmental Sciences II	20	40	-	2
BPTCLT002	Introduction to basic skills in patient care Clinics II	Clinical Training	-	-	160	2

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Human Anatomy-II** **Theory**
Course Code	**BPT-007**
Course Description	**Core Theory**
Semester	**Semester II**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
CO 1	describe anatomy of lower quadrant including spine, pelvis and lower extremities : list bones, joints, soft tissues, muscles related to musculoskeletal system of spine & lower extremities and to localize various surface land-marks, apply related radiological and living anatomy
CO 2	describe anatomy of structures of head, face and neck
CO 3	describe and outline various parts of nervous system: Source, course & components of various trans-sections of spinal tracts and C.N.S; Source, course & components of various trans-sections of brain, cranial nerves (Special emphasis to III, IV, V, VI & VII) & peripheralnerves.
CO 4	describe blood circulation of C.N.S. & spinal cord.
CO 5	describe the course of peripheral nerves.
CO 6	discuss anatomical basis of clinical conditions of nervous system.
CO 7	demonstrate movements of lower extremity joints – Identify & describe the origin/insertion, nerve /blood supply, root value & function of various skeletal muscles (including lower extremity and spine)

Unit	Topics	No. of Hrs.
1	**Musculoskeletal anatomy** a. Inferior extremity b. Overview of pelvic girdle & pelvic floormuscles. c. Spine	**18**
2	**Head, Face and Neck** a. Facial muscles and its blood and nervesupply. b. Triangles of neck, Glands, Tongue &Palate c. Larynx &Pharynx d. Muscles of Mastication & T.M.joint e. Extra ocular muscles with nervesupply f. Nose & Para nasalsinuses	**14**
3	**Neuro anatomy** a. General organization of C.N.S. (Brain & spinalcord) b. Central NervousSystem c. Cranial nerves -Peripheral nervoussystem d. Autonomic Nervous System -Sensorysystem, e. Neuro-muscularjunction f. Neuro-muscularintegration	**28**
	Total	**60**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 marks

Question type	No. of questions	Marks/ Question	Question X marks	Total marks
Section1				
Short Answer Questions(from units 1,2,3)	5 out of 6	3	3x 5	40
Brief answer questions(from units 1,2,3)	3 out of 4	5	5 x 3	
Long Answer Question (from units 1,3)	1 out of 2	10	1 x 10	
Section 2				
Short Answer Questions(from units 1,2,3)	5out of 6	3	3x 5	40
Brief answer questions(from units 1,2,3)	3 out of 4	5	5 x 3	
Long Answer Question (from units 1,3)	1 out of 2	10	1 x 10	
				Total= 80

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/ Question	Question X marks	Total marks
Section1				
Short Answer Questions(from units 1,2,3)	5out of 6	3	3x 5	40
Brief answer questions(from units 1,2,3)	3 out of 4	5	5 x 3	
Long Answer Question (from units 1,3)	1 out of 2	10	1 x 10	
				Total= 40

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Human Anatomy-II** **Practical**
Course Code	**BPT-008**
Course Description	**Core Practical**
Semester	**Semester II**
Credit per Semester	**2 credits**
Hours per Semester	**80 hours**

Course Learning Outcomes: The student will be able to	
CO 1	Identify and list bones, joints, soft tissues, muscles related to musculoskeletal system of spine & lower extremities and to localize various surface land-marks, apply related radiological and living anatomy
CO 2	Identify structures of head, face and neck
CO 3	Identify source, course & components of various trans-sections of spinal tracts and C.N.S; Source, course & components of various trans-sections of brain, cranial nerves (Special emphasis to III, IV, V, VI & VII) & peripheral nerves.
CO 4	demonstrate movements of lower extremity joints – Identify & describe the origin/insertion, nerve /blood supply, root value & function of various skeletal muscles (including lower extremity and spine) , course of peripheral nerves

Unit	Topics	No of Hrs
1	**Musculoskeletal anatomy** Lower Quadrant: Inferior extremity & Spine – with Radiological & Living Anatomy and Osteology	30
2	**Head, face and neck** – with Radiological & Living Anatomy, Osteology	20
3	**Neuro anatomy**	30
Total Hours		**80**

Practical question paper pattern for University Semester Examination under CBCS - 80 marks

Exercise	Description	Marks	Total = 80
Q No 1	Spots (lower limb, spine, neuroanatomy, head, neck, face)	2M x 10 = 20	20
Q No 2	OSPE 2 supervised stations (lower limb, spine anatomy) 2 unsupervised stations (neuroanatomy, head, neck and face anatomy)	10 M x 4= 40	40
Q No 3	Viva	10	10
Q No 4	Journal	10 M	10

Internal Examination Pattern (Practical): 40 Marks

Description	Marks
Spots /OSPE	25
Viva	10
Journal	05
Total	40

Internal Assessment marks will be weighted out of 20 marks, for theory and practical, respectively.

RECOMMEMDED TEXT BOOKS

7. Snell RS. Clinical anatomy: an illustrated review with questions and explanations. Lippincott Williams & Wilkins;2004.
8. Chaurasia BD. Human anatomy Volume- I, II & III, CBS Publisher; 2004. Singh Vishram Textbook of Anatomy Head, Neck, and Brain; Volume III;2014
9. Singh I. Textbook of human neuroanatomy. Jaypee Brothers Publishers;2006.
10. Kadasne'S T.B.Of Anatomy Vol.1 Upper And Lower Extremities2009
11. Singh V. Textbook of clinical neuroanatomy. Elsevier Health Sciences;2014.
12. Dutta AK. Essentials of human anatomy, head andneck.

RECOMMEMDED REFERENCE BOOKS

8. Johnson TB, Whillis J. Gray's Anatomy: Descriptive and Applied. Longman;1958.
9. Eroschenko VP, Di Fiore MS. DiFiore's atlas of histology with functional correlations. Lippincott Williams & Wilkins;2013.
10. DiFiore's Atlas of Histology with FunctionalCorrelations
11. Wells K. Kinesiology, ed. 3, Philadelphia,1960.
12. Snell RS. Neuroanatomy: a review with questions and explanations. Little, Brown; 1992 Jan.
13. Singh V. Textbook of clinical neuroanatomy. Elsevier Health Sciences; 2014 Aug14.
14. Romanes GJ. Cunningham's manual of practicalanatomy.

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Human Physiology II**
Course Code	**BPT-009**
Course Description	**Core Theory**
Semester	**Semester II**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
CO 1	describe of various systems, with special reference to Nervous system, & neuro-motor alterations in function with aging
CO 2	analyze physiological response & adaptation to environmentalstresses-with special emphasis on physical activity, altitude, temperature
CO 3	demonstrate basic clinical examination, with special emphasis to special senses, sensations, reflex testing, Exercise tolerance / Ergography.
CO 4	describe physiological functions of reproductive system, gastro intestinal system

Unit	**Topics**	**No. of Hrs.**
1	**Nervous system** a. Introduction of nervous system, classification – C.N.S, P.N.S.&A.N.S. b. Synapse-structure, properties, &transmission; c. Reflexes-classification &properties; d. Receptor physiology: classification,properties. e. Physiology of Touch, Pain, Temperature &Proprioception; f. Sensoryandmotortracts:effectoftransaction(completeandincomplete)at variouslevels g. Physiology of Muscle Tone (muscle spindle); Stretch reflexh. h. Connection&functionofBasalganglia,Thalamus,Hypothalamus,Sensory andMotorcortex,Cerebellum,Limbicsystem,VestibularApparatus i. Autonomicnervoussystem:Structureandfunctionsofthesympatheticand the parasympathetic nervoussystem. j. Learning, memory & conditionedreflex k. Physiology of Voluntarymovement	25
2	**Endocrine** a. Secretion-regulation & function of Pituitary-thyroid-adrenal-parathyroid-pancreas (emphasis oninsulin)	7
3	**Temperature Regulation** a. Circulation of the skin- body fluid- electrolyte balance	3

4	**Special Senses** a. Structure and function of theeye b. Applied physiology: errors of refraction,accommodation, c. Reflexes - dark and light adaptation,photosensitivity. d. Structure and function of theear e. Applied physiology- types ofdeafness	5
5	**Reproductive system-** a. Function of estrogen, progesterone, testosterone, spermatogenesis, menstruation ,menopause	5
6	**Gastrointestinal system** *a.* Motility-Secretion-Regulation-Digestion- Splanchnic circulation	5
7	**Exercise Physiology BMR**	6
8	**Physiology of Ageing**	4
Total		**60**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section1				
Short Answer Questions(from units 2-6,8)	5 out of 6	3	3x 5	40
Brief answer questions(from units 2-6,8)	3 out of 4	5	5 x 3	
Long Answer Question (from units 1,7)	1 out of 2	10	1 x 10	
Section 2				
Short Answer Questions(from units 2-6,8)	5out of 6	3	3x 5	40
Brief answer questions(from units 2-6,8)	3 out of 4	5	5 x 3	
Long Answer Question (from units 1,7)	1 out of 2	10	1 x 10	
				Total= 80

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section1				
Short Answer Questions(from units 2-6,7)	5out of 6	3	3x 5	40
Brief answer questions(from units 2-6,7)	3 out of 4	5	5 x 3	
Long Answer Question (from units 1,7)	1 out of 2	10	1 x 10	
				Total= 40

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Human Physiology II**
Course Code	**BPT-010**
Course Description	**Core Practical**
Semester	**Semester II**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Sr. No.	Topics	No. of Hrs.
1	**Clinical Examination** i. Nervous system - higher functions /Memory/ Time/ Orientation / Reflexes/ Motor & SensorySystem	20
2	**Physical fitness** i. Breathholding ii. Mercury ColumnTest iii. Cardiac Efficiency Test – Harvard Step Test, Master StepTest	15
3	**Perimetry**	5
Total		**40**

Practical question paper pattern for University Semester Examination under CBCS - 80 marks

Exercise	Description	Marks
Q No 1	OSPE (4 stations- Central Nervous system)	10 M x 4= 40
Q No 2	Spots	2 M x 10= 20
Q No 3	Viva	10
Q No 4	Journal	10
		Total = 80

Internal Examination Pattern (Practical): 20 Marks

Exercise	Description	Marks
Q No 1	Clinicals	20 marks
Q No 2	Spots (4 x 5 marks)	20 marks
Total		**Total = 40 M**

Internal Assessment marks will be weighted out of 20 marks, for theory and practical, respectively

Text Books same as for Human Physiology I

RECOMMENDED TEXT BOOKS

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

RECOMMENDED REFERENCE BOOKS

1. Review of Medical Physiology –Ganong
2. Samson&Wright"sAppliedPhysiology
3. Textbook of Medical Physiology – Bern and Levy

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Kinesiotherapy – II**
Course Code	**BPT011**
Course Description	**Core Theory**
Semester	**Semester II**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
CO 1	describe the physiological effects, therapeutic use, merits / demerits of soft tissue manipulations (massage), & demonstrate the skill of application of various manipulations & the limbs, face, back & abdomen
CO 2	describe types of Goniometry, methods of assessment of joint range of motion, measurerange of motion of joints of lower extremity and spine by using Goniometry
CO 3	discuss physiological basis , principles, therapeutic use of relaxation & demonstrate various methods of relaxation
CO 4	demonstrate group & recreational activities, examining advantages and disadvantages of group exercises, general fitness exercises used in physical training, describe physiological responses and principles of aerobic exercises forgeneral fitness & demonstrate fitness skills on self/healthy people.

Units	Topics	No. of Hrs.
1	**Goniometry- Diagnostic application for identification ofmovement dysfunction** a. Overview of surface anatomy b. Bony land marks of skeletal system --Reference points for identification of vertebral level, Tarsal bone Land marks for identification of articular surface & peri- articular structures of lower extremityjoints c. Revision of Definition and Types ofGoniometers d. Principles e. Techniquesforindividualjointswithbiomechanicalprinciples– Lower quadrant f. Assessment of Spinalmobility	**12**
2	**Soft Tissue maneuvers** a. Types ofmanoeuvres b. Physiological principles ofeach c. Therapeuticuses d. Indications andcontraindications e. Pre-sessionpreparation–Typeofmediausedformanipulation ;Environment f. Starting positions – used for model as well astherapist. g. Skills on Lower limb, Abdomen andback.	**8**
3.	**Principles of General Fitness** a. Physiology of aerobic and anaerobicexercise. b. Components of fitness (definition of termsonly) c. Warmup d. Cool downexercises	**8**
4.	**Group & recreational activities** a. Advantages anddisadvantages b. Basic principles of General fitness exercises forhealthy c. Need for fitness exercise for sedentarylife	**7**
5.	**Relaxation** a. Principles, b. Techniques along with their effects &uses General – Jacobson's, Shavasana & Reciprocal (Laura Mitchell) Local- Heat, Massage, Gentle/Rhythmic passive movements	**5**
Total		**40**

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Kinesiotherapy – II**
Course Code	**BPT012**
Course Description	**Core Practical**
Semester	**Semester II**
Credit per Semester	**2 credits**
Hours per Semester	**80 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
CO 1	demonstrate techniques for measurement of range of motion of individual joints with application of biomechanical principles – Lower quadrant and assessment of Spinal mobility, identify bony fulcrum, fixed arm and movable arm of goniometer for testing joint movement, identify structures affecting joint mobility
CO 2	demonstrate and apply different types of soft tissue maneuvers on lower limb, abdomen and back with understanding of indications and contraindications of each.
CO 3	design general fitness program inclusive of warm up, conditioning phase and cool down.
CO 4	demonstrate group & recreational activities focusing on special groups of people,
CO 5	Demonstrating relaxation techniques: General – Jacobson's, Shavasana &Reciprocal (Laura Mitchell) Local- Heat, Massage,Gentle/Rhythmic passive movements, with understand of principles, techniques, effects & uses

Sr. No.	**Topics**	**No. of Hrs.**
1	**Goniometry – Lower quadrant and spinal mobility**	20
2	**Soft Tissue maneuvers** Skills on Lower limb, Abdomen, Back	20
3	**Principles of Physical fitness** Warm up and cool down, aerobic activities	10
4	**Group and recreational activities**	10
5	**Relaxation techniques**	20
Total		**80**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions (from units 1-5)	8 out of 10	5	8x5	40
Section 2				
Long answer question (from units 1-5)	4 out of 5	10	4 x 10	40
				Total= 80

Practical question paper pattern for University Semester Examination under CBCS - 80 marks

Exercise	Description	Marks
Q No 1	Exercise- (from unit 1,2-lower quadrant goniometry, Soft Tissue maneuvers)	2x10=20
Q No 2	2 OSPE stations (from unit 3-fitness)	2x10=20
Q No 3	2 OSPE stations (from unit 4,5-Group and recreational activities / Relaxation techniques)	30
QNo 4	Journal	10
		Total = 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers (units 1-5)	4	5	4 x 5	20
Long answers (from units 1-5)	2	10	2 x 10	20
Total				**Total= 40**

Internal examination pattern (practical): 40marks

Exercise	Description	Marks
Q No 1	Exercise- (from unit 1,2-lower quadrant goniometry, Soft Tissue maneuvers)	1x10=10
Q No 2	2 OSPE stations (from unit 3-fitness)	1x10=10
Q No 3	2 OSPE stations (from unit 4,5-Group and recreational activities / Relaxation techniques)	15
Q No 4	Journal	5
	Total	**40 marks**

RECOMMENDED TEXT BOOKS

1. Gardiner MD. The principles of exercise therapy. G. Bell;1957.
2. Licht SH, editor. Massage, manipulation, and traction. E. Licht;1960.
3. Kisner C, Colby LA, Borstad J. Therapeutic exercise: Foundations and techniques. Fa Davis; 2017 Oct18.
4. Hollis M. Massage for therapists: a guide to soft tissue therapy. Wiley-Blackwell; 2009.
5. Hollis M, Cook PF, editors. Practical exercise therapy. Wiley-Blackwell;1999.
6. PracticalExercisetherapyMargaretHollis,PhyllisFletcherCook Wiley
7. Norkin CC, White DJ. Measurement of joint motion. A guide to goniometry.1995
8. Levangie PK, Norkin CC. Joint Structure and function: a comprehensive analysis. 3rd. Philadelphia: FA. Davis Company.2000.
9. Houglum PA, Bertoti DB. Brunnstrom's clinical kinesiology. FA Davis;2011.
10. World Health Organisation; Global Strategy on Diet, Physical Activity andHealth
11. McArdle WD, Katch FI, Katch VL. Exercise physiology: nutrition, energy, and human performance. Lippincott Williams & Wilkins;2010..
13. Kennedy-Armbruster C, Yoke M. Methods of group exercise instruction. Human Kinetics; 2014 .

Internal Assessment marks will be weighted out of 20 marks, for theory and practical, respectively

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Thermal Agents**
Course Code	**BPT013**
Course Description	**Core Theory**
Semester	**Semester II**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
At the end of the course the candidate will be able to –	
CO 1	Test the working of the various superficial thermal agents
CO 2	State and explain physical principles of Thermal Energy , Cryotherapy and equipment used to deliver cryotherapy- assess physiological effects, therapeutic effects/uses, compare and contrast merits/demerits, Indications/contra-indications, demonstrate skills of application, discuss dosage
CO 3	Describe & identify various equipments used to deliver superficial heat therapy - radiant energy techniques like Infrared, Ultraviolet and LASER therapy (production, physiological, therapeutic effects, techniques of application, indications & contraindications, dangers, precautions and dosage) ; superficial thermal agents such as Paraffin wax bath, Hydrocollator packs, IRR, UVR, Laser, home remedies,their physiological & therapeutic effects, Merits / demerits & acquire the skill of application.
CO 4	Distinguish between Cryotherapy and Thermotherapy

Unit	**Topics**	**No. of Hrs.**
1.	**Physical Principles of Thermal Energy** a. SpecificHeat b. Modes of HeatTransfer	8
2.	Physiological effects, Therapeutic effects/ Uses, Merits/demerits, Indications/contra-indications, Skills of applicationof: a. Paraffin waxbath b. Hydro-collator hotpacks c. Contrastbath d. Whirl pool	10

	e. Cryotherapy	
3.	Choosing Between Cryotherapy and Thermotherapy	2
4.	**Infra-red Radiation (I.R.R)** a. Definition, Types andproduction b. Physiological & Therapeuticeffects c. Technique & Methods ofApplication d. Dosagecontrol e. Indications &contraindications f. Dangers &Precautions	7
5.	**Ultra-violet Radiation (U.V.R)** a. Definition, Types andproduction b. Physiological & Therapeuticeffects c. Test Dose and Dosagecalculation d. Technique & Methods ofApplication e. Indications &contraindications f. Dangers &Precautions	6
6.	**LASER** a. Definition, Types andProduction. b. Physiological & Therapeuticeffects c. Technique & Methods ofApplication d. Indications &Contraindications e. Dosage f. Dangers &Precautions	7
Total		**40**

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Thermal Agents**
Course Code	**BPT014**
Course Description	**Core Practical**
Semester	**Semester II**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Sr. No.	Topics	No. of Hrs.
1	The skill of application of thermal agents (on models): a. Hotpacks b. P.W.B. c. Whirlpool d. Contrastbath e. Cryotherapy	20
2	The techniques of testing I.R. ,U.V.R. ,LASER	20
Total		**40**

Examination Scheme

This course will not be assessed as Semester University Examination. Evaluation will beconducted at the level of the constituent unit

Examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers (from units 1-6)	8	5	8 x 5	40

Examination pattern (practical): 40marks

Exercise	Question X marks	Marks
Station 1	1x10	10
Station 2	1x10	**10**
Station 3	1x10	**10**
Station 4	1x10	**10**
Total		**40**

RECOMMENDED TEXT BOOKS

1. Kitchen S, Bazin S, editors. Clayton's electrotherapy. Bailliere Tindall Limited;1996.
2. Robertson V, Ward A, Low J, Reed A, MCSP D. Electrotherapy explained:principles and practice. Elsevier Health Sciences; 2006
3. Kahn J. Principles and practice of electrotherapy. Saunders;2000.
4. Bellis E. Electrotherapy: evidence-basedpractice.
5. Gardiner MD. The principles of exercise therapy. G. Bell;1957.
6. Norkin CC, White DJ. Measurement of joint motion: a guide to goniometry. FA Davis; 2016

RECOMMENDED REFERENCE BOOK

1. Nelson RM, Hayes KW, Currier DP, editors. Clinical electrotherapy. Prentice Hall;1999.

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Environmental Sciences II**
Course Code	**AECC005**
Course Description	**Ability Enhancement Compulsory Course (AECC)**
Semester	**Semester II**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**
Course continued from Semester I	

Course Learning Outcomes	
CO1	Categorize different aspects of environmental contamination, which adversely affect human health, mechanisms of pollutants impacting human health, different types of pollutants, their sources and mitigationmeasures
CO2	Outline the legal structure of India and fundamentals of environmental legislation and policy making.
CO3	Identify environmental hazards, their causes, classifications, and impacts, management strategies and governmental action plan to mitigate and prepare for such hazards, global changes on human communities and initiatives takenat global and regional levels to combat them.
CO4	Describe the multidisciplinary nature, components of environment, concept of sustainable development and structure and function of ecosystem.
CO5	Plan strategies to conserve and protect the natural resources such as fuel, food, water, electricity at home and in the community and social environment
CO6	Assess the impact of significant global environmental issues such as acid rain, climate change, and resource depletion; historical developments in cultural, social and economic issues related to land, forest, and water management in a global context; interface between environment and society.

Units	Topics	No. of Hrs.
Unit 4: Environmental Pollution		
1	Environmental pollution: types, causes, effects and controls; Air, water, soil, chemical and noise pollution	**5**
2	Solid waste management: Control measures of urban and industrial waste	
3	Nuclear hazards and human health risks	
Unit 5: Environmental Policies & Practices		
1	Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture.	**5**
2	Environment Laws : Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act; International agreements; Montreal and Kyoto protocols and conservation on Biological Diversity (CBD). The Chemical Weapons Convention(CWC).	
3	Nature reserves, tribal population and rights, and human, wildlife conflicts in Indian context	
Unit 6: Human Communities and the Environment		
1	Human population and growth: Impacts on environment, human health and welfares.	**10**
2	Carbon foot-print.	
3	Resettlement and rehabilitation of project affected persons; case studies.	
4	Disaster management: floods, earthquakes, cyclones and landslides.	
5	Environmental movements: Chipko, Silent valley, Bishnios of Rajasthan.	
6	Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.	
7	Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).	
Practical Aspects : Field Visits		40
Total		**60**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Evaluation will beconducted at the level of the constituent unit

Theory question paper pattern - 40 Marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers (from unit 1-6)	8	5	8 x 5	40
Total				**Total= 40**

Practical evaluation – Students will submit a field visit report which will be evaluated for 20 Marks

Books:

1. Plumwood V, Low N. Global Ethics andEnvironment..
2. Gleick PH. Water in crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press. 473p.1993;9.
3. Principles of conservation biology Martha J Groom; Gary K Meffe; C Ronald Carroll Sunderland, Mass. : Sinauer Associates,©2006.
4. Odum, E.P., Odum, H.T. & Andrews, J. 1971. Fundamentals of Ecology. Philadelphia: Saunders.
5. Pepper, I.L., Gerba, C.P. &Brusseau, M.L. 2011. Environmental and Pollution Science. AcademicPress.
6. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. Environment. 8th edition. John Wiley &Sons.
7. Rosencranz, A., Divan, S., & Noble, M. L. 2001. Environmental law and policy in India. Tripathi 1992.
8. Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. OUP.
9. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, NewDelhi.
10. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley &Sons.
11. Warren, C. E. 1971. Biology and Water Pollution Control. WBSaunders.

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Biochemistry**
Course Code	**AECC004**
Course Description	**Ability Enhancement Compulsory Course - Theory**
Semester	**Semester II**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Outcomes	
CO 1	describe carbohydrate, fat and protein metabolism , classification, digestion, absorption , regulation and clinical application
CO 2	define bio-enzymes, classify, factors affecting enzyme action and therapeutic uses
	describe vitamins, minerals , hormones - classify, discuss manifestations of nutritional deficiency
CO 3	discuss normal levels in body fluids required for functioning and their abnormal levels to understand the disease process
CO 4	discuss biochemical mechanisms of muscle contraction and biochemistry of connective tissue
CO 5	describe functions of nucleic acids

Unit	**Topics**	**No. of Hrs.**
1	**Cell** -Introduction, Cell structure, Cell membrane structure and function, various types of absorption. Intracellular organelles and their functions, briefly on cytoskeleton.	1
2	**Carbohydrates** a. Definition, general classification with examples, Glycosidicbond b. Structures, composition, sources, properties and functions of Monosaccharides, Disaccharides, Oligosaccharides andPolysaccharides. c. Glycosaminoglycan(mucopolysaccharides) Carbohydrate metabolism a. Introduction, Glycolysis – Aerobic, Anaerobic Citric acid cycle, Substrate level phosphorylation. b. Glycogen metabolism – Glycogenesis, Glycogenolysis, Metabolic disorders glycogen, Gluconeogenesis, Coricycle c. Hormonal regulation of glucose, Glycosuria, Diabetesmellitus.	6

3	**Proteins** a. Amino acid chemistry: Definition, Classification, Peptidebonds b. Peptides: Definition, Biologically importantpeptides c. Protein chemistry: Definition, Classification, Functions ofproteins, Protein metabolism a. Catabolismofaminoacids-Introduction,transamination,deamination, Fate of ammonia, transport of ammonia, Urea cycle b. Specialized products formed from amino acids - from glycine, arginine, methionine, phenylalanine andtyrosine.	6
4	**Lipid** a. Definition, generalclassification b. Definition, classification, properties and functions of Fatty acids, Triacylglycerol, Phospholipids, Cholesterol c. Essential fatty acids and theirimportance d. Lipoproteins: Definition, classification, properties, Sources and function Ketone bodies Lipid Metabolism a. Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids -oxidation of fattyacids, b. Lipogenesis - Denovo synthesis of fatty acids, chain elongation, desaturation, triacylglycerol synthesis, fat metabolism in adiposetissues c. Ketone body metabolism: Ketone body formation (ketogenesis), utilization (ketolysis), ketosis, Rothera'stest. d. Cholesterol metabolism: synthesis, degradation, cholesteroltransport e. Hypercholesterolemia and its effects (atherosclerosis and coronary heart diseases) Hypocholesterolemic agents, Common hyperlipoproteinemia, Fatty liver	6
5	**Digestion and Absorption** General characteristics of digestion and absorption, Digestion and absorption of carbohydrates, proteins and lipids. Disorders of digestion and absorption – Lactose intolerance.	2
6	**Enzymes** Definition, Active site, Cofactor (Coenzyme, Activator), Proenzyme. Classification with examples, Factors effecting enzyme activity, Enzyme inhibition and significance, Isoenzymes, Diagnostic enzymology (clinical significance of enzymes)	4
7	**Vitamins** a. Definition, classification according tosolubility, b. Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency andtoxicity.	4

8	**Minerals** Definition, Sources, RDA, Digestion, absorption, transport, excretion, functions, disorder of Individual minerals - Calcium, phosphate, iron, Magnesium, fluoride, selenium, molybdenum, copper. Phosphate, calcium and iron indetail.	3
9	**Nutrition** a. Introduction, Importance of nutrition Calorific values, Respiratory quotient – Definition, and its significance Energy requirement of a person - Basal metabolic rate: Definition, Normal values, factor affecting BMR Special dynamic action of food. b. Physical activities - Energy expenditure for various activities. Calculationof energy requirement of aperson c. Balanceddiet i. Recommended dietaryallowances ii. Role of carbohydrates in diet: Digestible carbohydrates and dietaryfibers iii. Role of lipids indiet iv. Role of proteins in diet: Quality of proteins - Biological value, net protein utilization, Nutritional aspects of proteins-essential and non- essential amino acids. Nitrogenbalance v. Nutritionaldisorders.	3
10	**Hormones** Definition, classification, Mechanism of hormone action. Receptors, signal transduction, second messengers and cell function.	1
11	**Muscle Contraction and Connective Tissue** Contractile elements in muscle, briefly on the process of muscle contraction, Energy for musclecontraction ConnectiveTissue- Introduction, various connective tissue proteins: Collagen, elastin - Structure and associated disorders. Glycoproteins, Proteoglycans.	2
12	**Nucleic Acid** a. Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in body. b. Nucleic acid (DNA and RNA) chemistry: Difference between DNA and RNA, Structure of DNA (Watson and Crick model), Functions of DNA. Structure and functions of tRNA, rRNA,mRNA.	1
13	**Acid-Base balance –** Acids, bases and buffers, pH. Buffer systems of the body, bicarbonate buffer system Role of lungs and kidneys in acid base balance, Acid base imbalance. Water and Electrolyte –Osmorality and role of aldosterone and ADH	1

14	**Clinical Biochemistry** a. Normal levels of blood and urine constituents, Relevance of blood and urine levels of Glucose, Urea, Uric acid, Creatinine, Calcium, Phosphates, pH and Bicarbonate. Liver function tests, Renal function tests. **Normal levels of blood and urine constituents(1 Hour each= 13 hours)** 1. Introduction to clinical biochemistry laboratory, blood collection and anticoagulants. 2. Demonstrate the estimation of bloodglucose 3. Demonstrate the estimation of blood urea 4. Demonstrate the estimation of serum creatinine and creatinine clearance 5. Demonstrate estimation of serum proteins, albumin and A:Gratio 6. Demonstrate estimation of calcium and phosphorous 7. Demonstrate the estimation of serum bilirubin 8. Demonstrate the estimation of SGOT and SGPT 9. Demonstrate the estimation of alkalinephosphatase 10. Demonstrate the estimation of Uricacid 11. Normal and abnormal constituents ofurine 12. Demonstrate the estimation of ABG analysis 13. Water balance and imbalance and Interpretation of serum electrolytes **Case studies based on Relevance of blood and urine levels of various constituents in various diseases.(1 hour each= 7 hours)** 1. Diabetesmellitus 2. Dyslipidemia, Myocardialinfarction 3. Renal failure,- proteinuria,- nephroticsyndrome 4. Jaundice,- liverdiseases 5. Gout 6. Thyroiddisorders 7. Muscular and connective tissuedisorders	20
Total		**60**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Evaluation will beconducted at level of the constituent unit

Theory question paper pattern for Internal Assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8	5	8 x 5	40
Total				**Total= 40**

RECOMMENDED TEXT BOOKS

1. Satyanarayana Biochemistry Aug2013
2. Vasudevan DM, Sreekumari S, Vaidyanathan K. Textbook of biochemistryfor medical students. JP Medical Ltd;2013
3. Naik P. Essentials of Biochemistry (for Medical Students). JP Medical Ltd;2011.

RECOMMENDED REFERENCE BOOK

1. Wood EJ. Harper's biochemistry 24th edition

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Basic Skills in patient care**
Course Code	**BPTCLT002**
Course Description	**Clinical Training**
Semester	**Semester II**
Credits per semester	**2 credits**
Hours per semester	**160 hours**

Students will be introduced to basic skills in patient care such as history taking, reading patient files and communication skills.

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	10
Q No 2	OSPE Station 2	10
		Total = 20

*Students will be evaluated as per their level of knowledge level.

Bachelor of Physiotherapy (BPT)Semester-III (13- 18 months)

Course Code	Course Title	Course Description	Theory Hours	Practical Hours	Clinical Hours	Credits
BPT015	Kinesiology	Core Theory	60	-	-	3
BPT016	Clinical applications of Kinesiology	Core Practical	-	80	-	2
BPT017	Electrotherapy Theory	Core Theory	40	-	-	2
BPT018	Electrotherapy Practical	Core Practical	-	40	-	1
BPT019	Pharmacology	Core Theory	60	-	-	3
BPT020	Psychology & Psychiatry	Core Theory	60	-	-	3
SEC001	Indian Human Movement Science I -Yoga therapy	Skill Elective Course	20	40	-	2
AECC001/ AECC002	Ergonomics and health promotion/ Personality development and learning styles	Ability Enhancement Elective Course	40	-	-	2
BPTCLT003	Basic skills in patient care I	Clinical Training	-	-	280	4
Total			280	160	280	22

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Kinesiology** **Theory**
Course Code	**BPT015**
Course Description	**Core Theory**
Semester	**Semester III**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
CO 1	explain principles of biophysics related to mechanics of movement / motion & apply these principles to biomechanics of human movement
CO 2	explain kinetics and kinematics of spine, joints of upper and lower extremities, Temporo- Mandibular joint and thoracic cage
CO 3	explain musculoskeletal movements during normal gait and Activities of Daily Living
CO 4	explain factors determining muscle action during normal gait and Activities of Daily Living
CO 5	explain factors influencing normal human posture [static & dynamic], postural control mechanisms and postural deviations

Unit	Topics	Hours
1	**INTRODUCTION TO BIOMECHANICS:**	
	a. Muscle Biomechanics i. Elements of muscle structure – fiber, size, motor unit, length tension, arrangement & numberrelationship ii. Classification ofmuscles iii. Mobility and Stability ofmuscles iv. Types of muscle contraction and factors affecting musclefunction. b. JointBiomechanics i. Basic principles of jointdesign ii. Classification ofjoints iii. Osteo-kinematics&Arthro-kinematics iv. Concave Convex Rule v. Joint function, kinetics &kinematics	5

2	**REGIONAL KINESIOLOGY**	
	Biomechanics of i. VertebralColumn ii. Thorax iii. Upper Quadrant - Shoulder Complex, Elbow joint, Wrist And Hand Complex iv. Lower Quadrant – Sacroiliac, Hip, Knee , Ankle-footcomplex v. Temporo-mandibularjoint	35
3	**KINETICS AND KINEMATICS OF GAIT AND ADLS**	
	a. Gait i. Humanlocomotion ii. Subjective & Objectiveevaluation iii. Gait cycle & Measurableparameters (Step Length, Step Width, Stride Length, Foot Angle, Cadence) iv. Kin0etics and kinematics ofgait v. Determinants ofgait **b. Kinetics and kinematics of various Activities of dailyliving** i. Supine to Sitting, Sitting to Standing, Squatting, Climbing up &down ii. Lifting, Pulling, Pushing, Overheadactivities, iii. Running,Jogging.	10
4	**POSTURE**	5
	1. Definition 2. Human posture –Changes from quadruped tobiped 3. Correct and faultyposture 4. Postural patterns and PosturalMechanism 5. Factors affectingposture 6. Physiologicaldeviations 7. Analysis of all views	
5	**BALANCE, MOTOR CONTROL AND POSTURAL CONTROL**	**5**
	i. Motor Control ii. Postural Alignment & WeightDistribution iii. SensoryOrganization iv. C.N.S.Integration v. MotorStrategies	
		60

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions (from unit 1-5)	8 out of 10	5	8x5	40
Section 2				
Long answer question (from 2-5)	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers(unit 1-5)	4	5	4 x 5	20
Long answers (unit 2-5)	2	10	2 x 10	20
Total				**Total= 40**

RECOMMEMDED TEXT BOOKS

1. Cynthia C, Norkin D, Pamela K. Joint structure and function. A comprehensive analysis.1992.
2. Houglum PA, Bertoti DB. Brunnstrom's clinical kinesiology. FA Davis; 2011 Dec7.

RECOMMEMDED REFERENCE BOOKS

1. Steindler A. Kinesiology of the human body under normal and pathological conditions. Spring-field, IL. Charles C Thomas.1977.
2. Neumann DA. Kinesiology of the musculoskeletal system-e-book: foundations for rehabilitation. Elsevier Health Sciences; 2013 Aug7.
3. Oatis CA. Kinesiology: the mechanics and pathomechanics of human movement. Lippincott Williams & Wilkins;2009.

4. Hamill J, Knutzen KM. Biomechanical basis of human movement. Lippincott Williams & Wilkins; 2006 Oct1.
5. Robertshawe P. Kapandji AI.: The Physiology of the Joints, Volume 3: The Spinal Column, Pelvic Girdle and Head. Journal of the Australian Traditional-MedicineSociety. 2009 Sep1;15(3):178-9.
6. Margareta Nordin: Basic Biomechanics of Musculoskeletal System, 4th Edition

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Clinical Applications of Kinesiology Practical**
Course Code	**BPT016**
Course Description	**Core Practical**
Semester	**Semester III**
Credit per Semester	**2 credits**
Hours per Semester	**80 hours**

Course Learning Outcomes: The student will be able to	
CO 1	demonstrate analytical skills in describing kinematics of normal gait and Activities of Daily Living through observation and 2D analysis
CO 2	demonstrate skill in measuring gait speed, spatial-temporal variables of gait, muscle action during normal gait and Activities of Daily Living
CO 3	analyze normal human posture [static & dynamic].
CO 4	Apply skills in analysis of joint kinesiology

Unit	Topics	No of Hrs
1	Gait	20
2	Kinetics and kinematics of various Activities of daily living	20
3	Posture and balance	20
4	Joint Kinesiology	20
Total Hours		**80**

Practical question paper pattern for University Semester Examination under CBCS - 80 marks

Exercise	Description	Marks
Q No 1	Exercise (gait analysis)	30
Q No 2	2 OSPE stations (from unit 1-3)	2 x 20 = 40
Q No 3	Journal	10
		Total = 80

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	Exercise (gait analysis)	15
Q No 2	2 OSPE station (from unit 1-3)	20
Q No 3	Journal	5
		Total = 40

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Electrotherapy**
Course Code	**BPT017**
Course Description	**Core Theory**
Semester	**Semester III**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	state and explain physiology of pain, pain pathways &methods of pain modulation, selection of appropriate modality for pain modulation
CO 2	State, explain and assess physiological effects, therapeutic effects/uses, compare and contrast merits/demerits, indications/contra-indications of various Low/ Medium & High Frequency currents / Actinotherapy, describe & identify various equipment's used to deliver therapeuticcurrents
CO 3	State, explain and assess physiological effects, therapeutic effects/uses, compare and contrast merits/demerits, indications/contra-indications of various therapeutic ions & topical pharmaco -therapeutic agents to be used for the application of Iontophoresis & sono/ phonophoresis, describe & identify equipment's used to deliver Iontophoresis & sono/ phonophoresis
CO 4	Explain phases of wound healing, physiological effects, therapeutic effects/uses, compare and contrast merits/demerits, indications/contra-indications of various electrotherapy modalities for woundhealing
Psychomotor	
At the end of the course, the candidate will be able to:	
CO 4	demonstrate skills of application on models, discuss dosage of various Low/ Medium & High Frequency currents / Actinotherapy
CO 5	demonstrate skills of application on models, discuss dosage and choice of ions for therapeutic application of iontophoresis, methods of application of phonophoresis, analytical ability to select the appropriate mode of application based on tissues involved, area of application, chronicity of disorder etc
CO 6	demonstrate skills of application on models, discuss dosage, choice of modality for therapeutic wound healing, analytical ability to select the appropriate modality based on tissues involved, area of application,chronicity of wound

Unit.	Topics	No. of Hrs.
1	**PAIN** i. Pain pathway ii. Pain gate theory iii. Descending pain suppressingsystem iv. d. Physiologicalblock	3
2	**LOW FREQUENCY CURRENTS** a. Faradic currents : Physiological & Therapeutic effects,indications, contraindications- i. Faradictype ii. Strong SurgedFaradic iii. Sinusoidalcurrents iv. Application of Faradiccurrent a. Faradism Under pressure – Indications, Principle of application, Technique of application b. Faradic re-education: Indications, Principle of application, Technique of application v. Short/Long pulse currents Motor Points: Definition.,Identification b. Galvanic / Direct currents (Continuous DC &Interrupted DC) : Physiological & Therapeutic effects, Indications, Contraindications i. Definition: Galvanic & Interrupted GalvanicCurrents ii. Property ofAccommodation iii. Technique & Methods of Application of Galvaniccurrents iv. Types – Anodal & Cathodal, Therapeutic effects & uses, Technique & Methods of application, Dangers & precautions v. Ionization / Iontophoresis : Theory of Medical Ionization, Effects & Uses of various Ions, Indications and contraindications, Dangers andprecaution c. High Voltage Currents d. MicroCurrents e. DidynamicCurrents f. Transcutaneous Electrical NerveStimulation(T.E.N.S.) i. Definition,Types ii. Physiological & Therapeuticeffects iii. Technique & Methods ofApplication iv. Indications &contraindications	18
3	**MEDIUM FREQUENCY CURRENTS** a. Interferential Therapy	6

	i. Definition ,Types, ii. Physiological & Therapeuticeffects iii. Technique & Methods ofApplication iv. Electrodes types (including vacuum), Effects&Uses v. Advantages of I.F.T. over Low frequency currents vi. Indications &contraindications. b. Russian Currents	
4	**BIOFEEDBACK** i. Principle ii. Methods: Electrobiofeedback. iii. Uses ofBiofeedback	1
5	**HIGH FREQUENCY CURRENTS** Short Wave Diathermy (S.W.D) i. Types: continuous /Pulsed ii. Definition andtypes iii. Physiological & Therapeuticeffects iv. Technique & Methods ofApplication v. Electrodes types, Effects &Uses vi. Indications &contraindications vii. Dangers &Precautions	4
6	**SOUND** Therapeutic Ultra Sound: Pulsed / Continuous i. Physiological & Therapeuticeffects ii. Technique & Methods ofApplication iii. Phonophoresis iv. Indications &Contraindications v. Dangers &Precautions	4
7	**ELECTROTHERAPY WOUND CARE** i. Types ofwound ii. Application of Therapeutic currents, Ultrasound, U.V.R. &LASER	4
Total		**40**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question x marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total = 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

Internal Assessment marks will be weighted out of 20 marks for theory examination.

RECOMMENDED TEXTBOOKS

1. Forster A, Clayton EB, Palastanga N. Clayton's electrotherapy: theory andpractice. Bailliŕe Tindall;1985.
2. Robertson V, Ward A, Low J, Reed A, MCSP D. Electrotherapy explained:principles and practice. Elsevier Health Sciences; 2006 May1.
3. Bellis E. Electrotherapy: evidence-basedpractice.

RECOMMENDED REFERENCEBOOK

1. Kahn J. Principles and practice of electrotherapy. Saunders; 2000.
2. Nelson RM, Hayes KW, Currier DP, editors. Clinical electrotherapy. PrenticeHall; 1999.

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Electrotherapy**
Course Code	**BPT018**
Course Description	**Core Practical**
Semester	**Semester III**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	state and explain physiology of pain, pain pathways &methods of pain modulation, selection of appropriate modality for pain modulation
CO 2	State, explain and assess physiological effects, therapeutic effects/uses, compare and contrast merits/demerits, indications/contra-indications of various Low/ Medium & High Frequency currents / Actinotherapy, describe & identify various equipment's used to deliver therapeuticcurrents
CO 3	State, explain and assess physiological effects, therapeutic effects/uses, compare and contrast merits/demerits, indications/contra-indications of various therapeutic ions & topical pharmaco -therapeutic agents to be used for the application of Iontophoresis & sono/ phonophoresis, describe & identify equipment's used to deliver Iontophoresis & sono/ phonophoresis
CO 4	Explain phases of wound healing, physiological effects, therapeutic effects/uses, compare and contrast merits/demerits, indications/contra-indications of various electrotherapy modalities for woundhealing
Psychomotor	
At the end of the course, the candidate will be able to:	
CO 4	demonstrate skills of application on models, discuss dosage of various Low/ Medium & High Frequency currents / Actinotherapy
CO 5	demonstrate skills of application on models, discuss dosage and choice of ions for therapeutic application of iontophoresis,methods of applicationof phonophoresis, analytical ability to select the appropriate mode of application based on tissues involved, area of application, chronicity of disorder etc
CO 6	demonstrate skills of application on models, discuss dosage, choice of modality for therapeutic wound healing, analytical ability to select the appropriate modality based on tissues involved, area of application,chronicity of wound

Unit	Topics	No. of Hrs.
1	Low Frequency Currents a. Faradiccurrents b. Faradism underpressure c. Motor point stimulation d. Transcutaneous Electrical Nerve Stimulation(TENS) e. Iontophoresis	20
2	Medium FrequencyCurrents a. Interferentialtherapy	5
3	High Frequency Currents a. Short wave diathermy	5
4	Sound – Ultrasound : Methods of application	5
5	Wound Healing	5
Total		**40**

EXAMINATION SCHEME

Practical question paper pattern for University Semester Examination under CBCS - 80 marks

Exercise	Description	Marks
Q No 1	Exercise- (from unit 1,6)	30
Q No 2	2 OSPE stations (from unit 2-5)	2 x 20 = 40
Q No 3	Journal	10
		Total = 80

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	Exercise (from Unit 1,6)	15
Q No 2	2 OSPE station(from unit 2-5)	20
QNo 3	Journal	5
		Total= 40

Internal Assessment marks will be weighted out of 20 marks for practical examination.

RECOMMENDED TEXTBOOKS

1. Forster A, Clayton EB, Palastanga N. Clayton's electrotherapy: theory andpractice. Bailliŕe Tindall;1985.
2. Robertson V, Ward A, Low J, Reed A, MCSP D. Electrotherapy explained: principles and practice. Elsevier Health Sciences; 2006 May1.
3. Bellis E. Electrotherapy: evidence-basedpractice.

RECOMMENDED REFERENCEBOOK

1. Kahn J. Principles and practice of electrotherapy. Saunders; 2000.
2. Nelson RM, Hayes KW, Currier DP, editors. Clinical electrotherapy. PrenticeHall; 1999.

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Pharmacology**
Course Code	**BPT019**
Course Description	**Core Theory**
Semester	**Semester III**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
CO 1	Describe pharmacological effects of commonly used drugs by patients referred for Physiotherapy; list their adverse reactions, precautions, contraindications, formulation & route of administration.
CO 2	identify whether the pharmacological effect of the drug interferes with the therapeutic response of Physiotherapy & vice versa
CO 3	indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency, & safety for individual needs.
CO 4	describe use & adverse reactions of commonly used drugs by patients

Sr. No	Topics	Hours
1	**GENERAL PHARMACOLOGY** i. Pharmacokinetics & Pharmacodynamics ii. Routes ofadministration iii. Adverse drug reaction andreporting iv. Factors modifying drugeffect	**6**
2	**DRUGS ACTING ON CENTRAL NERVOUS SYSTEM (CNS)** i. Introduction ii. Alcohols + Sedatives &Hypnotics iii. Anti-convulsants iv. Drug therapy inParkinsonism v. Analgesics & antipyretics –especially Gout &R.A. vi. PsychoTherapeutics vii. Local anaesthetics, counterirritants	**8**
3	**DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM (ANS)** i. Adrenergic ii. Cholinergic iii. Skeletal musclerelaxants	**6**
4	**DRUGS ACTING ON CARDIOVASCULAR SYSTEM (CVS)** i. Antihypertensives ii. Anti-anginal – Antiplatelets, Myocardial infarction iii. Congestive cardiacfailure iv. Shock	**6**

	v. Coagulants andAnticoagulants	
5	**DRUGS ACTING ON RESPIRATORY SYSTEM** i. Cough ii. Bronchialasthma iii. C.O.P.D.	**6**
6	**CHEMOTHERAPY** i. Generalprinciples ii. AntiTuberculosis iii. Anti–Leprosy	**8**
7	**OTHER CHEMO THERAPEUTIC DRUGS** i. Drugs used in Urinary TractInfection ii. Tetra /chlora iii. Penicillin iv. Cephalosporin v. Aminoglycocides vi. Macrolides	**8**
8	**ENDOCRINE DRUGS** i. Insulin and oral Anti diabeticdrugs ii. Steroids-Anabolicsteroids iii. Drugs for osteoporosis, Vitamin D, Calcium,Phosphorus iv. Thyroid &Antithyroid v. Estrogen +Progesterone	**6**
9	**DRUGS IN G.I. TRACT** i. Pepticulcer ii. Diarrhoea, Constipation&Anti-emetics	**4**
10	**HEAMATINICS** i. Vitamin B, Iron	**1**
11	**DERMATOLOGICAL DRUGS** i. Scabies, Psoriasis, Local antifungal	**1**
	TOTAL HOURS	**60**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 40 marks

Question type	No. of questions	Marks/ question	Question x marks	Total marks
Short answer questions	8 out of 10	5	8x5	40
				Total= 40

Internal examination pattern (Theory): 20marks

Question type	No. of questions	Marks /question	Question x marks	Total marks
Short answer questions	4	5	4 x 5	20
Total				**Total = 20**

RECOMMENDED TEXT BOOKS

1. Udaykumar P. Pharmacology for physiotherapy. Jaypee Bros. Medical Publishers;2011.

2. Ramesh KV, Shenoy KA. Pharmacology for Physiotherapist. Jaypee BrothersMedical Publishers Pvt. Limited;2005.

3. Tripathi KD. Essentials of medical pharmacology. JP Medical Ltd; 2013 Sep 30.

4. Satoskar RS, Rege N, Bhandarkar SD. Pharmacology and pharmacotherapeutics.Elsevier India; 2017 Aug10.

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Psychology & Psychiatry**
Course Code	**BPT020**
Semester	**Semester III**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
CO 1	define the term Psychology & its importance in health delivery system, explain psychological maturation during human development & growth & alterations during aging process
CO 2	explain the importance of psychological status of the person in health & disease; environmental & emotional influence on the mind & personality
CO 3	apply skills required for good interpersonal communication
CO 4	describe various psychiatric disorders with special emphasis to movement / Pain & ADL
CO 5	describe pathological & etiological factors, signs /symptoms & management of various psychiatric conditions

Unit	**Topics**	**Hours**
Psychology		**30**
1	Definition, understanding, nature & its fields and subfields.	**5**
2	Developmental psychology (childhood, adolescence, adulthood and old age) and its theories in brief	**5**
3	Learning: Theories of learning, Role of learning in human life	**5**
4	Memory – types – Causes of Forgetting	**5**
5	Attention & perception- Nature of attention, Nature of perception, Principles of grouping	**5**
6	Motivation and theories: conflict and frustration – Types of common defense mechanisms, Stress – common reactions to frustrations	**5**
Psychiatry		**30**
1	Psychiatric history &examination of mental status	**2**
2	Classification of mental disorders	**2**
3	Schizophrenia & its types	**2**
4	Other psychotic disorders (Psychotic disorder, Delusional disorder, Schizo-affective disorders, Post partum psychosis	**2**
5	Mood disorder	**2**

6	Organic brain disorders (delirium, dementia, Amnestic syndromes, Organic personality disorder,)	**2**
7	Anxiety disorders: Phobia, Obsessive Compulsive Disorder, Post Traumatic Disorders and Conversion disorder	**2**
8	Somatoform disorder, (Hypochondriasis, Dissociative disorder,Conversion disorder, & Pain disorder)	**2**
9	Somatization disorder	**2**
10	Personality disorder	**2**
11	Substance related disorder (alcohol)	**2**
12	Disorders of infancy – childhood & adolescence i. Attention Deficit HyperactivityDisorder, ii. MentalRetardation iii. Conductdisorder, iv. Pervasive developmentaldisorder v. Enuresis vi. Speechdisorder	**2**
13	Geriatric Psychiatry	**2**
14	Eating disorder	**2**
15	Management: ECT, Pharmacotherapy, Group therapy, Psycho therapy, Cognitive Behavioral Therapy and Rational Emotive Therapy.	**2**
	TOTAL HOURS	**60**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Evaluation will beconducted at the constituent unit level

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks / question	Question x marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8 x 5	40
				Total = 40

RECOMMENDED TEXT BOOKS:

1. Morgan C.T. & King R.A. Introduction to Psychology– recent edition [Tata McGraw-Hill publication]
2. Munn N.L. Introduction to Psychology [Premium Oxford, I.B.P. publishingCo.]
3. Clinical Psychology –Akolkar
4. Hurlock EB. Development psychology. McGraw-Hill; 1953. (5thedition)
5. Ahuja N, Ahuja S. A Short Book ofPsychiatry.
6. Bhatia, M. S. (Ed.). (2004). *Short Textbook of Psychiatry:(aids to Psychiatry)*. CBS Publishers &Distributors.

ELECTIVE COURSES

Skill Elective Course (SEC)	
Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Indian Human Movement Science I -Yoga therapy**
Course Code	**SEC001**
Course Description	**Skill Elective Course – Theory and Practical**
Semester	**Semester III**
Credits per semester	**2 credits**
Hours per semester	**60 hours**

Course Learning Outcomes: The student will be able to	
CO 1	describe physiological principles and acquire the skill of performing Pranayama &Yogasanas
CO2	describe and demonstrate the joint positions and muscle work involved in each asana

Sr. No.	Topics (Theory)	No. of Hrs.
1	**Yoga–**Definition, Principles of Yoga, Physiological effects, Indications/Contraindications, Benefits, various schools of Yoga	05
2	Technique, benefits, contraindications & cautions for each Asanas: i. **Asanas in supine**: Pawanamuktasana, ArdhaHalasana, Halasana, Setubandhasana, Naukasana, Matsyasana, Shavasana, Sarvangasana ii. **Asanas in prone**: Bhujangasana, Ardha- Shalabhasana, Dhanurasana, Makarasana iii. **Asanas in sitting**: Padmasana, Yogamudrasana, Virasana, Vajrasana, Gomukhasana, Pashchimottanasana iv. **Asanasinstanding**:Padhastasana,Padangusthasana,Uttanasana,Utkatasana, Tadasana, Trikonasana v. **Pranayama and meditation** : Anulom-vilom, Bhramari, Sitali,Kapalbharti, Omkar, meditation **vi. Suryanamaskar**	15
Total		**20**

Sr. No.	Topics (Practical)	No. of Hrs.
1	Practical sessions : vii. **Asanas in supine**: Pawanamuktasana, ArdhaHalasana, Halasana, Setubandhasana, Naukasana, Matsyasana, Shavasana, Sarvangasana viii. **Asanasinprone**:Bhujangasana,Ardha-Shalabhasana,Dhanurasana, Makarasana ix. **Asanas in sitting**: Padmasana, Yogamudrasana, Virasana, Vajrasana, Gomukhasana, Pashchimottanasana x. **Asanasinstanding**:Padhastasana,Padangusthasana,Uttanasana,Utkatasana, Tadasana, Trikonasana xi. **Pranayama and meditation** : Anulom-vilom, Bhramari, Sitali,Kapalbharti, Omkar, meditation **xii. Suryanamaskar**	40
Total		**40**

RECOMMENDED TEXT BOOKS:

1. McCall, T. (2007). *Yoga as medicine: the yogic prescription for health & healing:a yoga journal book*.Bantam.
2. Gore, M. M. (2008). *Anatomy and Physiology of Yogic practices*. New AgeBooks.
3. Malshe, P. C. (2017). *Medical Understanding of Yoga*. JP MedicalLtd.

RECOMMENDED REFERENCE BOOKS:

1. Uebelacker, L. A., Lavretsky, H., Tremont, G., Khalsa, S. B., Cohen, L., McCall, T., & Telles, S. (2016). The Principles and Practice of Yoga in Health Care.

Examination Scheme

This course will not be assessed as Semester University Examination. Assessment willbe conducted at the constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question x marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
				Total = 40

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	10
Q No 2	OSPE Station 2	10
		Total = 20

Ability Enhancement Elective Course (AEEC)	
Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Ergonomics and Health promotion**
Course Code	**AEEC001**
Course Description	**Ability Enhancement Elective Course – Theory**
Semester	**Semester III**
Credits per semester	**2 credits**
Hours per semester	**40 hours**

Course Learning Outcomes: The student will be able to	
CO 1	explain the idea of safety culture and its importance in work place.
CO 2	explain role of OSHA in job-site safety
CO 3	identify hazards and assess risk techniques at work place
CO 4	analyze work place demands and modify dysfunctional body postures
CO 5	Prescribe ergonomic management at work place.

Sr. No.	Topics	No. of Hrs.
1	Introduction to Ergonomics and Health promotion	1
2	Safety and health training	2
3	Occupational Safety and Health Administration- 1. OSHA Act of1970 2. What does OSHAdo? 3. Worker'sRights 4. EmployerResponsibilities	5
4	Ergonomic considerations including repetitive motion, sustained postures	1
5	Stress and safety.	1
6	OSHA's voluntary Ergonomics guidelines.	1
7	Job Analysis	1
8	Workers' compensation	1
9	Work conditioning and work hardening	2
10	Understanding work demands of: (on-field visit) 1. Deskworker. 2. Teacher 3. Industrialworker 4. Manuallabourer	4
11	Job analysis: 1. Deskworker. 2. Teacher 3. Industrial worker Manuallabourer	4

12	Evaluation of impairments amongst the professions defined.	4
13	Management of the impairments.	4
14	Preparation of the ergonomic checkpoints that can help to systematically examine the existing workplace conditions and improve the workplace to create a safe working condition	5
15	Work conditioning and Work hardening	4
TOTAL HOURS		**40**

RECOMMENDED TEXT BOOKS:

1. Salvendy, G. (Ed.). (2012). *Handbook of human factors and ergonomics*. John Wiley &Sons.
2. Stack, T., Ostrom, L. T., & Wilhelmsen, C. A. (2016). *Occupational ergonomics: A practical approach*. John Wiley &Sons.
3. Waqar Naqvi. Physiotherapy in community health andrehabilitation.

RECOMMENDED REFERENCE BOOKS:

1. Naidoo, J., & Wills, J. (2009). *Foundations for Health Promotion E-Book*. Elsevier Health Sciences.

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at the constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks / question	Question x marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
				Total = 40

Ability Enhancement Elective Course (AEEC)	
Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Personality development and learning styles**
Course Code	**AEEC002**
Course Description	**Ability Enhancement Elective Course – Theory**
Semester	**Semester III**
Credits per semester	**2 credits**
Hours per semester	**40 hours**

Course Learning Outcomes: The student will be able to	
CO 1	describe personality development and define the stages of personality development
CO 2	describe basic personality traits and personality types
CO 3	describe how to work on personality changes and personality disorders
CO 4	describe the process of learning and identify learning styles

Sr. No.	Topics	No. of Hrs.
1	Introduction to the personality development , need of personality and basic personality traits	5
2	The developing personality and stages of development , Moral development	4
3	Types of Personality	4
4	Personality and career choice	4
5	Changing your personality	4
6	Personality growth	4
7	Personality disorders	5
8	Learning styles – visual, auditory, kinesthetic, verbal, physical, logical, social, solitary Identification of learning styles through questionnaires, prescription of methods to enhance learning	10
		40

RECOMMENDED TEXT BOOKS:

1. Looking at Type and Learning Styles by Gordon D.Lawrence
2. The Personality Development Book – 2016 by SouravDas
3. Personality Development and Soft Skills by Barun Mitra.2016

RECOMMENDED REFERENCE BOOKS:

1. Life's Amazing Secrets: How to Find Balance and Purpose in Your Life - 2018 by Gaur Gopal Das

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at the constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks / question	Question x marks	Total marks
Short answer questions	8 out of 10	5	8 x 5	40
				Total = 40

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Basic Skills in patient care**
Course Code	**BPTCLT003**
Course Description	**Clinical Training**
Semester	**Semester III**
Credits per semester	**4 credits**
Hours per semester	**280 hours**

Students will be introduced to basic application of Physiotherapeutic skills.

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	10
Q No 2	OSPE Station 2	10
Q No 3	OSPE Station 3	10
Q No 4	OSPE Station4	10
		Total = 40

*Students will be evaluated as per their level of knowledge level.

Bachelor of Physiotherapy (BPT) Semester-IV (19 - 24 months)

Course Code	Course Title	Course Description	Theory Hours	Practical Hours	Clinical Hours	Credits
BPT021	Physiotherapy Skills	Core Theory	40	-	-	2
BPT022	Physiotherapy Skills	Core Practical	-	80	-	2
BPT023	Electro-diagnostics	Core Theory	40	-	-	2
BPT024	Electro-diagnostics	Core Practical	-	80	-	2
BPT025	Pathology & Microbiology	Core Theory	80	-	-	4
BPT026	Sociology	Core Theory	40	-	-	2
BPT027	Research Methodology	Core Theory	40	-	-	2
SEC002	Indian Human Movement Science II- Dance & Sports	Skill Elective Course	20	40	-	2
AEEC003/ AEEC004	Biostatistics and SPSS / Medical Ethics, Human rights & professional values	Ability Enhancement Elective Course	20	40	-	2
BPTCLT004	Basic skills in patient care	Clinical Training	-	-	200	3
TOTAL			280	240	200	23

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Physiotherapy Skills Theory**
Course Code	**BPT021**
Course Description	**Core Theory**
Semester	**Semester IV**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes: The student will be able to	
CO 1	describe the biophysical properties of connective tissue, explain effect of mechanical loading & factors which influence the muscle strength, & mobility of articular &peri-articular soft tissues
CO 2	apply the biomechanical principles governing assessment methods of mobility and muscle strength
CO 3	acquire the skill of subjective and objective assessment of individual & group muscle strength testing
CO 4	discuss, compare and contrast various methods of muscle strengthening, merits and demerits, physiological effects, benefits, risks and hazards of various strengthening techniques
CO5	explain the physiological effects, therapeutic uses, merits / demerits of various land and water based(Hydrotherapy)exercise modes
CO6	prescribe home exercise programs
CO 7	discuss functional re-education techniques, principles of application of balance and coordination exercises, PNF, principles governing postural correction exercises and methods used for postural correction
CO 8	identify and describe walking aids and methods used for gait training while using various walking aids
CO 9	describe types of lung expansion therapy- breathing exercises, physiological effects, benefits, indications-contraindications, methods of breathing retraining and lung re-expansion therapy, respiratory PNF, thoracic expansion techniques, adjuncts used
CO 10	describe anatomy of broncho-pulmonary segments, surface anatomy of lung, methods used for maintaining lung hygiene viz postural drainage, autogenic drainage, active cycle of breathing techniques, , principles governing, physiological effects, benefits, indications-contraindications, method of application, humidification and nebulization therapy, adjuncts used

Unit	Topics	Hours
1	**BIOPHYSICS** i. Biophysical Principles: Structures & Properties of connective andnon connectivetissues ii. Stretching: 1. Definition 2. Types 3. Assessment of muscle length and fascia around thejoint 4. Principles ofstretching 5. Techniques for alljoints 6. Individual musclestretching	**4**
2	**JOINT MOBILITY** 1. Definition 2. Causes oflimitation 3. Indication and contraindications 4. Principles 5. Techniques 6. Assessmentmethods 7. Individual joints mobility Exercises– Upper Limb, Lower Limb & Spine (Using active, assisted, passivemovements)	**4**
3	**MANUAL MUSCLE TESTING AND ASSESSMENT (SUBJECTIVE & OBJECTIVE)** 1. Principle 2. Trickmovements 3. Group MuscleTesting 4. Individual Muscle testing – Upper & Lower Limbs, Trunk& Face	**3**
4	**MUSCLE STRENGTHENING** 1. Concepts -Strength, Power, Endurance 2. Factors influencing the Strength of normal muscle/ hypertrophy, recruitment of motor units, change after the training, training with isometric, isotonic &Iso-kinetic muscle contraction 3. Principles: Overload, Intensity, Motivation, Learning, Duration, Frequency, Reversibility, Specificity,Determinants 4. Methods : Subjective &Objective 5. Individual joint Strengthening Exercises Upper Limb,Lower Limb &Spine 6. Concepts- 1 RM, 10 RM &Dynamometry 7. Progressive Resisted Exercise - Delorme, Zinoveiff,Mc	**5**

	queen protocols 8. Use of gymnasium equipments	
5	**HYDROTHERAPY** 1. Physiologicaleffects 2. Indication andContraindications 3. Techniques	**2**
6	**TRACTION (CERVICAL & LUMBAR)** 1. Introduction 2. Types(Mechanical / Electrical,Continuous/Intermittent) 3. Indications and Contraindications 4. Techniques 5. Effects anduses	**2**
7	**HOME PROGRAM** 1. Principles 2. Ergonomic advice forADLs 3. Home based exerciseprogram	**2**
8	**FUNCTIONAL REEDUCATION** a. Principles &Indications b. Mat exercises- mobility, strength and balancetraining c. Progression to sitting, standing andwalking d. Transfers	**4**
9	**NEUROMUSCULAR CO-ORDINATION AND BALANCE** a. Definition b. Physiology related to coordination &Balance c. Frenkel's exercise (Principles &Techniques) d. BalancingExercise e. Proprioceptive neuromusculareco-ordination	**4**
10	**WALKING AIDS AND GAIT TRAINING** **a.** WalkingAids i. Types ii. Indications iii. Selection /Prescription iv. Pre 'Walking Aids'training v. Measurements vi. Gait with walkingaids	**3**
11	**LUNG EXPANSION THERAPY** 1. Breathingexercises 2. Types – Inspiratory , Expiratory (including forced expiratory technique) 3. Goals &Uses 4. Techniques 5. Thoracic expansion 6. RespiratoryPNF	**3**

12	**BRONCHIAL HYGIENE** 1. Postural Drainage – Definition, Indications & Contraindications, Principles, preparation, assessment & Techniques 2. ACBT 3. Autogenicdrainage 4. Humidification & Nebulisation –Definition, Types, Method of delivery, Indications and contraindications, physiological principles andbenefits	**4**
	TOTAL HOURS	**40**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

RECOMMENDED TEXT BOOKS

1. Progressive Resisted Exercises – MargaretHollis,

2. Kisner, C., Colby, L. A., & Borstad, J. (2017). *Therapeutic exercise: foundations and techniques*. FaDavis.

3. Kendall, F. P., McCreary, E. K., Provance, P. G., Rodgers, M., & Romani, W. A. (1993). *Muscles, testing and function: with posture and pain* (Vol. 103). Baltimore, MD: Williams & Wilkins.

4. Gardiner, M. D. (1957). *The principles of exercise therapy*. Bell.

5. O'Sullivan, S. B., Schmitz, T. J., & Fulk, G. (2019). *Physical rehabilitation*. FADavis.

RECOMMENDED REFERENCE BOOKS

1. Basmajian, J. J., & Wolf, S. L. (1992). Therapeutic exercise. *Physiotherapy*, *78*(10),732.

2. Dutton, M. (2004). *Orthopaedic examination, evaluation, and intervention* (Vol. 1). McGraw-HillMedical.

3. Downie, P. A., Innocenti, D. M., & Jackson, S. E. (1987). Cash's textbook of chest,heart and vascular disorders for physiotherapists.

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Physiotherapy Skills Practical**
Course Code	**BPT022**
Course Description	**Core Practical**
Semester	**Semester IV**
Credit per Semester	**2 credits**
Hours per Semester	**80 hours**

Course Learning Outcomes: The student will be able to	
CO 1	describe the biophysical properties of connective tissue, & effect of mechanical loading, & factors which influence the muscle strength, & mobility of articular &peri-articular soft tissues
CO 2	apply the biomechanical principles for the efficacy in the assessment methods for mobility, muscle strength
CO 3	acquire the skill of subjective and objective assessment of individual & group muscle strength
CO 4	acquire the skills of subjective and objective methods of muscle strengthening
CO5	describe the physiological effects, therapeutic uses, merits / demerits of various exercise modes including Hydrotherapy
CO6	demonstrate various therapeutic exercises on self& acquire the skill of application on models with home programs
CO 7	acquire the skill of functional re-education techniques on models, balance and coordination exercises, PNF, postural correction
CO 8	apply skill of gait training while using various walking aids
CO 9	apply skills of breathing exercises and retraining on self and others, postural drainage on models.

Unit	**Topics**	**No of Hrs**
1	Stretching	10
2	Joint Mobility	10
3	Manual Muscle Testing and assessment	10
4	Muscle Strengthening	10
5	Posture	06
6	Functional Re-education	06
7	Balance, Co-ordination, PNF	08
8	Walking aids and gait training	10
9	Breathing exercises, Postural Drainage, Humidification	10
Total Hours		**80**

Practical examination pattern for University Semester Examination under CBCS - 80 marks

Exercise	Description	Marks
Q No 1	Exercise	30
Q No 2	2 OSPE stations	2 x 20 = 40
Q No 3	Journal	10
		Total = 80

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	Exercise	15
Q No 2	2 OSPE stations	20
QNo3	Journal	5
		Total= 40

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Electro-diagnostics**
Course Code	**BPT023**
Course Description	**Core Theory**
Semester	**Semester IV**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes: : At the end of the course, the candidate will be able to	
Cognitive	
CO 1	describe structure and function of nerve and muscle as a base for understanding the electro-diagnostic assessment
CO 2	describe neuro physiology of muscle and effect of various therapeutic currents on nerve-muscle complex, use of tests-Galvanic-Faradic test, Sensory, pain, vibration threshold, Strength duration curves, nerve conduction velocity, needle and surface electromyography
CO 3	knowledge regarding advanced methods of electro diagnosis and its application in pediatric and adult neurological conditions
Psychomotor	
CO 4	apply skills of electro-diagnosis (SD Curve), observe needle and surface EMG and NCV studies and analyze test results
CO 5	interpretation and analysis of assessment and findings

Unit.	**Topics**	**No. of Hrs.**
1	Physiology of resting membrane potential,action potential, Propagation ofAction Potential	**3**
2	Physiology of muscle contraction	
3	Motor unit &recruitment pattern of motor unit – Size principle	**2**
4	**Therapeutic current –as a tool for electro diagnosis** 1. Electrophysiology of muscle &nerve 2. Faradic Galvanic Test, Strength DurationCurve-tests 3. Test for Sensory, Pain, Vibration Threshold/ PainTolerance	**2**
5	**Strength Duration Curves (SDC)** 1. Principle of S-Dcurves 2. Technique ofplotting 3. Interpretation of normal curves 4. Chronaxie andRheobase	**10**
6	**Nerve Conduction Studies (NCV)** 1. Principles , Technique, Reporting, Interpretation	**13**

	2. Fwave 3. Hreflex	
7	**Electromyography (EMG)**	
	1. Definition Instrumentation – Basic components like C.R.O., Filter, Amplifier & Preamplifier, and Types ofElectrodes 2. Needle EMG- Normal & Abnormal E.M.G. pattern 3. SurfaceEMG	**10**
Total		**40**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

RECOMMENDEDTEXTBOOKS

1. O'Sullivan, S. B., Schmitz, T. J., & Fulk, G. (2019). *Physical rehabilitation*. FA Davis
2. Forster A, Clayton EB, Palastanga N. Clayton's electrotherapy: theory andpractice. Bailliŕe Tindall;1985.
3. Robertson V, Ward A, Low J, Reed A, MCSP D. Electrotherapy explained:principles and practice. Elsevier Health Sciences; 2006 May1.
4. U K Misra,J Kalita : Clinical Neuro Physiology; 4thEdition

RECOMMENDED REFERENCE BOOK

1. Bellis E. Electrotherapy: evidence-based practice.

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Electro-diagnostics**
Course Code	**BPT024**
Course Description	**Core Practical**
Semester	**Semester IV**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes: : At the end of the course, the candidate will be able to	
Cognitive	
CO 1	describe structure and function of nerve and muscle as a base for understanding the electro-diagnostic assessment
CO 2	describe neuro physiology of muscle and effect of various therapeutic currents on nerve-muscle complex, use of tests-Galvanic-Faradic test, Sensory, pain, vibration threshold, Strength duration curves, nerve conduction velocity, needle and surface electromyography
CO 3	knowledge regarding advanced methods of electro diagnosis and its application in pediatric and adult neurological conditions
Psychomotor	
CO 4	apply skills of electro-diagnosis (SD Curve), observe needle and surface EMG and NCV studies and analyze test results
CO 5	interpretation and analysis of assessment and findings

Unit	**Topics**	**No of Hrs**
1	a) Faradic GalvanicTest b) S.D.C. c) Sensory, pain, vibration threshold	**60**
2	a) N.C. V Studies	**10**
3	a) Surface E.M.G	**10**
Total Hours		**80**

EXAMINATION SCHEME

Practical examination pattern for University Semester Examination under CBCS - 80 marks

Exercise	Description	Marks
Q No 1	Long Case- (from unit 1)	30
Q No 2	2 OSPE stations (from unit 1-3)	2x20= 40
QNo 3	Journal	10
		Total = 80

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	Case (from unit 1)	15
Q No 2	2 OSPE stations(from unit 1-3)	20
QNo 3	Journal	5
		Total= 40

Internal Assessment marks will be weighted out of 20 marks, for theory and practical, respectively

RECOMMENDEDTEXTBOOKS

1. O'Sullivan, S. B., Schmitz, T. J., & Fulk, G. (2019). *Physical rehabilitation*. FA Davis
2. Forster A, Clayton EB, Palastanga N. Clayton's electrotherapy: theory andpractice. Baillifre Tindall;1985.
3. Robertson V, Ward A, Low J, Reed A, MCSP D. Electrotherapy explained:principles and practice. Elsevier Health Sciences; 2006 May1.
4. U K Misra,J Kalita : Clinical Neuro Physiology; 4th Edition

RECOMMENDED REFERENCE BOOK

Bellis E. Electrotherapy: evidence-based practice

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Pathology & Microbiology**
Course Code	**BPT025**
Course Description	**Core Theory**
Semester	**Semester IV**
Credit per week	**4 credits**
Hours per Semester	**80 hours**

Course Outcomes : At the end of the course, the candidate will be able to	
Cognitive	
CO 1	describe cell injury &response of different tissues, organs and capacity of the body to heal
CO 2	acquire knowledge of general concepts of neoplasia with reference to etiology, gross & microscopic features, & diagnosis, in different tissues, & organs of the body.
CO 3	acquire knowledge of common immunological disorders & their effects on the human body
CO 4	acquire knowledge of prevalent communicable diseases, agents responsible for causing clinical infections, pertaining to C.N.S, C.V.S, musculoskeletal system, respiratory system, genitourinary system, wound infections and newly emerging pathogens
CO 5	describe etiology–pathogenesis, effects & clinical–pathological correlation of common infections & non-infectious diseases.
CO 6	describe common hematological disorders & investigations necessary to diagnose them.
CO 7	describe importance and best practices to prevent development of infections in self and patients (universal safety precautions).

Unit	Topics (Pathology)	No. of Hrs.
1	**GENERAL PATHOLOGY** 1. Cell injury-Causes, Mechanism & Toxic injuries with special referenceto Physical including ionizing radiation, Chemical &Biological 2. Reversible injury (degeneration)- types- morphology-cloudy swelling, hyaline, fattychanges 3. Intra-cellular Accumulation- Mucin,Protein 4. Irreversible cell injury-types of necrosis- Apoptosis–Calcification-Dystrophic &Metastasis 5. Extra-cellularaccumulation-Amylidosis	**03**
2	**INFLAMMATION & REPAIR** 1. Acute inflammation – features, causes, vascular & cellular events	**05**

	2. Morphologicvariations-Ulcers 3. Inflammatory cells &Mediators 4. Chronic inflammation: Causes, Types, Non- specific & Granulomatous– withexamples 5. Wound healing by primary & secondary union, factors promoting &delaying healingprocess 6. Healing at various sites- bone, nerve & muscle g. Regeneration &Repair	
3	**IMMUNO –PATHOLOGY** 1. Immune system: organization-cells- antibodies- regulation of immune responses 2. Hyper-sensitivity (types and examples including graftrejection) 3. Secondary Immuno-deficiency includingH.I.V. 4. Basic concepts of autoimmune disease (emphasis on S.L.E. &R.A.)	**03**
4	**CIRCULATORY DISTURBANCES** 1. Oedema - pathogenesis - types - transudates /exudates 2. Chronic venous congestion- lung,liver 3. Thrombosis – formation – fate –effects 4. Embolism – types- clinicaleffects 5. Infarction – types – commonsites 6. Gangrene – types –etiopathogenesis 7. Shock – Pathogenesis,types	**03**
5	**PATHOLOGIC CHANGES IN VITAMIN DEFICIENCIES**	**01**
6	**GROWTH DISTURBANCES** 1. Atrophy, Hypertrophy, Hypoplasia, Metaplasia, Agenesis, Dysplasia, 2. Neoplasia classification, Histogenesis, Biologic behaviours, difference between Benign & Malignanttumour 3. Malignant neoplasms- grades-stages-local & distalspread 4. Carcinogenesis: Physical, Chemical, Occupational, Heredity,Viral, Nutritional 5. Precancerous lesions & Carcinoma in situ 6. Tumour & host interactions–local and systemic effects-metastatic (special reference to bones andC.N.S.)	**04**
7	**MEDICAL GENETICS (in brief):** **a**. Classifications with examples of Genetic disorders	**01**
8	**SPECIFIC PATHOLOGY** A. C.V.S. 1. Atherosclerosis - Ischemic Heart Diseases – Myocardial Infarction– Pathogenesis/Pathology 2. Hypertension 3. C.C.F. 4. Rheumatic Heart Diseases v. Peripheral VascularDiseases	**11**

	B. Respiratory 1. C.O.P.D. 2. Pneumonia (lobar, bronchial, viral), LungAbscess 3. T. B.: Primary, Secondary – morphologictypes 4. Pleuritis& itscomplications 5. Lung collapse –Atelectasis 6. Occupational Lung diseases (with special emphasis on Silicosis, Asbestosis,Anthracosis) 7. A.R.D.S. C. Neuropathology: 1. Reaction of nervous tissue to injury, infection &ischemia 2. Meningitis: Pyogenic, T.B.M.,Viral 3. Cerebro-Vascular Diseases – Atherosclerosis – Thrombosis, Embolism, Aneurysm, Hypoxia, Infarction &Hemorrhage, Hydrocephalous, Increased IntracranialPressure 4. Leprosy 5. Parkinsonism	
9	**MUSCULAR DISORDERS** a. Classification of Muscular disorders with emphasis on Muscular Dystrophies	**03**
10	**NEURO-MUSCULAR JUNCTION** 1. Myasthenia gravis 2. Myasthenicsyndrome	**01**
11	**BONE & JOINTS** 1. Osteomyelitis – Rickets – Osteomalacia –Osteoporosis 2. Arthritis- degenerative (Osteoarthritis, Calcaneal spur,Periarthritis, Spondylosis) - inflammatory (R.A., Ankylosing Spondylitis,Gout) 3. Miscellaneous-P.I.D.,Haemarthosis 4. Infective-T.B.	**07**
12	**G.I. SYSTEM** 1. Gastric / Duodenal ulcer, Enteric fever, T.B., Enteritis, Gastritis (related to consumption of NSAID)	**01**
13	**ENDOCRINE** 1. Hypo andHyperthyroidism 2. Diabetes	**05**
14	**HEPATIC DISEASES** 1. Cirrhosis – emphasis to systemic effects of portal	**01**
15	**CLINICAL PATHOLOGY** 1. Anemia – (deficiency) – T.C./D.C./ EosinophiliaAnaemia 2. Muscle / Skin / Nervebiopsy 3. Microscopic appearance of muscle necrosis – fattyinfiltration	**01**
Total		**50**

Unit	TOPICS (Microbiology)	No. of Hrs.
1	**GENERAL MICROBIOLOGY** • Introduction &Scope • History – Contributions of Louis Pasteur, RobertKoch • Classification of Micro-Organisms & Morphology of Bacteria (Various parts)– structure andfunctions. • Bacterial GrowthCurve • Growth requirements of Bacteria • Sterilization &Disinfection	**03**
2	**LABORATORY DIAGNOSIS OF INFECTION** • Culture media and identification ofbacteria • Sample collection for smear examination andcultures • Demonstration of Gram staining, ZN staining and culturemedia	**02**
3	**IMMUNOLOGY** • Antigen definition &types • Determinants ofAntigenicity • Antibody definition, different types,functions • Antigen-Antibody reaction – Classification, principle,uses • Agglutination, precipitation& enzyme immunoAssay • Radio immune assay, immunoflorescent, compliment fixation test, Neutralisationtest. • Immune response – Definition &types. • Humoral& CMIdifference • Innate immunity & acquired immunity(Vaccination). • Hypersensitivity – Classification & Type I (indetail) • Hypersensitivity – Type II, III &IV • Autoimmunity	**05**
4	**SYSTEMIC BACTERIOLOGY** • Bacteriology – Morphology, Pathogenicity & Lab diagnosis of importantbacteria. • List of Gram Positive Cocci & infectionscaused • List of Gram Negative Cocci & infectionscaused • Gas gangrene, Diphteria – Gram PositiveBacilli. • Cholera, Typhoid – Gram NegativeBacilli. • MycobacteriumTuberculosis. • Leprosy • AtypicalMycobacterium	**06**

	• Syphillis	
6	**MYCOLOGY** • Introduction & SuperficialMycosis. • Mycetoma & Opportunistic fungalinfection. • Mycology & Virologydemonstration.	**04**
7	**VIROLOGY** • Introduction & GeneralProperties • DNA & RNAviruses. • Measles, congenital viral infections, Rubella, CMV, Herpes,Dengue, Rabies (Clinical feature only.) • HIV, Hepatitis,Polio.	**05**
8	**PARASITOLOGY** • Introduction & Entamoebahistolytica • Malaria, Filaria • Toxoplasma, Cystisarcosis &Echinococcus.	**03**
10	**APPLIED MICROBIOLOGY** • Hospital acquired infections, Universal safety precautions &Waste disposal • Diseases involving Bones, Joints,Nerves, Muscles, Skin,Brain, Cardiopulmonary system, Burn and wound infections	**02**
Total		**30**

RECOMMENDED TEXT BOOKS

1. Mohan, H. (2010). Textbook of pathology., Mohan P, Mohan T, Mohan S.,(eds.),New Delhi: Jaypee Bros.

2. SL, R. (2012). Robbins basic pathology. *New York: Elsevier HealthSciences*.

RECOMMENDED REFERENCE BOOKS

1. Cotran, R. S., Kumar, V. N., & Stanley, R. L. (2004). *Robbins pathologic basis of disease*. WB Saunders CompHny, Philadelphia,USA..

2. Bhende, Y. M., Deodhare, S. G., & Kelkar, S. S. (1976). *General Pathology*. Popular Prakashan.

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question x marks	Total marks
Short answer questions (from units of Pathology 1-15)	5 out of 8	**5**	**5 x 5**	**25**
Short answer questions (from units of microbiology 16-23)	3 out of 5	5	3 x 5	15
				Total = 40

Name of the Programme	Bachelor of Physiotherapy (BPT)
Name of the Course	Sociology
Course Code	BPT026
Course Description	Core theory
Semester	Semester IV
Credit per week	2 credits
Hours per Semester	40 hours

Course Outcomes	
	At the end of the course, the candidate shall be able to
CO 1	describe social factors affecting health, influence of family, social groups, culture, community and governmental policies on health perspectives
CO 2	identify vulnerable population, role of social support systems and NGOs, legislations related to disability and role of medical social worker,
CO 3	describe the interaction between social problems and public health

Unit	Topics	No. of Hrs.
1	**Introduction:** Definition & Relevance with Physiotherapy and social factors affecting Health status, Decision Making in taking treatment.	2
2	**Socialization**: Definition, Influence, of Social Factors, on Personality, Socialization in the Hospital & Rehabilitation of the patients.	2
3	**Social Groups:** Concepts, Influence of formal & informal groups of Health & Diseases, Role of Primary & Secondary Groups in the Hospital & Rehabilitation Setting.	2
4	**Family:** Influence on human personality, Role of family in health and disease	2
5	**Community Role**: Rural & Urban communities in Public Health, Role of community in determining Beliefs, Practices & Home Remedies in Treatment	4
6	**Culture:** Component's impact on human behavior, Role of community in determining beliefs, practices and health seeking behavior and home remedies	2
7	**Social Change Factors:** Human Adaptation, Stress, Deviance, Health Program Role of Social Planning in the improvement of Health & in Rehabilitation.	2
8	**Social Control**: Definition, Role of norms, Folkways, Customs, Morals, Religion, Law & other means of social controls in the regulation of Human Behavior, Social Deviance & Disease	2
9	**Population Groups** : a) Children: Street children, Child labor, Juveniledelinquency. b) Women's: Victims of domestic violence and addiction, C.S.W., physically and /or mentallychallenged c) Role of NGOs, Social supportsystems	8

10	Social Security & Social Legislation in relation to the Disabled	**4**
11	Role of a Medical Social Worker	**2**
12	Sociology of Brain Death and/ or Organ donation:	**4**
13	**Social Problems:** Population explosion, Poverty, Dowry, Illiteracy- Causes, prevention & Control measures.	**4**
Total		**40**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks / question	Question x marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8 x 5	40
				Total= 40

RECOMMENDED TEXT BOOKS

1. Bhushan, V., & Sachdeva, D. R. (2005). *Introduction to sociology*. KitabMahal.

2. Indian Social Problems - Madan, Vol-I-Madras

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Research Methodology**
Course Code	**BPT027**
Course Description	**Core Theory**
Semester	**Semester IV**
Credit per week	**2 credits**
Hours per Semester	**40 hours**

Course Outcomes	
CO 1	enumerate the steps in Physiotherapy research process.
CO 2	describe the importance & use of biostatistics for research work.
CO 3	describe the PICO format, methods of reviewing literature, formulatinga hypothesis, collecting data, writing research proposal and researchethics
CO 4	describe study designs, define sampling techniques, discuss the concept of probability and probability distribution, application of inferential statistics and descriptive analysis
CO 5	demonstrate skill of preparing a research proposal, data tabulation, graphical representation of data and research report

Unit	Topics	No. of Hrs.
1	**RESEARCH IN PHYSIOTHERAPY** a. Introduction b. Research for Physiotherapist: Why? How?When? c. Research – Definition, concept, purpose,approaches d. Internet sites forPhysiotherapists	**05**
2	**RESEARCH FUNDAMENTALS** a. Definemeasurement b. Measurementframework c. Scales ofmeasurement d. Pilot Study e. Types ofvariables f. Reliability &Validity g. Drawing Tables, Graphs, Masterchart	**05**
3	**WRITING A RESEARCH PROPOSAL** a. Defining aproblem b. Review ofLiterature c. Formulating a question, Operational Definition d. Inclusion & Exclusioncriteria e. Methodology- Forming groups Data collection & method foranalysis f. Informed Consent Steps of documentation – Title to Scope ofstudy	**05**

4	**RESEARCH ETHICS** a. Importance of Ethics inResearch b. Main ethical issues in human subjects"research c. Main ethical principles that govern research with humansubjects d. Components of an ethically valid informed consent forresearch	**05**
5	**OVERVIEW OF STUDY DESIGNS** a. Observational- i. Descriptive-Case study/ series, Cross sectional,Normative, Correlational ii. Analytical; case control,cohort b. Experimental- True & quasiexperimental	**03**
6	**SAMPLING** a. Random and non-randomsampling. b. Various methods of sampling – simple random, stratified, systematic, cluster and multistage. Sampling and non-sampling errors and methods of minimizing theseerrors.	**03**
7	**BASIC PROBABILITY DISTRIBUTIONS AND SAMPLING DISTRIBUTIONS** a. Concept of probability and probabilitydistribution. b. Normal, Poisson and Binomial distributions, parameters andapplication. c. Concept of samplingdistributions. d. Standard error and confidence intervals. e. Skewness andKurtosis	**02**
8	**TESTS OF SIGNIFICANCE** a. Basics of testing of hypothesis – Null and alternate hypothesis, type Iand type II errors, level of significance and power of the test, pvalue. b. Tests of significance (parametric) - t – test (paired and unpaired), Chi square test and test of proportion, one way analysis ofvariance. c. Repeated measures analysis ofvariance. d. Tests of significance (non-parametric)-Mann-Whitney u test, Wilcoxontest, e. Kruskal-Wallis analysis of variance. Friedman's analysis ofvariance.	**03**
9	**CORRELATION AND REGRESSION** a. Simple correlation – Pearson's and Spearman's; testing the significance of correlation coefficient, linear and multiple regressions.	**01**
10	**STATISTICAL DATA** a. Tabulation, Calculation of central tendency and dispersion, Using software packages, Analysis, Presentation of data in diagrammatic & Graphic form	**03**
11	**RESEARCH REPORT** a. Overview, Types and Publication	**05**
Total		**40**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
				Total = 40

RECOMMENDED TEXT BOOK

1. Mahajan, B. K. (2002). *Methods in biostatistics*. Jaypee BrothersPublishers.

2. Hicks, C. (1995). *Research for physiotherapists: project design and analysis*. Churchill Livingstone.

ELECTIVE COURSES

Skill Elective Course (SEC)	
Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Indian Human Movement Science II – Dance & Sports**
Course Code	**SEC002**
Course Description	**Skill Elective Course – Theory**
Semester	**Semester IV**
Credits per semester	**2 credits**
Hours per semester	**60 hours**

Course Learning Outcomes: The student will be able to	
CO 1	Describe the science and art of typical movements in traditional Indian dance forms and sports.
CO 2	gain skills in performing basic movements of one traditional dance form and sport
CO 3	analyze kinematics and muscle work involved in traditional Indian dance and sport movement for potential use in therapy

Unit	Topics	No. of Hrs.
1	Origin and History ofdance	01
2	7 classical dance styles of India	01
3	Contribution of Nathuvanars	01
4	Folk dances of India	01
5	Namaskar- hands, legs, sthanakas	02
6	Hasta Bhedas – Hasta Prachar, Rechaka, Karna, Asamyuta Hasta, Samyuta hasta-	02
7	Padabhedas- Padaprachar, Shadvidhpada	01
8	Shim bheda- head gestures	01
9	Dhrishtibheda- eye gestures	01
10	Bhramari, Chari, Gati	01
11	Dashavatara	01
12	Sthanakas, Mandalas, Dev hasta	01
13	Adavus – Tattaadavu, Natta adavu, Chatushram,Vardhaman,Uttandvanchita, tattamettu , Kuditamettu, Periyaadavu – Kinematics and muscle work	01
14	Ginatom	01
15	History of sports in India	01
16	Malkhamb – kinematics and muscle work	01
17	Lezim- kinematics and muscle work	01
18	Kabbadi- kinematics and muscle work	01
Total		**20**

Practical

Sr. No.	Topics	No. of Hrs.
1	7 classical dance styles of India	05
2	Namaskar- hands, legs, sthanakas	05
3	Hasta Bhedas – Hasta Prachar, Rechaka, Karna, Asamyuta Hasta, Samyuta hasta	05
4	Padabhedas- Padaprachar, Shadvidhpada	05
5	Shim bheda- head gestures	05
6	Dhrishtibheda- eye gestures	05
7	Bhramari, Chari, Gati	05
8	Dashavatara	05
9	Sthanakas, Mandalas, Dev hasta	05
10	Adavus – Tattaadavu, Natta adavu, Chatushram,Vardhaman,Uttandvanchita, tattamettu , Kuditamettu, Periyaadavu	05
11	Ginatom	05
12	Malkhamb	03
13	Lezim	03
14	Kabbadi	03
Total		**60**

RECOMMENDED TEXT BOOKS:

1. Nrityawishkar-Bharat Natyam, 3rd edition 2009 – Published by Shri Sarfojiraje Bhosale Book House
2. Indian Classical Dance – Tradition in Transition- Leela Venkataraman , Avinash Pasricha-Lustre press roli Books 2005

RECOMMENDED REFERENCE BOOKS:

1. Franklin, E. (2003). *Conditioning for Dance: Training for Peak Performance in All Dance Forms*. Human Kinetics, PO Box 5076, Champaign, IL61825-5076.
2. Clarkson, P. M., & Skrinar, M. (1988). *Science of dance training*. Champaign,IL: HumanKinetics.

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question x marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8 x 5	40
				Total = 40

Ability Enhancement Elective Course (AEEC)	
Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Biostatistics & SPSS**
Course Code	**AEEC003**
Course Description	**Ability Enhancement Elective Course – Theory**
Semester	**Semester IV**
Credits per semester	**2 credits**
Hours per semester	**60 hours**

Course Learning Outcomes: The student will be able to	
CO 1	Enumerate the steps in Physiotherapy research process.
CO 2	Describe the importance & use of biostatistics for research work.
CO 3	Acquire skills of reviewing literature, formulating a hypothesis, collecting data, writing research proposal etc.
CO 4	Acquire skills for analyzing data in SPSS software and interpret the results
CO 5	Acquire skills in writing a research report

Sr. No.	Topics	No. of Hrs.
1	**INTRODUCTION TO BIOSTATISTICS**	**1**
	a. Introduction to biostatistics	
2	**SOURCES & PRESENTATION OF DATA**	**3**
	a. Statisticaldata b. Methods ofpresentation c. Presentation / illustration of Quantitativedata d. Presentation / illustration of Qualitativedata	
3	**MEASURES OF LOCATION**	**3**
	a. Measures of Central tendency –Averages b. Measures of Location –Percentiles	
4	**NORMAL DISTRIBUTION AND NORMAL CURVE**	**3**
	a. Demonstration of normaldistribution b. Normalcurve c. Asymmetricaldistributions	

	d. Normal probability distributions	
5	**SAMPLING**	**3**
	a. Samplingcharacteristics b. Samplingtechniques c. Samplingdistribution	
6	**TESTS OF SIGNIFICANCE**	**4**
	a. Significance of difference inMeans b. Significance of difference in Proportion of largesamples c. The Chi- squaretest	
7	**CORRELATION AND REGRESSION**	**3**
	a. Measures of Relationship between continuousvariables b. Types ofCorrelation c. Calculation of Correlation Coefficient from ungroupedseries. d. Calculation of Correlation Coefficient from groupedseries. e. Regression f. Calculation of RegressionCoefficient	
8	**DESIGNING & METHODOLOGY**	**3**
	a. Steps in Methodology & designing of protocol.	
9	**SPSS SOFTWARE (PRACTICAL)**	**5**
	a. Starting SPSS &introduction b. Data entry and importing datafiles c. Data view & Variableview	
10	**ANALYZING DATA USING SPSS (PRACTICAL)**	**12**
	a. Descriptivestatistics b. Analyzing – Frequencytables c. Saving modified datatables d. Coding and recodingvariables	

	e. Specific values labels	
11	**STATISTICAL TESTS USING SPSS (PRACTICAL)**	**20**
	a. T- Test : One sample T-test, Independent T-test, Paired SampleT-test b. Chi-Square Test ofindependence c. Bivariatecorrelations d. Linearregression e. Interpreting output charts andcrosstabs.	
TOTAL HOURS		**60**

RECOMMENDED TEXT BOOK

1. Mahajan, B. K. (2002). *Methods in biostatistics*. Jaypee BrothersPublishers.

2. Hicks, C. (1995). *Research for physiotherapists: project design and analysis*. Churchill Livingstone.

RECOMMENDED REFERENCE BOOKS:

1. Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.

Examination Scheme

This course will not be assessed as Semester University Examination. Assessment willbe conducted at constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	**No. of questions**	**Marks/ question**	**Question X marks**	**Total marks**
Section 1				
Short answer questions	8 out of 10	5	8 x 5	40
				Total = 40

Ability Enhancement Elective Course (AEEC)	
Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Medical Ethics, Human rights and Professional values**
Course Code	**AEEC004**
Course Description	**Ability Enhancement Elective Course – Theory**
Semester	**Semester IV**
Credits per semester	**2 credits**
Hours per semester	**60 hours**

Course Learning Outcomes: The student will be able to	
Cognitive	
CO 1	describe moral values and meaning of ethics
CO 2	acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals
Pyschomotor	
CO 3	apply psychomotor skills for physiotherapist-patient relationship.
CO 4	Skill to evaluate and make decision for plan of management based on socio-cultural values and referral practice
CO 5	examine ethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency
CO 6	record patients concerns and preferences, and respect the rights of patients to reach decisions with their doctor about their treatment and care and to refuse or limit treatment.
Affective	
CO 7	apply behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
CO8	develop bed side behavior, respect & maintain patients‟ confidentiality
CO 9	list patients' questions, their understanding of condition and treatment options, their views, concerns, values, preferences and extent to which patients want to be involved in decision-making regarding their care and treatment.
CO 10	communicate clearly, sensitively and effectively with patients, caregivers, and colleagues from the medical and other professions, by listening, sharing and responding.
CO 11	communicate clearly, sensitively and effectively with individuals and groups regardless of their age, social, cultural or ethnic backgrounds or their disabilities including when English is not the patient's first language.
CO 12	communicate by spoken, written and electronic methods (including medical records), and be aware of other methods of communication used by patients.
CO 13	communicate appropriately in difficult circumstances, such as when breaking bad news, and when discussing sensitive issues, such as alcohol consumption, smoking or obesity, with difficult or violent patients, people with mental illness and with vulnerable population

Unit	Topics	No. of Hrs.
1	Concept of morality and ethics	01
2	Concept of professionalism and Professional dress code	01
3	Ethical code of conduct	01
4	Communication skills	01
5	a. Physiotherapist -PatientRelationship b. Interviewing -Types of interview, Skills ofinterviewing	01
6	Collecting data on psychosocial factors in Medicine / Surgery / Reproductive Health / Pediatrics	01
7	Inter professional communication.	02
8	Ethics in clinical practice	02
9	Roles of Physiotherapist as patient manager, Consultant, Critical inquirer, Educator, Administration	02
10	Laws and regulations	01
11	Professional development, competence and expertise	01
12	Professional bodies	01
13	Ethics in Research	02
14	Ethics in Teaching	02
15	Role of W.C.P.T. & Council	01
Total		**20**

RECOMMENDED TEXT BOOKS:

1. Percival, T. (2014). *Medical ethics*. Cambridge UniversityPress.
2. Dunn, M., & Hope, T. (2018). *Medical ethics: a very short introduction*. Oxford UniversityPress.
3. Blackburn, S. (2003). *Ethics: A very short introduction* (Vol. 80). Oxford University Press.

RECOMMENDED REFERENCE BOOKS:

1. Hébert, P. C., & Rosen, W. (2009). *Doing right: a practical guide to ethics for medical trainees and physicians* (p. 352). Don Mills, ON: Oxford UniversityPress.
2. American Medical Association, & New York Academy of Medicine. (1848). *Code of medical ethics*. H. Ludwig &Company.

Examination Scheme

This course will not be assessed as Semester University Examination. Assessment willbe conducted at constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
				Total = 40

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Basic Skills in patient care**
Course Code	**BPTCLT004**
Course Description	**Clinical Training**
Semester	**Semester IV**
Credits per semester	**4 credits**
Hours per semester	**200 hours**

Students will be introduced to basic application of Physiotherapeutic skills, ethical consideration along with research methodology

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	10
Q No 2	OSPE Station 2	10
Q No 3	OSPE Station 3	10
Q No 4	OSPE Station4	10
		Total = 40

*Students will be evaluated as per their level of knowledge level

SEMESTER V (25-30 months)

Course Code	Course Title	Course Description	Theory Hours	Practical Hours	Clinical Hours	Credits
BPT028	**Medical and Surgical aspects of Musculoskeletal conditions**	**Core Theory**	**80**	**-**	**-**	**4**
BPT029	**Medical and surgical aspects of cardiovascular Respiratory disorders and general medical conditions**	**Core Theory**	**80**	**-**	**-**	**4**
BPT030	**Diagnosis movement dysfunction and ICF Theory**	**Core Theory**	**20**	**0**	**-**	**1**
BPT031	**Diagnosis movement dysfunction and ICF Practical**	**Core Practical**	**0**	**40**		**1**
BPT032	**Public Health**	**Core Theory**	**60**		**-**	**3**
GEC001/GEC002	**2D motion capture / Device Innovation and IPR**	**Generic Elective Theory and Practical**	**20**	**40**	**-**	**2**
AECC005/ AECC006	**Diagnostic Radiology/ Pulmonary Function test**	**Ability Enhancement Elective Course Theory and Practical**	**20**	**40**	**-**	**2**
BPT CLT005	**Basic skills in patient care**	**Clinical Training**	**280**	**120**	**320**	**5**

	Bachelor of Physiotherapy (BPT)
Name of the Course	**Medical and surgical aspects of Musculoskeletal conditions**
Course Code	**BPT-028**
Course Description	**Core Theory**
Credit per Semester	**4 credits**
Hours per Semester	**80 hours**

Course Learning Outcomes: The student will be able to	
CO 1	Explain the, etiology, pathophysiology, clinical manifestations & m e d i c a l / surgical management of various traumatic & non-traumatic (degenerative, inflammatory, infective, autoimmune) musculoskeletal conditions.
CO 2	perform clinical examination; apply and interpret special tests in both preoperative and post-operative patients
CO 3	interpret investigations such as X-ray of spine & extremities and correlate radiological findings with clinical findings
CO 4	Interpret pathological / biochemical studies pertaining to musculoskeletal conditions.

Unit	Topics	Hours
1	**Traumatic Bony and Soft tissue conditions – Upper Quadrant**	**25**
	• Definition, Classification, Causes, Clinical features, healing of fractures &Complication • Principles of general management of fracture of the upperextremity • Definition, General description, Principles of general description and management of traumatic dislocation and subluxation of common joints- shoulder joint, Acromioclavicular joint, Elbowjoin • Introduction, Anatomy & physiology general description, grade of injury and management of injuries of ligaments, bursae, fascia, muscles & tendons of upperextremity • Injuries of Cervico-Thoracic region,Whiplash of the cervical spine, D4 Syndrome • Crush injuries ofhand • Definition,Cause, Classification of congenital and acquired deformities of upper quadrant - Physical and clinical and radiological features, Complications, principles of medical and surgical management of the deformities - Sprengel‟s shoulder, Cubitus varus, Cubitus valgus, Dupuytren‟s contracture, Carpel tunnel syndrome /Entrapment nerve injuries, Compartment syndrome, Ischemic contracture	

2	**Traumatic Bony and soft tissue conditions – Lower Quadrant**	25
	• Definition, Classification, Causes, Clinical features, healing offractures & Complications of fracture of the lower extremity, lumbo-sacral spine andpelvis • Management of traumatic dislocation and subluxation of hip, knee and anklejoint • Management of injuries of ligaments, bursae, fascia, muscles &tendons of lower extremity and crush injuries offoot • Spinal deformities: Scoliosis, Kyphosis, Lordosis, Flat back,Torticollis • Congenital and acquired deformities of the lower limb:C.D.H., coxa vara , coxa valga , anteversion, Retroversion , Genu valgum, Genu varum, Genu recurvatum, C.D.K., Talipes calcaneous equinus, varus &valgus, Pes cavus, Pes planus, Hallux valgus & varus, Hallux rigidus and hammer toe	
3	**Degenerative and inflammatory disorders**	10
	Osteo-orthosis/Arthritis, Spondylosis, Spondylolysis and listhesis, Pyogenic arthritis, Rheumatoid arthritis, Juvenile arthritis, Tuberculous arthritis, Gouty arthritis, Haemophilic arthritis, Neuropathic arthritis, Ankylosing spondylitis, Psoriatic arthritis	
4	**Rheumatological disorders**	10
	Rheumatoid Arthritis, S L E, S S A, Gout, Polymyositis, Fibro myalgia, Ankylosing spondylitis	
5	**Management of Metabolic Disorders**- Osteoporosis, Osteomalacia & Rickets	10
	Total Hours	**80**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

RECOMMEMDED TEXT BOOKS

1. Adams's Outline of Fractures, Including JointInjuries
2. Book by A. Hamish R. W. Simpson, David L. Hamblen, and John CranfordAdams
3. Outline ofFractures–Adams
4. OutlineofOrthopedics.--Adams
5. Apley’s systems of orthopedics and fractures by Louis Solomon, 9thedition
6. Short practice of surgery-- BaileyandLove
7. Textbook of SurgeryDAS

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Medical and surgical aspects of cardiovascular, Respiratory disorders and general medical conditions**
Course Code	**BPT-029**
Course Description	**Core Theory**
Credit per Semester	**4 credits**
Hours per Semester	**80 hours**

Course Learning Outcomes: The student will be able to	
CO 1	Explain etiology, pathophysiology, clinical signs, symptoms & management of cardiovascular, pulmonary and general medical conditions.
CO 2	Acquire skill of history taking and clinical examination of respiratory, cardio-vascular system as a part of clinical teaching.
CO 3	Interpret auscultation findings related to respiratory system.
CO 4	Interpret Chest X-ray,Blood gas analysis, Pulmonary Function Tests& Haematological studies relevant to cardiovascular, respiratory and general medical conditions.
CO5	Describe the principles of management in the Intensive Care Unit.
CO6	Acquire the skills of Basic Life Support.
CO7	Acquire knowledge for drugs used in each condition to understand its effect and its medical uses and influence on Physiotherapy management.

Unit	Topics	Hours
1	**Cardio-vascular diseases**	**20**
	• Hypertension – systemic • Cardiac Conditions- I.H.D. (Angina, Myocardial infarction), R.H.D, Infective Endocarditis, Cardio myopathy, HeartFailure • Valvular Heart Disease -Congenital,Acquired • Congenital HeartDisease • Peripheral arterial diseases, Varicose veins and PVD, lymphatic disorders • Congenital vasculardisorders • Investigations- Basics of E.C.G. [Normal & Abnormal (Ischaemia, Infarction&Arrhythmias)],Observationofconductionofstressteston patient, 2D Echo (Ejection Fraction & Wall motion Abnormality)	
2	**Respiratory Diseases**	20
	• Common Infectious diseases like Tuberculosis, Pneumonia, Lung Abscess, Bronchiectasis, SARS-CoV, MERS-CoV, andCOVID-19. • Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydropneumothorax, andEmpyema. • ILD & Occupational lung diseases like Silicosis, Asbestosis,	

	Pneumoconiosis, Brucellosis, Farmer's Lung. • Obstructive Airway Diseases (C.O.P.D. with Cor Pulmonale, Pulmonary Hypertension, Bronchial, Asthma & CysticFibrosis) • Intensive Care Unit- Infrastructure, Instrumentation, Mechanical Ventilation (settings & monitoring), Assessment, monitoring & management of patient in I.C.U. • Investigation: Normal & Abnormal- Chest X-ray, Blood Gas Analysis, PFT(Observation of conduction onpatient) • Management of infectious disease as COVID-19, Severe Acute Respiratory Syndrome Middle East Respiratory Syndrome and others	
3	**General medical conditions**	10
	• GeneralMedicine • Disorders of Endocrine system (Diabetes) Introduction, pathophysiology, types, role of physical activity, complications of diabetes (autonomic neuropathy, myopathy, weakness) &medications. • Thyroid, Pituitary & Adrenal conditions Cushing"ssyndrome • Obesity • Nutrition Deficiency Disease (Rickets, Vit. E, Vit. D, Vit. B , micro nutrients,(Zn,Se) • Intoxication (Drug abuse; Alcohol, smoking, cocainedependence	
4	**General Surgeries**	15
	• Types of Anesthesia, Effect, indications and contraindications and common postoperativecomplications • Hemorrhage and Shock, classification, description andtreatment • Water & Electrolyteimbalance • Inflammation – acute & chronic-signs, symptoms, complications & management • Wounds & Ulcers, Cellulitis – classification, healing process, management, bandaging, Dressing solutions and its uses and debridement Procedure, hand washing and universalprecautions. • Common abdominal surgical incisions – classification, indications, opening – closure, advantages and disadvantages, complications (including burst abdomen and feacal fistula), minimally invasive surgery. • Mastectomy and oncosurgery– approach, complications &management • Amputation – types, sites, complications &management • Burns – causes, complications, classification &management • Hernias-surgery, precautions andcomplications • Transplantation approach, risk problems related to donor and receipient, precautions.	
5	**Cardio-Thoracic Surgeries**	15

	• Introduction, Cardiorespiratory resuscitation, cardiopulmonary bypass, Special investigation procedures in cardiac surgery, Basic techniques in cardiacsurgeryapproach,incisions,Typesofoperation,Complications	
	of cardiac surgery, Lines, drains and tubes. • Brief description of indications, surgery, complicationsfor: Surgeries of thorax, lung, pleura andpericardium Surgery for coronary artery disease Valvular surgeries Surgery for Congenital Heart Disease Peripheral arterial disorder, Burger‟s disease, Raeynaud‟s disease and Aneurysm Gangrene, Amputation, DVT	
	Total Hours	**80**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions (from unit 1-5)	8 out of 10	5	8x5	40
Section 2				
Long answer question (from 2-5)	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40 marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers(unit 1-5)	4	5	4 x 5	20
Long answers (unit 2-5)	2	10	2 x 10	20
Total				**Total= 40**

RECOMMENDED TEXT BOOKS:

1. Short practice of surgery- Bailey andLove
2. A manual on Clinical surgery- S.Das
3. A textbook of surgery- S. Das

	Bachelor of Physiotherapy
Name of the Course	**Diagnosis of movement dysfunction and ICF Theory**
Course Code	**BPT030**
Course Description	**Core Theory**
Credit per Semester	**1 credits**
Hours per Semester	**20 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	explain movement dysfunction and models used to evaluate function- ICICDH, ICF
CO 2	explain choice of appropriate tools/instruments of assessment in musculoskeletal, neurological and cardio-vascular and respiratory conditions
CO 3	explain principles of manipulative skills, neurotherapeutic skills and skills of cardiopulmonary care and resuscitation
CO 4	document evaluation of patient based on ICF model identifying structural impairments, functional impairments, participation, contextualfactors, performance and capacity measurement
Psychomotor	
At the end of the course, the candidate will be able to:	
CO 4	apply evaluation methods to measure body functions related to tissue mechanics, apply sound biomechanical principles for appropriate handling techniques that is ensuring privacy, positioning of body parts to betreated, position of therapist, , manual techniques, lifting and transfer techniques
CO 5	apply evaluation methods to measure body function related to motor control affecting activity and participation, quality of life and independence
CO 6	apply skills of manual therapy musculoskeletal, neurotherapeutics and cardiovascular and respiratory skills on models (Laboratorywork)
Affective	
CO 7	use ethical, safe, gender sensitive methods to evaluate and treat movement dysfunction
CO 8	demonstrate ability to execute ethical, evidence-based practices, deliver effective, environment-friendly, physiotherapy management techniques appropriate to patient's clinical condition within constraints of available resources
CO 9	communicate with patients and their families/caregivers regarding the need and uses of various assessment techniques, inform risks and benefits of therapy

Unit	Topics	Hours
1	Functional Diagnosis using International Classification of Function, Disability & Health (I.C.F.) (Applicable for all units mentioned below) and Treatment Techniques	**3**
2	**Special Tests** Cervical Spine: Foraminal compression, Distraction, Shoulder depression, vertebral artery, Dizziness tests Shoulder: Yergason's, Speed's, Drop- Arm, Supraspinatus, Impingement, Anterior & Posterior Apprehension, Allen's, Adson's test. Elbow: Cozen's, Miller's, Tinel's sign Forearm, Wrist &Hand: Phalen's,Bunnel-Littler, Froment's sign Lumbar Spine: Schober's, SLR, Prone,Knee Bending, Slump. Sacro Iliac joint: Faber- Patrick's, Gaenslen, Gillet, March's test Hip: Nelaton"s line, Bryant"s triangle, Thomas, Ober"s, Tripod sign, Trendlenburg sign Knee: Tests for collateral & cruciate ligaments (valgus, varus, Lachman, Drawer's, McMurray's, Fluctuation, Patellar tap, Q- angle, Clarke's test Ankle & Foot: Anterior Drawer, Talar Tilt, Homan"s & Moses test	4
3	**Response of soft tissues to trauma :** Trigger points, Spasm, Ligament Sprains, Muscle Strains	1
4	**Basics in Manual Therapy with Clinical Reasoning:** Assessment of Articular and extra-articular soft tissue status Contractile tissues, Non contractile tissues, Examination of joint integrity, Accessory movement, End feel Examination of musculoskeletal Dysfunction: Subjective examination, Objective examination, Special tests, Functional Diagnosis using ICF	2
5	**Basic principles, indications, contra indications of mobilization skill for joints and Soft tissues**: Maitland, Mulligan, Kaltenborn, Mckenzie, Cyriax, Myofascial Release Technique, Muscle Energy Technique, Neural Tissue Mobilization (Neuro Dynamic Testing)	2
6	**Cardiorespiratory techniques:** Vital parameters, Chest expansion, Symmetry of chest movement, Breath Holding Test, Breath Sounds, Rate of Perceived Exertion (R.P.E.), 6minute walk test , Auscultation, Breathing exercises, postural drainage, thoracic expansion, rib mobilization, Respiratory PNF	**2**
7	**Energy Systems & Exercise Physiology:** Physiological response to immobility and activity. Aerobic & Anaerobic metabolisms	3
8	**Fitness & Health** Screening for risk factors Body composition-B.M.I., use of skin fold calipers, Girth measurement Physical fitness: Flexibility, Strength, Endurance, Agility	3

	Physical Activity Readiness Questionnaire Screening for health and fitness in childhood, adulthood and geriatric group Quality of life Principles & components of exercise prescription for healthy	
	Total	**20**

RECOMMENDED TEXT BOOKS

1. Orthopaedic PhysicalExamination–Magee
2. Clinical Electro Therapy – Nelson – Currier --- Appleton &Langepublication
3. Clinical Electromyography–Mishra
4. Therapeutic Exercises - Colby&Kisner
5. Physical Rehabilitation, Assessment and treatment - Susan BO"sSullivan
6. Neurological Examination -JohnPatten

RECOMMENDED REFERENCE BOOKS

1. Maitland"s book onManualtherapy,
2. Mobilisation of Extremities – Kaltenborn
3. Clinical Electromyography–Kimura
4. Orthopaedic Physical therapy–Donnatelli
5. NAGS, SNAGS and MWMS - BrianMulligan
6. Exercise & Heart–Wenger
7. Exercise Physiology – WilliamDMc"Ardle
8. Facilitation techniques based on NDT principles - Lois BlyAllisonWhiteside
9. Movement therapy in Hemiplegia–Brunnstrom
10. Cash textbook of Physiotherapy in neurological conditions -PatriciaDownie
11. Physical Dysfunction -TromblyScoot
12. Infant Motor Development-JanPiek
13. Neurology & Neurosurgery Illustrated (3rd edition)-Bone&Callander
14. Neuro-developmental Therapy–JanettHowle

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ Question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

Internal Assessment marks will be weighted out of 20 marks.

	Bachelor of Physiotherapy
Name of the Course	**Diagnosis of movement dysfunction and ICF Practical**
Course Code	**BPT031**
Course Description	**Core Practical**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	explain movement dysfunction and models used to evaluate function- ICICDH, ICF
CO 2	explain choice of appropriate tools/instruments of assessment in musculoskeletal, neurological and cardio-vascular and respiratory conditions
CO 3	explain principles of manipulative skills, neurotherapeutic skills and skills of cardiopulmonary care and resuscitation
Psychomotor	
At the end of the course, the candidate will be able to:	
CO 4	apply evaluation methods to measure body functions related to tissue mechanics,applysoundbiomechanicalprinciplesforappropriatehandling techniques that is ensuring privacy, positioning of body parts to be treated, position of therapist, , manual techniques, lifting and transfer techniques
CO 5	apply evaluation methods to measure body function related to motor control affecting activity and participation, quality of life and independence
CO 6	apply skills of manual therapy musculoskeletal, neurotherapeutics and cardiovascular and respiratory skills on models (Laboratorywork)
Affective	
CO 7	use ethical, safe, gender sensitive methods to evaluate and treat movement dysfunction
CO 8	demonstrate ability to execute ethical, evidence-based practices, deliver effective, environment-friendly, physiotherapy management techniques appropriate to patient's clinical condition within constraints of available resources
CO 9	communicate with patients and their families/caregivers regarding the need and uses of various assessment techniques, inform risks and benefits of therapy

Unit	Topics	Hours
1	**Musculoskeletal Assessment and management** Soft tissue flexibility, Joint mobility, Muscle strength & Endurance, Trick movement, Sensations, Limb length, Abnormal posture, Gait deviations due to musculoskeletal dysfunction	4
2	**Special Tests** Cervical Spine: Foraminal compression, Distraction, Shoulder depression, vertebral artery, Dizziness tests Shoulder: Yergason's, Speed's, Drop- Arm, Supraspinatus, Impingement, Anterior & Posterior Apprehension, Allen's, Adson's test. Elbow: Cozen's, Miller's, Tinel's sign Forearm, Wrist &Hand: Phalen's,Bunnel-Littler, Froment's sign Lumbar Spine: Schober's, SLR, Prone,Knee Bending, Slump. Sacro Iliac joint: Faber- Patrick's, Gaenslen, Gillet, March's test Hip: Nelaton"s line, Bryant"s triangle, Thomas, Ober"s, Tripod sign, Trendlenburg sign Knee: Tests for collateral & cruciate ligaments (valgus, varus, Lachman, Drawer's, McMurray's, Fluctuation, Patellar tap, Q- angle, Clarke's test Ankle & Foot: Anterior Drawer, Talar Tilt, Homan"s & Moses test	4
3	**Response of soft tissues to trauma :** Trigger points, Spasm, Ligament Sprains, Muscle Strains	2
5	**Basics in Manual Therapy and Applications with Clinical Reasoning:** Assessment of Articular and extra-articular soft tissue status Contractile tissues, Non contractile tissues, Examination of joint integrity, Accessory movement, End feel Examination of musculoskeletal Dysfunction: Subjective examination, Objective examination, Special tests, Functional Diagnosis using ICF	4
6	**Assessment of Pain:** Types of pain: Somatic, Somatic referred, Neurogenic, Visceral Subjective Assessment: Location, duration, progression, distribution, quality, diurnal variations, modifying factors, Severity, nature of pain, tissue irritability Objective Measurement & Documentation- Visual Analogue Scale (V.A.S), Numerical Rating Scale(N.R.S.), McGill"s modified questionnaire(including Body Charts)	2
7	**Basic principles, indications, contra indications of mobilization skill for joints and Soft tissues**: Maitland, Mulligan, Kaltenborn, Mckenzie, Cyriax, Myofascial Release Technique, Muscle Energy Technique, Neural Tissue Mobilization (Neuro Dynamic Testing)	4
8	**Cardiorespiratory Assessment and management techniques:** Vital parameters, Chest expansion, Symmetry of chest movement, Breath Holding Test, Breath Sounds, Rate of Perceived Exertion (R.P.E.), 6minute walk test , Auscultation, Breathing exercises, postural drainage, thoracic expansion, rib mobilization, Respiratory PNF	4

9	**Energy Systems & Exercise Physiology:** Evaluation of Functional Capacity using sub maximal tests (Exercise Tolerance – Six Minutes Walk test)Theoretical bases of different protocols for maximal exercise testing (e.g.: Bruce Protocol, Modified Bruce Protocol, Balke) Interpretation of reports – A.B.G., P.F.T., P.E.F.R., E.C.G.- (Normal & Variations due to Ischemia & Infarction), X-ray Chest, Biochemical Reports Ankle Brachial Index Tests for Peripheral Arterial & Venous circulation	4
10	**Assessment of Fitness & Health** Screening for risk factors Body composition-B.M.I., use of skin fold calipers, Girth measurement Physical fitness: Flexibility, Strength, Endurance, Agility Physical Activity Readiness Questionnaire Screening for health and fitness in childhood, adulthood and geriatric group Quality of life Principles & components of exercise prescription for healthy	4
11	**Neurological Assessment and Movement Dysfunction** Higher functions, Cranial nerves, Sensations , sensory organization & body image, Joint mobility, Tone, Reflexes-Superficial & Deep, Voluntary control, Muscle Strength, Co-ordination, Balance, Endurance, Trick movements, Limb Length, Posture deviations, Gait deviations due to neurological dysfunction, Functional Diagnosis using I.C.F., Interpretation of Electro diagnostic findings, routine Biochemical investigations	4
12	**Basics in Neuro Therapeutics Skills & Applications with Clinical reasoning-** Principles, Technique & Indications for Application of Bobath, Neuro Developmental Technique, Rood's Technique, P.N.F., Brunnstrom, Techniques of Motor Relearning Program (M.R.P.)	4
	Total	40

RECOMMENDED TEXT BOOKS

1. Orthopaedic PhysicalExamination–Magee
2. Clinical Electro Therapy – Nelson – Currier --- Appleton &Langepublication
3. Clinical Electromyography–Mishra
4. Therapeutic Exercises - Colby&Kisner
5. Physical Rehabilitation, Assessment and treatment - Susan BO"sSullivan
6. Neurological Examination -JohnPatten

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1. Maitland"s book onManualtherapy,
2. Mobilisation of Extremities – Kaltenborn
3. Clinical Electromyography–Kimura

4. Orthopaedic Physical therapy–Donnatelli
5. NAGS, SNAGS and MWMS - BrianMulligan
6. Exercise & Heart–Wenger
7. Exercise Physiology – WilliamDMc"Ardle
8. Facilitation techniques based on NDT principles - Lois BlyAllisonWhiteside
9. Movement therapy in Hemiplegia–Brunnstrom
10. Cash textbook of Physiotherapy in neurological conditions -PatriciaDownie
11. Physical Dysfunction -TromblyScoot
12. Infant Motor Development-JanPiek
13. Neurology & Neurosurgery Illustrated (3rd edition)-Bone&Callander
14. Neuro-developmental Therapy–JanettHowle

EXAMINATION SCHEME

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	Exercise	15
Q No 2	2 OSPE station	20
QNo 3	Journal	5
		Total= 40

Internal Assessment marks will be weighted out of 20 marks.

Name of the Program	**Bachelor of Physiotherapy**
Name of the Course	**Public health**
Course Code	**BPT-032**
Course Description	**Core Theory**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
CO 1	Explain the concept of health care, determinants of health, health care delivery systems and management issues in Health Services.
CO 2	explain National Health Care Policies
CO 3	explain epidemiology of communicable, non-communicable, nutritional diseases
CO 4	explain levels of health care services, hospital waste management , disaster management

Unit.	**Topics**	**No. of Hrs.**
1.	**General Concepts & Determinants Of Health & Diseases:**	**08**
	• National & International Definition of Health, Role of Socio-Economic & Cultural Environment in Health & Disease. • Epidemiology – Definition & scope, uses with relevance to physiotherapy Environmental Hygiene including man & hissurrounding, • Occupational & Industrial hygiene, Village & Town Sanitation, Bacteriology of Water, Milk, & FoodHygiene.	
2.	**National Public Health Administration**	**04**
3.	**Healthcare Delivery System:**	**06**
	• Healthcare Delivery System ofIndia • National HealthPrograms • Role ofW.H.O. • Millennium Development Goals forAll	
4.	**Primary Healthcare**	**04**
	• Definition • Principles • Elements & itsapplication	

5.	**Epidemiology Of Socio-Economical & Cultural Issues** - related to morbidity in relation to the following vulnerable groups. • Women: Pregnant and lactating women, maternal health (ANC,PNC,INC), peri-menopausal women's health: physical &psychological • Infants: (Low Birth Weight, Breast feeding, Complimentary feeding, IYCN,IMNCI Vaccine preventable diseases, Immunization programs, Infant and childhoodmortality) • Children: Child health, Growth monitoring under five clinic, ICDS,PEM • School aged population health: Early detection and prevention of disabilities, behavioralproblems	**08**
6.	**Demography and Objectives of National Family Welfare Programs And National Population Policy**	**04**
7.	**Epidemiology of Communicable Diseases**	**06**
	An over-view [including prevention & control] T.B., H.I.V., Leprosy, Vector borne diseases- Malaria / Filariasis / Dengue/ Chikungunya/ Japanese encephalitis/Covid 19/SARS/H1N1.	
8.	**Epidemiology of Non Communicable Diseases:**	**06**
	Diabetes Mellitus, Hypertension, Coronary Heart Disease / Obesity / Blindness/ Accidents /Stroke/ Cancer.	
9.	**Epidemiology of Nutritional Diseases:**	**04**
	Malnutrition, Nutritional disorders and National nutrition programmes, Osteomalacia, Rickets, Neuropathies due to Vitamin - deficiency, skeletal Deformities.	
10.	**Hospital Waste Management:**	**04**
	Universal Safety Precautions, Immunization of health care providers including their vaccination.	
11.	**Introduction to Disaster Management**	**06**
	Types of disaster- Natural, manmade, complex emergencies, pandemic emergencies Aspects of disaster management- disaster prevention, disaster preparedness, disaster response/ relief, disaster recovery	
Total		**60**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 40 Marks

Question type	No. of questions	Marks/ Question	Question X marks	Total marks
Short answer questions	8 out of 10	5	8x5	40
Total				**80**

Internal examination pattern (theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Total				**Total= 20**

RECOMMENDED TEXT BOOKS

1. An Introduction to Sociology – Sachdeva&Bhushan
2. Indian Social Problems -Madan,Vol-I-Madras
3. Preventive and social medicine- K.Park.
4. WHOguidelines

ELECTIVE COURSES

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**2D Motion Capture**
Course Code	**GEC001**
Course Description	**Generic Elective Theory and Practical**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
CO 1	explain process of capture of photographs and videos using digital cameras
CO 2	explain technical considerations- equipment, concept of composition, light, exposure, focus, alignment, depth of field ,different types of photography, post photo processing, , identify bony landmarks, position reflective markers and capturing unobtrusive movement
CO 3	apply ethical considerations while capturing photographs of human participants, seeking written informed consent
CO 4	capture photographs and videos of healthy participants while performing ADL, walking, exercise, running etc.
CO 5	use software's for analysis of 2D motion capture, measure spatial-temporal variables, joint angles, measure inter tester ad intra tester reliability of data captured

Units	**Topics**	**Hours**
1	Introduction to Photography and videography	**2**
2	Technical aspects of photography and videography- Photography Equipment: Camera, Lens, Tripods, Digital storage Camera settings: Shutter speed, Aperture, ISO, Camera modes, Flash, Metering, Color filters, Focus, Exposure, Composition, Depth offield Common camera settings to take sharp pictures Lighting: Natural vs Artificial light, Indoor vs Outdoor photography, Reflection Different types of photography: Portrait, Landscape, Macro, Motion Photography Representation of digital image: Resolution, Pixel Depth, Pixel Aspect Ratio, Image Compression, File Formats. Digital Output: Placing photos in other documents, Printers as output devices – Different types of Print, Proofing, Photo quality printing	**8**
3	Post photo processing: Digital Retouching & Image Enhancement, Image editing through image editing software like Adobe Photoshop – Adjustment of Brightness, Contrast, Tonal and Color Values, fixing blemishes, color correcting.	**4**
4	Ethical considerations and informed consent	**1**
5	Softwares used to analyse 2D motion capture	**5**
	Theory Total	**20**

	Topics (Practical)	
1	2 D capture of ADL	**10**
2	2D capture of gait	**10**
3	Inter and intratester reliability	**20**
	Practical Total	**40**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at the constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 10	5	8x5	40
				Total= 40

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q 1	2 OSPE stations	20

Reference Books:

1. The Focal Encyclopedia of Photography by Michael Peres4thEdition

2. Mastering Aperture, Shutter Speed, ISO & Exposure by Al Judge ISBN-10:1482314452

3. Adobe Photoshop CC for Photographers 2018 by Martin Evening ISBN-10:1138086762

4. The Beginner's Photography Guide by Chris Gatcum 2nd Edition ISBN-10:1465449663

5. Complete Digital Photography by Ben Long 9th editionISBN-10:1732636923

6. Light--science & magic byFil Hunter,Paul Fuqua5thEdition

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Medical Device Innovation and IPR**
Course Code	**GEC002**
Course Description	**Generic Elective Theory and Practical**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
CO 1	Explain steps involved in developing medical device from prototype designing to final product development and testing related to the same in order to improve healthcare among patients and general population.
CO 2	explain technology innovation, product development, project and business management, intellectual property, regulatory affairs, clinical needs, entrepreneurship, emerging trends, globalization, reimbursement, and public policy.
CO 3	apply a repeatable process for identifying and characterizing a significant unmet health need and inventing and evaluating a new technology to address it.
CO 4	explain risks and challenges that are unique to medical device innovation and develop strategies for assessing and managing them. Work effectively in a multidisciplinary team.

Units	**Topics**	**Hours**
1	**Introduction to Medical DeviceInnovation** • Orientation to thecurriculum • Approaches in Device Innovation • Futurescope	**2**
2	**Clinical Foundations of Medical Device Innovation** • Identifying need for device innovation: A problem-solution based approach to understand unmet healthcareneeds	**3**
3	**Product Innovation and Development Management** • Concept of prototype and designdevelopment • Framework for conceptualization, design, development and the commercializationprocessformedicalproducts,withasurveyofkeysteps	**4**

	in innovation from an engineering and business perspective.	
4	**Quality, Regulatory, and Manufacturing Management** • Examine process validations, Good Laboratory Practice (GLP), Good Manufacturing Practice (GMP), appropriate management of Standard Operating Procedures (SOPs) and knowledge sharing across the valuechain.	**4**
5	**Role of IPR in device innovation** • Understanding various policies and steps for safeguarding newlydesigned devices through filing of copyright andpatent	**4**
6	**Technical Writing** • Develop the professional skills required to communicatetechnical information to a broad audience in an effectivemanner	**3**
	Theory Total	**20**
	Topics (Practical)	
1	**Visit to Healthcare centers** • Interviews, Surveys among clinicians to identifyproblem	**10**
2	**Visit to Macro environment of Technology incubation centers**: • Understanding basics of mechanics, availability, functioning and cost of resources	**10**
3	**Development of Product design** • Multi-disciplinary team building to develop prototype, work on fabrication, making of final product and plan forcommercialization	**20**
	Practical Total	**40**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at the constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 10	5	8x5	40
Total				**40**

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q 1	2 OSPE stations	20

Reference Books:

1. The Essence of medical device Innovation; B Ravi, The Write Place, 1st Edition
2. Inventing Medical Devices: A perspective from India; Dr. Jagdish Chaturvedi, Notion Press, 1st Edition
3. Handbook of Biomedical Instrumentation; R.S. Khandpur; McGraw Hill Education, 3rd Edition

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Diagnostic Radiology**
Course Code	**AEEC005**
Course Description	**Generic Elective Theory and Practical**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
CO 1	explain different aspects of diagnosis and intervention in radiology.
CO 2	explain use of imaging techniques like X Rays, ultra sonography, CT scan, MRI and interventional radiology.
CO 3	explain technical aspects of clinical radiology and applied radiology and post treatment follow up in disease.
CO 4	interpret radiological reports of X Rays, ultra sonography, CT scan, MRI related to musculoskeletal system, neurological system and cardiorespiratory system

Unit.	**Topics**	**No. of Hrs.**
1.	Radiological studies in musculoskeletal, neurological, cardiovascular and respiratory conditions.	**4**
2	Basic principles of X-rays, instrumentation, observations related to musculoskeletal, neurological and cardiovascular and respiratory conditions	**4**
3	Ultrasonography- Principles, instrumentation, observations in vascular disorders, gynecological conditions, recent advances in musculoskeletal ultrasonography	**4**
4	CT scan and MRI- Principles, instrumentation and observations related to musculoskeletal, neurological and cardiovascular and respiratory conditions	**4**
5	Interventional Radiology	**4**
6	Practical: Observation and interpretation of radiological investigations related to musculoskeletal, neurological and cardiovascular and respiratory conditions	**40**
		60

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at the constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 10	5	8x5	40
Total				**40**

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q 1	2 OSPE stations	20

Reference Books:

1. Diagnostic and Interventional Radiology- Thomas J. Vogl, Wolfgang Reith, Ernst J. Rummeny.
2. Learning Radiology- WilliamHerring.
3. Vascular and Interventional Radiology- KarimValji
4. Textbook of Radiology and Imaging- DavidSutton.

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Pulmonary Function Test**
Course Code	**AEEC006**
Course Description	**Generic Elective Theory and Practical**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
CO 1	explain principles behind pulmonary function tests, types of tests-spirometer, DLCO, indications and contraindications of pulmonary function test
CO 2	explain normal physiology and pathophysiological changes in lung volumes and capacities, respiratory muscle strength, gas exchange, reversibility, flow volume loops in respiratory diseases, importance of pre-operative PFT, recent advances in PFT
CO 3	perform bedside pulmonary function test
CO 4	Explain principles of maximal and sub-maximal exercise testing, methods, protocols, equipments used for testing functional capacity, indications and contra-indications of testing
CO 5	explain normal physiology and pathophysiological changes during exercise test related to cardiovascular, respiratory, metabolic systems
CO 6	perform sub-maximal exercise tests – Bruce's treadmill protocol, cycle ergometer testing, walk tests; observe and interpret Stress Test reports, and Holter monitor reports

Unit.	**Topics**	**No. of Hrs.**
1.	Introduction to PFT, Instrumentation, Indications, Contraindications	**2**
2	Spirometry, Lung volumes and capacities, Flow-Volume loops, Reversibility	2
3	Respiratory muscle strength	2
4	Gas exchange studies-Diffusing capacity, Alveolar -Arterial O_2 gradient	2
5	Bedside- PFT and Preoperative assessment: TISI guidelines ACP guidelines	2
6	Pulmonary function test report in various lung conditions	2
7	Exercise testing – Submaximal and maximal testing, Principles, Instrumentation, Indications and Contraindications, Exercise testing Protocols – Treadmill and Cycle Ergometer testing	4
8	Stress Testing and Holter monitoring	2

9	Pediatric Exercise Testing	2
10	Practical: Performing and Interpretation of Pulmonary function test in healthy people	20
11	Practical: Performing and interpreting sub-maximal exercise tests in healthy people	20
	Total Hours	60

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at the constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 10	5	8x5	40
				Total= 40

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q 1	2 OSPE stations	20

Reference Books:

1. Ruppel's Manual of Pulmonary Function Testing by Carl Mottram 10thEdition
2. Pulmonary Function Tests & Interpretation In Health & Diseases By P.S.Shankar3rd Edition
3. Murray & Nadel's Textbook of Respiratory Medicine by Robert J. Mason MD6th Edition
4. Interpretative strategies for lung function tests by R. Pellegrino et al European Respiratory Journal 2005 26:948-968.
5. The ATS/ERS consensus on clinical pulmonary function testing by V. Brusasco et al Breathe2005
6. Standardisation of spirometry by M. R. Miller et al European Respiratory Journal 2005 26:319-338.
7. Recommendations for a Standardized Pulmonary Function Report An Official American Thoracic Society Technical Statement Am J Respir Crit Care Med Vol 196, Issue11, pp 1463–1472, Dec 1, 2017

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Basic Skills in patient care**
Course Code	**BPTCLT005**
Course Description	**Clinical Training**
Semester	**Semester V**
Credits per semester	**5 credits**
Hours per semester	**320 hours**

Students will be learning about patient evaluation, assessment techniques and critical thinking in patient care.

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	10
Q No 2	OSPE Station 2	10
Q No 3	OSPE Station 3	10
Q No 4	OSPE Station4	10
		Total = 40

*Students will be evaluated as per their level of knowledge level.

Bachelor of Physiotherapy (BPT) Semester-VI

Course Code	Course Title	Course Description	Theory Hours	Practical Hours	Clinical Hours	Credits
BPT033	Medical and surgical aspects of Neurological disorders	Core Theory	80	-	-	4
BPT034	Physiotherapy for women and child care theory	Core Theory	40	-	-	2
BPT035	Physiotherapy for women and child care practical	Practical	-	80		2
BPT036	Public Health and Preventive Physiotherapy theory	Core Theory	40	-	-	2
BPT037	Public Health and Preventive Physiotherapy practical	Core Practical	-	40	-	1
BPT038	Physiotherapy in Geriatric Care Theory	Core Theory	20	-	-	1
BPT039	Physiotherapy in Geriatric Care Practical	Core Practical	-	40	-	1
BPT 040	Introduction to Evidence Based Physiotherapy theory	Core Theory	20	-	-	1
BPT 041	Introduction to Evidence Based Physiotherapy practical	Core Practical	-	40	-	1
SEC003	Clinical Biomechanics	Skill Based Elective Course	20	40	-	2
SECC004	Vestibular Rehabilitation	Skill Based Elective Course	20	40	-	2
BPTCLT006		Basic skills in patient care	-	-	260	4

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Medical and Surgical Aspects of Neurological Disorders**
Course Code	**BPT-033**
Course Description	**Core Theory**
Credit per Semester	**4 credits**
Hours per Semester	**80 hours**

Course Learning Outcomes: The student will be able to	
CO 1	describe neuro-anatomy, neurophysiology and medical management of neurological conditions
CO 2	describe procedures followed during neuro-surgery, effects of surgical trauma &anesthesia in general surgery
CO 3	assess and treat medically managed patients with neurological dysfunction, perform pre-operative evaluation of patient undergoing neurosurgery, describe indications for various surgical approaches, apply treatment techniques to manage patient post-operatively, describe post-operative complication during and following neurosurgery
CO 4	interpret relevant investigations related to neurological disorders such as CT scan, MRI reports, blood investigations, EMG-NVC studies, Doppler and others

Unit	Topics	Hours
1	**NEUROLOGY**	
	Introduction to Nervous System • AppliedNeuro-anatomy • AppliedNeuro-physiology	5
2	**Cerebro-Vascular Accidents** • Thrombosis, Embolism,Haemorrhage • Level of Lesion & symptoms • Management	5
3	**Extra Pyramidal lesions** • BasalGanglia • Parkinsonism • Athetosis, Chorea,Dystonia	5
4	**Differential diagnosis of muscle wasting** • Approach toneuropathies • Myopathies and neuromuscular junctiondisorders.	5
5	• **Disorders of Anterior Horn cell** with differential diagnosis ofMotor Neuron Disease, S.M.A., Syringomyelia, Peroneal MuscularAtrophy, andPoliomyelitis.	10
6	**Disorders of Spinal cord** • Syndromes • Bladderdysfunction • Autonomicdysfunction	10

7	• **Infections of the nervous system**: Encephalitis, Neurosyphilis,H.I.V. infection, Herpes, Meningitis, TabesDorsalis	10
8	• Disorders of cerebellar function • Disorders of cranial nerves & SpecialSenses	10
9	Tetanus, Epilepsy, Alzheimer"s Disease, Dementia , Multiple Sclerosis	10
10	**Neurosurgery** • Head Injury –management • Intra cranial & Spinaltumors • Intracranial Aneurysm and AVmalformation • Post operative Neurosurgicalcare	10
	Total	**80**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

RECOMMEMDED TEXTBOOKS

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

2. Medicine-- P.J. Mehta

RECOMMEMDED REFERENCE BOOKS

1. Principles & Practice of Medicine --Davidson

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Physiotherapy for women and child care**
Course Code	**BPT 034**
Course Description	**Core Theory**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes: The student will be able to	
CO 1	describe normal development & growth of a child
CO 2	describe neuromuscular, musculoskeletal, cardio-vascular & respiratory conditions, immunological conditions, nutritional deficiencies, infectious diseases, & genetically transmitted conditions in children and women
CO 3	assess function of a neonate / child with respect to neurological, musculoskeletal & respiratory function
CO 4	describe normal & abnormal physiological events, complications and management during puberty, pregnancy and menopause
CO 5	describe uro-genital dysfunction.(Antenatal, Postnatal, during menopause)
CO 6	apply skill of clinical examination of pelvic floor

Unit	Topics	Hours
	PAEDIATRICS	
1	Normal intra-uterine development of foetus with special reference to Central Nervous System, Neuromuscular System, Cardiovascular Respiratory System	2
2	Immunization and breast-feeding	1
3	Sepsis, Prematurity, Asphyxia Hyperbilirubinemia and birth injuries	2
4	Cerebral Palsy- Medical Management including early intervention	2
5	Developmental disorders associated with spinal cord: Spinal Dysraphism, Spina Bifida, Meningocele, Myelomeningocele, hydrocephalus	2
6	Common infections • C.N.S.& Peripheral NervousSystem • Typhoid, Rubella, Mumps, Measles, Diphtheria,Chickengunia, Malaria	2
7	Genetically transmitted neuro- muscular conditions	2
8	Juvenile R. A. & other Rheumatologic conditions of Musculoskeletal system	2
9	Common diseases of the Respiratory system: Asthma,Bronchitis, Bronchiectasis, T.B., Pneumonia, Lung collapse, Pleuraleffusion.	2
10	Respiratory distress in neonate	2
11	Rheumatic & Congenital Heart disease	2
12	**Anatomical And Physiological Variations Associated With Puberty & Menstruation**: Abnormalities & Common Problems Of Menstruation	2

13	**Anatomical And Physiological Variations Associated With Pregnancy** Development of the foetus, Normal/ Abnormal / multiple gestations, Common Complications during pregnancy: Anaemia, PIH , Eclampsia , Diabetes,Hepatitis,TORCH infection or HIV	2
14	**Physiology of Labour** • Normal – Events of Ist, IInd& IIIrd Stages oflabour • Complications during labour &management • Caesarean section- elective/ emergency & post operativecare	2
15	**Post Natal Period** • Puerperium &Lactation • Complications of repeated child bearing with smallgaps • Methods ofcontraception	2
16	**Infertility -** Management with emphasis on PCOS/PCOD	1
17	**Urogenital Dysfunction** Uterine prolapse – Classification & Management (Conservative / Surgical) Cystocoele, Rectocoele, Enterocoele, Urethrocoele Incontinence, malignancy and their therapeutic interventions.	2
18	**Gynaecological Surgeries** (Pre And Post Surgical Management)	2
19	Pre,Peri,Post Menopause- • Anatomical and Physiological variations associated withMenopause • Complications • Management	2
20	**Pelvic Inflammatory Diseases -** with special emphasis to backache due to Gynecological / Obstetrical conditions	2
21	Women in India and Social issue having impact on physical Function	1
22	Legal rights and benefits related to health	1
	Total	**40**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40 marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

Internal Assessment marks will be weighted out of 20 marks, for theory and practical, respectively

RECOMMENDED TEXTBOOKS

1. Essentials of Paediatrics – O.P. Ghai-Inter Printpublications
2. Clinical Paediatrics - MeherbanSingh
3. Text book of Gynaecology – Datta – New Central BookAgency
4. Text book of Obstetrics --Datta – New Central BookAgency
5. Physiotherapy in Gynecological & Obstetrical conditions–Mantle
6. Therapeutic Exercise –Kisner
7. Text of Physiotherapy for obstetrics and Gynecology – G.B. Madhuri&Pruthvish

RECOMMENDED REFERENCE BOOKS

1. Women's Health – Sapsford

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Physiotherapy for women and child care**
Course Code	**BPT 035**
Course Description	**Core Practical**
Credit per Semester	**2 credits**
Hours per Semester	**80 hours**

Course Learning Outcomes: The student will be able to	
CO 1	describe normal development & growth of a child
CO 2	describe neuromuscular, musculoskeletal, cardio-vascular & respiratory conditions, immunological conditions, nutritional deficiencies, infectious diseases, & genetically transmitted conditions in children and women
CO 3	assess function of a neonate / child with respect to neurological, musculoskeletal & respiratory function
CO 4	describe normal & abnormal physiological events, complications and management during puberty, pregnancy and menopause
CO 5	describe uro-genital dysfunction.(Antenatal, Postnatal, during menopause)
CO 6	apply skill of clinical examination of pelvic floor

Unit	Topics	Hours
	PAEDIATRICS	
1	Normal intra-uterine development of foetus with special reference to Central Nervous System, Neuromuscular System, Cardiovascular Respiratory System	6
3	Immunization and breast-feeding	3
5	Cerebral Palsy- Medical Management including early intervention	6
6	Developmental disorders associated with spinal cord: Spinal Dysraphism, Spina Bifida, Meningocele, Myelomeningocele, hydrocephalus	6
7	Common infections • C.N.S.& Peripheral NervousSystem • Typhoid, Rubella, Mumps, Measles, Diphtheria,Chickengunia, Malaria	6
8	Mental Retardation and Down‟s Syndrome	4
9	Genetically transmitted neuro- muscular conditions	2
11	Juvenile R. A. & other Rheumatologic conditions of Musculoskeletal system	2
12	Common diseases of the Respiratory system: Asthma,Bronchitis, Bronchiectasis, T.B., Pneumonia, Lung collapse, Pleuraleffusion.	4
13	Respiratory distress in neonate	2
14	Rheumatic & Congenital Heart disease	4
15	**Anatomical And Physiological Variations Associated With Puberty & Menstruation**: Abnormalities & Common Problems Of Menstruation	6

18	**Post Natal Period** • Puerperium &Lactation • Complications of repeated child bearing with smallgaps • Methods ofcontraception	6
19	**Infertility -** Management with emphasis on PCOS/PCOD	4
20	**Urogenital Dysfunction** Uterine prolapse – Classification & Management (Conservative / Surgical) Cystocoele, Rectocoele, Enterocoele, Urethrocoele Incontinence, malignancy and their therapeutic interventions.	6
21	**Gynaecological Surgeries** (Pre And Post Surgical Management)	3
22	Pre,Peri,Post Menopause- • Anatomical and Physiological variations associated withMenopause • Complications • Management	6
23	**Pelvic Inflammatory Diseases -** with special emphasis to backache due to Gynecological / Obstetrical conditions	4
	Total	**80**

EXAMINATION SCHEME

Practical question paper pattern for University Semester Examination under CBCS - 80 marks

Exercise	Description	Marks
Q No 1	Long case	40
Q No 2	OSPE station	2x20=40
		Total = 80

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	20
Q No 2	OSPE station 2	20
		Total= 40

Internal Assessment marks will be weighted out of 20 marks, for theory and practical, respectively

RECOMMENDED TEXTBOOKS

1. Essentials of Paediatrics – O.P. Ghai-Inter Printpublications
2. Clinical Paediatrics - MeherbanSingh
3. Text book of Gynaecology – Datta – New Central BookAgency
4. Text book of Obstetrics --Datta – New Central BookAgency
5. Physiotherapy in Gynecological & Obstetrical conditions–Mantle
6. Therapeutic Exercise –Kisner
7. Text of Physiotherapy for obstetrics and Gynecology – G.B. Madhuri&Pruthvish

RECOMMENDED REFERENCE BOOKS

1. Women's Health – Sapsford

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Public Health and Preventive Physiotherapy**
Course Code	**BPT 036**
Course Description	**Core Theory**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes: The student will be able to	
CO 1	explain the concept of health care, determinants of health, health care delivery systems and management issues in Health Services.
CO 2	explain role of Physiotherapists in preventing non-communicable diseases
CO 3	
CO 4	It will help them in improving their performance through better understanding of the health services at all the levels of community.

Unit.	Topics	No. of Hrs.
1.	**Prevention of Communicable Diseases**	**04**
	Prevention & control of T.B., H.I.V., Leprosy, Vector borne diseases- Malaria / Filariasis / Dengue/ Chikungunya/ Japanese encephalitis/Covid 19, SARS/H1N1.	
2.	**Prevention of Non-Communicable Diseases:**	**06**
	Diabetes Mellitus, Hypertension, Coronary Heart Disease / Obesity / Blindness/ Accidents /Stroke/ Cancer.	
3.	**Prevention of Nutritional Diseases:**	**04**
	Malnutrition, Nutrional disorders and National nutrition programmes, Osteomalacia, Rickets, Neuropathies due to Vitamin - deficiency, Skeletal Deformities.	
4.	**Promotion of Sound Mental Health:**	**04**
	1. Socio-economical & culturalaspects 2. Substance abuse and addiction –tobacco, alcohol andothers	
5.	**Occupational Health and Industrial Therapy:**	**02**
	Occupational diseases & hazards - definition, scope, prevention & legislations, Occupational lung diseases & Physical injuries/pains, Industrial therapy	
6.	**Concepts of Rehabilitation**	**20**
	Disability- evaluation, types, prevention.	
	Rehabilitation- definition, types {Institutional, Reach out and Community}	
	National policies for rehabilitation	
	Rehab Team work: Medical practitioner, P.T. / O.T., A.S.T., P.&O., Clinical psychologist, and vocational counselors and social workers.	
	CBR – Role of Physiotherapy & Physiotherapist	

	CBR strategies in: i. Urban area e.g. UHC, Community Centre, Clubs, Mahila Mandals,Social centers, Schools, industries, sportscenters. ii. Rural area- by using PHC / rural hospital, district hospital infrastructure. Locomotor aids using localresources.	
Total		**40**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 10	5	8x5	40
				Total= 40

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

Internal Assessment marks will be weighted out of 20 marks, for theory and practical, respectively

RECOMMENDEDTEXTBOOKS

1. Park"s Textbook of Preventive & Social Medicine - K.Park
2. Textbook of Preventive & Social Medicine - P.K. Mahajan & M.C.Gupta
3. Essential of Community Medicine - Baride andKulkarni
4. Text book of Community Health for Physiotherapists – BhaskarRao

RECOMMENDED REFERENCE BOOK

1. Status of Disabled in India -2000-RCIpublication
2. Legal Rights of disabled in India- GautamBannerjee
3. ICF –WHO Health Organisation 2001publication
4. Training in the Community for the people with disability – Hallender Padmini Mendes
5. Disabled Village Children-- DavidWerner
6. Chorin C& M Desai, C Gonsalves, 1999, Women & the Law, Vol. I & II Socio - legal Information CentreMumbai

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Public Health and Preventive Physiotherapy**
Course Code	**BPT 037**
Course Description	**Core Practical**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Learning Outcomes: The student will be able to	
CO 1	explain the concept of health care, determinants of health, health care delivery systems and management issues in Health Services.
CO 2	explain role of Physiotherapists in preventing non-communicable diseases
CO 3	
CO 4	It will help them in improving their performance through better understanding of the health services at all the levels of community.

Unit.	**Topics**	**No. of Hrs.**
1.	**Community Based Rehabilitation:**	**15**
	Rehab Team work: Medical practitioner, P.T. / O.T., A.S.T., P.&O., Clinical psychologist, and vocational counselors and social workers.	
	CBR strategies in: iii. Urban area e.g. UHC, Community Centre, Clubs, Mahila Mandals,Social centers, Schools, industries, sportscenters. iv. Rural area- by using PHC / rural hospital, district hospital infrastructure**.** Locomotor aids using localresources.	
2.	**Occupational Health and Industrial Therapy:**	**10**
	Occupational diseases & hazards - definition, scope, prevention & legislations, Occupational lung diseases & Physical injuries/pains, Industrial therapy	
3.	**Prevention Camps**	**05**
4.	**Visit to Industrial Complex for health promotion**	**05**
5.	**Visit to Community Centers**	**05**
	Total	**40**

EXAMINATION SCHEME

Practical question paper pattern for University Semester Examination under CBCS - 40 marks

Exercise	Description	Marks
Q No 1 and 2	OSPE station (2)	2x20=40
		Total = 40

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	10
Q No 2	OSPE station 2	10
		Total= 20

Internal Assessment marks will be weighted out of 20 marks, for theory and practical, respectively

RECOMMENDEDTEXTBOOKS

1. Park"s Textbook of Preventive & Social Medicine - K.Park
2. Textbook of Preventive & Social Medicine - P.K. Mahajan & M.C.Gupta
3. Essential of Community Medicine - Baride andKulkarni
4. Text book of Community Health for Physiotherapists – BhaskarRao

RECOMMENDED REFERENCE BOOK

1. Status of Disabled in India -2000-RCIpublication
2. Legal Rights of disabled in India- GautamBannerjee
3. ICF –WHO Health Organisation 2001publication
4. Training in the Community for the people with disability – Hallender Padmini Mendes
5. Disabled Village Children-- DavidWerner
6. Chorin C& M Desai, C Gonsalves, 1999, Women & the Law, Vol. I & II Socio - legal Information CentreMumbai

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Physiotherapy in Geriatric Care**
Course Code	**BPT-038**
Course Description	**Core Theory**
Credit per Semester	**1 credit**
Hours per Semester	**20 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	explain physiology of aging process and its influence on physical function
CO 2	apply measures to improve physical function of elderly
Psychomotor	
CO 3	identify contextual {e.g. environmental and psycho-social cultural} factors serving as risk factors responsible for dysfunction and morbidity related to elderly and describe strategies to combat dysfunction at community level.
CO 4	collaborate with other health professionals for effective service delivery & community satisfaction
Affective	
CO 5	develop as an empathetic health professional, especially for individuals with no access to health care

Sr. No	**Topics**	**Hours**
1	**Aging**	**2**
	1. Classification and theories ofaging 2. Physiology of ageing: Musculoskeletal, Neurological, Cardio respiratory, metabolic, visual, auditory, sensory and othersystems	
2	**Geriatric Conditions**	**4**
	1. Osteoporosis 2. Degenerative conditions 3. Alzheimerdisease 4. Dementia 5. Parkinsonism 6. Incontinence 7. Chronic obstructive pulmonarydisease 8. DiabetesMellitus	

	9.Hypertension	
3	**Geriatric Assessment: WHO ICF model** • **Assessment of Body Functions andStructures**: • Anthropometric measurement, Vital signassessment. • Musculoskeletal assessment: Muscle strength and range ofmotion assessment. • Neurological assessment: Cranial nerve examination, sensory & coordination assessment, Four stage step test and star excursiontest • Cardiopulmonary assessment: Pulmonary function test, Peak expiratory flow rate, respiratory strength measurement and chest wallmobility • Cognitive assessment: Mini MentalScale • **Activitylimitation:** • Sit to stand & Transfers: Arm Curl, 30 sec Chair-Stand test, Back-Scratch test and Chair Sit and Reachtest • Balance & Gait: Tinetti Performance-orientedScale • Aerobic endurance: Six-minute walk test or Two minutes walk-in place test • Stair-climbing: Stair climbtest • **Participationrestriction**: • World Health Organization Quality of Life instrument(WHOQoL), Geriatric Depression scale and BarthelIndex.	**4**
4	**Falls Assessment, Management and Prevention in Elderly** 1. Epidemiology offalls 2. Consequences offalls 3. Risk factors offalls 4. Fall prevention andManagement	**2**
5	**Role of Physiotherapy in Geriatric Care** Institutionalized & Community dwelling elders, Hospital based care, Half way homes	**4**
6	**NGO"s and Health related Legal rights and benefits for the elderly.** 1. National policy for seniorcitizen 2. National old age pension schemes 3. Insurancescheme 4. JanArogya 5. National council for olderperson 6. Annapurnapolicy	**2**
7	**Senior citizens in India**	**2**
	TOTAL HOURS	**20**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted as Internal College Exam

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/ Question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Total				**40**

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	20
		Total= 20

RECOMMENDED TEXT BOOKS:

1. World Health Organization 2001. The International Classification of Functioning, Disability and Health (ICF). Geneva: WHO.http://www.who.int/classifications/icf/en/

2. Advanced Fitness Assessment and Exercise Prescription- Vivian. H.Heyward.

3. Physical Rehabilitation-Susan B O'Sullivan, Thomas. J.Schmitz

4. Geriatric Physical therapy- Andrew A.Guccione

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Physiotherapy in Geriatric Care**
Course Code	**BPT-039**
Course Description	**Core Practical**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	explain physiology of aging process and its influence on physical function
CO 2	apply measures to improve physical function of elderly
Psychomotor	
CO 3	identify contextual {e.g. environmental and psycho-social cultural} factors serving as risk factors responsible for dysfunction and morbidity related to elderly and describe strategies to combat dysfunction at community level.
CO 4	collaborate with other health professionals for effective service delivery & community satisfaction
Affective	
CO 5	develop as an empathetic health professional, especially for individuals with no access to health care

Sr. No	Topics	Hours
1	**Geriatric Conditions**	**8**
	1. Osteoporosis 2. Degenerative conditions 3. Alzheimerdisease 4. Dementia 5. Parkinsonism 6. Incontinence 7. Chronic obstructive pulmonarydisease 8. DiabetesMellitus 9. Hypertension	
2	**Geriatric Assessment: WHO ICF model**	**8**

	• **Assessment of Body Functions andStructures**: • Anthropometric measurement, Vital signassessment. • Musculoskeletal assessment: Muscle strength and range ofmotion assessment. • Neurological assessment: Cranial nerve examination, sensory & coordination assessment, Four stage step test and star excursiontest • Cardiopulmonary assessment: Pulmonary function test, Peak expiratory flow rate, respiratory strength measurement and chest wallmobility • Cognitive assessment: Mini MentalScale • **Activitylimitation:** • Sit to stand & Transfers: Arm Curl, 30 sec Chair-Stand test, Back-Scratch test and Chair Sit and Reachtest • Balance & Gait: Tinetti Performance-orientedScale • Aerobic endurance: Six-minute walk test or Two minutes walk-in place test • Stair-climbing: Stair climbtest • **Participationrestriction**: • World Health Organization Quality of Life instrument(WHOQoL), Geriatric Depression scale and BarthelIndex.	
3	**Falls Assessment, Management and Prevention in Elderly** 1. Epidemiology offalls 2. Consequences offalls 3. Risk factors offalls 4. Fall prevention andManagement	**6**
4	**Role of Physiotherapy in Geriatric Care** Institutionalized & Community dwelling elders, Hospital based care, Half way homes	**6**
5	**NGO"s and Health related Legal rights and benefits for the elderly.** 7. National policy for seniorcitizen 8. National old age pension schemes 9. Insurancescheme 10. JanArogya 11. National council for olderperson 12. Annapurnapolicy	**4**
6	**Senior citizens in India**	**4**
7	**Geriatric Assessment and treatment methods**	**4**
	TOTAL HOURS	**40**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at constituent unit level

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	20
		Total= 20

RECOMMENDED TEXT BOOKS:

1. World Health Organization 2001. The International Classification of Functioning, Disability and Health (ICF). Geneva: WHO.http://www.who.int/classifications/icf/en/
2. Advanced Fitness Assessment and Exercise Prescription- Vivian. H.Heyward.
3. Physical Rehabilitation-Susan B O'Sullivan, Thomas. J.Schmitz
4. Geriatric Physical therapy- Andrew A.Guccione

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Introduction to Evidence Based Physiotherapy**
Course Code	**BPT-040**
Course Description	**Core Theory**
Credit per Semester	**1 credit**
Hours per Semester	**20 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	formulate clinical research questions and refine them
CO 2	explain the source of evidence and learn how to find out relevant evidence
CO 3	establish authenticity of evidence
CO 4	critically evaluate scientific studies on assessment tools and interventions/diagnostic /prognostic research studies
CO 5	communicate with other clinicians about the evidence for best physiotherapy practice with consideration of patient's opinion
CO 6	implement the practice for the right purpose and in an appropriate time

Sr. No.	Topics	No. of Hrs.
1	**Introduction to Evidence Based Physiotherapy** Definition, background, importance, model of Evidence Based Physiotherapy, role of evidence based practitioner	**2**
2	**Methods of forming clinical research questions and searching evidence** Techniques of creating research/clinical questions, Strategies for searching evidence	**2**
3	**Exploring different terminologies** Validity, reliability, Randomized Control Trial, Systemic Review, Meta-Analysis, Case Study, Diagnostic research study, Prognostic Research study, Intervention research studyetc.	**2**
4	**Analyze evidence about diagnostic test** Diagnostic test and process in physiotherapy, appraise the quality of the studies,result of the studies, technique of pull out the summary of the studies and communicate with intra and inter professional for final clinical conclusion	**2**
5	**Analyze evidence about prognosis** Concept of prognosis, research design relevant to prognostic studies, process of knowing the quality of study and method of discussion with other professional and physiotherapist to draw the summary for final clinical decision	**2**

6	**Analyze evidence about outcome measure** Elements of outcome measure, method of knowing validity and reliability, take out the outline from the studies and method of interacting with other professional and physiotherapist for clinical reasoning and decision making	**2**
7	**Analyze evidence about intervention** Concept of various types of intervention in physiotherapy, Research design related to intervention studies, know the strength and weakness of the study, method of discussion with other professional and physiotherapist, produce condensed zest to draw the clinicalconclusion.	**2**
8	**Analyze evidence about systemic reviews and other research design** Overview of systemic review, stages and techniques involve in it , procedure to critically appraise it and extract the terminal results to make valid and relevant clinical decision, Introduction to case study and qualitative research, evaluating the robustness and fragility of the studies, methods of concise the studies to conclude clinical opinion	**2**
9	**Patient review** Process of feedback taking, knowing patient's expectations, making practical judgement for clinical decision	**2**
10	**Evidence Based Physiotherapy and its Implementation** Economy, access to the source, population, ethical guideline in physiotherapy, recent clinical guideline for physiotherapy practice, applicability and authenticity of guidelines, clinically appraise them and draw the final conclusion, Knowing the right tract, appropriate time ,population, conditions, continue to provide quality of service	**2**
	Total	**20**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at Constituent unit level

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
				Total= 40

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	20
		Total= 20

RECOMMENDED TEXT BOOKS:

1) Practical Evidence-BasedPhysiotherapy
By Robert Herbert, Gro Jamtvedt, Kåre Birger Hagen, Judy Mead, Sir Iain Chalmers

2) Evidence Based Physical Therapy
By Linda Fetters, JulieTilson

3) Guide to Evidence-Based Physical TherapyPractice
By Dianne V.Jewell

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Introduction to Evidence Based Physiotherapy**
Course Code	**BPT-041**
Course Description	**Core Practical**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	formulate clinical research questions and refine them
CO 2	explain the source of evidence and learn how to find out relevant evidence
CO 3	establish authenticity of evidence
CO 4	critically evaluate scientific studies on assessment tools and interventions/diagnostic /prognostic research studies
CO 5	communicate with other clinicians about the evidence for best physiotherapy practice with consideration of patient's opinion
CO 6	implement the practice for the right purpose and in an appropriate time

Sr. No.	Topics	No. of Hrs.
1	**Introduction to Evidence Based Physiotherapy** Definition, background, importance, model of Evidence Based Physiotherapy, role of evidence based practitioner	**2**
2	**Methods of forming clinical research questions and searching evidence** Techniques of creating research/clinical questions, Strategies for searching evidence	**2**
3	**Exploring different terminologies** Validity, reliability, Randomized Control Trial, Systemic Review, Meta-Analysis, Case Study, Diagnostic research study, Prognostic Researchstudy, Intervention research study etc.	**2**
4	**Analyze evidence about diagnostic test** Diagnostic test and process in physiotherapy, appraise the quality of the studies, result of the studies, technique of pull out the summary of the studies and communicate with intra and inter professional for final clinical conclusion	**2**
5	**Analyze evidence about prognosis** Concept of prognosis, research design relevant to prognostic studies, process of knowing the quality of study and method of discussion with other professional and	**2**

	physiotherapist to draw the summary for final clinical decision	
6	**Analyze evidence about outcome measure** Elements of outcome measure, method of knowing validity and reliability, take out the outline from the studies and method of interacting with other professional and physiotherapist for clinical reasoning and decision making	**2**
7	**Analyze evidence about intervention** Concept of various types of intervention in physiotherapy, Research design related to intervention studies, know the strength and weakness of the study, method of discussion with other professional and physiotherapist, produce condensed zest to draw the clinicalconclusion.	**2**
8	**Analyze evidence about systemic reviews and other research design** Overview of systemic review, stages and techniques involve in it , procedure to critically appraise it and extract the terminal results to make valid and relevant clinical decision, Introduction to case study and qualitative research, evaluating the robustness and fragility of the studies, methods of concise the studies to conclude clinical opinion	**3**
9	**Patient review** Process of feedback taking, knowing patient's expectations, making practical judgement for clinical decision	**4**
10	**Evidence Based Physiotherapy and its Implementation** Economy, access to the source, population, ethical guideline in physiotherapy, recent clinical guideline for physiotherapy practice, applicability and authenticity of guidelines, clinically appraise them and draw the final conclusion, Knowing the right tract, appropriate time ,population, conditions, continue to provide quality of service	**4**
11	**Evidence based PT related to musculoskeletal, cardiorespiratory and neurological conditions**	**05**
12	**Evidence based PT related to cardio-respiratory conditions**	**05**
13	**Evidence based PT related to neurological conditions**	**05**
	Total	**40**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at constituent unit level

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	20
		Total= 20

RECOMMENDED TEXT BOOKS:

1. Practical Evidence-BasedPhysiotherapy
By Robert Herbert, Gro Jamtvedt, Kåre Birger Hagen, Judy Mead, Sir Iain Chalmers

2. Evidence BasedPhysicalTherapy
By Linda Fetters, JulieTilson

3. Guide to Evidence-Based PhysicalTherapyPractice
By Dianne V.Jewell

ELECTIVE COURSES

Skill Elective Course (SEC)	
Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Clinical Biomechanics**
Course Code	**SEC003**
Course Description	**Skill Based Elective Course – Theory and Practical**
Semester	**Semester VI**
Credits per semester	**2 credits**
Hours per semester	**60 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	describe biomechanics of connective tissue, laws governing forces, study of kinematics and kinetics, clinical and instrumented testing methods used to identify biomechanical impairments, muscle activity and postural control during motion
CO 2	describe impairments related to biomechanical alterations in conditions such as shoulder dysfunction, knee osteoarthritis and low back pain
CO 3	describe gait deviations
Psychomotor	
CO 3	apply clinical and instrumented testing methods to measure kinematics and muscle action, identify altered biomechanics using clinical tests, 2D motion analysis, superficial EMG
CO 4	analyze primary impairment and prescribe corrective strategies

Unit	Topics	No. of Hrs.
1	Basic Biomechanics: Forces, Equilibrium, levers – laws – mechanical advantage, Material properties of bones and soft tissues. Gravity, balance & equilibrium	**2**
2	Biophysics of ligament, Cartilage, tendon,muscle, neuraltissues, response to mechanical loading Material properties of bones, tendons and ligaments: Viscoelasticity, elastic properties, Stress, Strain , force and torque, moment and moment arm, muscle length tension relationships, factors affecting force production	**2**
3	**Muscular System** • Muscle FibreArrangement • Functional Characteristics of MuscleTissue • Length-Tension Relationship in MuscleTissue • Types of Muscle Contraction affecting forceproduction • Angle ofPull • KineticChains • **SurfaceEMG**	**2**

4	**Kinematics related to dysfunction of shoulder, knee and lumbar spine**	**6**
5	**Kinetics** a. Anatomical structures that can produce internal forces andmoments b. Internal forces and moments aroundjoints c. Concentric versus eccentric muscleactions d. Elasticity ofmuscles e. Net joint moment and power duringwalking f. Quantitative gaitanalysis	**4**
6	Activity limitations and participation restriction to common activities like gait, sit to stand, squatting, staircase ascent and descent, cross leg sitting	**4**
	Practical: Surface anatomy landmarks, ROM assessment, posture and gait analysis, measurement techniques of Spatiotemporal parameters, 2 D motion analysis for gait and functional movements, calculation of moment arm, clinical case presentations emphasizing on screening of muscular, neural and biomechanical impairments	**40**
Total		**60**

Examination Scheme

This course will not be assessed as Semester University Examination. Assessment willbe conducted at constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Total				**40**

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	20
		Total= 20

RECOMMENDED TEXT BOOKS:

- Norkins C (2017); Basic Concepts of Biomechanics. Elsevier HealthSciences.
- Magee, D. J. (2013). Orthopedic physical assessment. Elsevier HealthSciences.

RECOMMENDED REFERENCE BOOKS

- Sahrmann, S. (2001). Diagnosis and treatment of movement impairment syndromes. Elsevier HealthSciences.
- Carol A. Oatis, Kinesiology: The Mechanics and Pathomechanics of Human Movement

Skill Elective Course (SEC)	
Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Vestibular Rehabilitation**
Course Code	**SEC004**
Course Description	**Skill Elective Course – Theory and Practical**
Semester	**Semester VI**
Credits per semester	**2 credit**
Hours per semester	**60 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	explain anatomy and physiology of the vestibular system
CO 2	explain clinical significance of diagnostic studies, physical assessment and clinical history
CO 3	explain signs, symptoms and co-existing problems of the patient
CO 4	describe disorders that may affect the vestibular system but are not appropriate for treatment by physical therapists
Psychomotor	
CO 5	perform clinical evaluation and plan rationale for appropriate evaluation procedures
CO 8	Apply therapeutic measures to treat vestibular dysfunction
Affective	
CO 5	communicate with the patient and care-giver regarding precautions to be followed following therapy, preventive measures

Sr. No.	Topics	No. of Hrs.
1	Anatomy & Physiology of Vestibular System	2
2	Role of vestibular system in postural control	2
3	Assessment of Balance and vestibular ocular reflex	2
4	Balance and Gait Assessment	2
5	Oculomotor Examination	2
6	Assessment of Subjective Complaints	2
7	Vestibular Function Tests: Caloric & Vestibular Evoked Potential	2
8	Benign Paroxysmal Positional Vertigo, Unilateral Vestibular Loss, Bilateral Vestibular Disorder– Assessment and management of Posterior Canal, Anterior Canal, Horizontal Canal	4
9	Treatment theory, goals of management and progression	2
10	Practical: Assessment and management of disorder	40
Total		**60**

Examination Scheme

This course will not be assessed as Semester University Examination. Assessment will beconducted at constituent unit level

Theory for internal assessment under CBCS - 20 Marks
Practical demo for internal assessment - 20 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	4 out 5	5	4x5	20
A simulated case with practical demo of techniques	1 case	20	20	20
				Total= 40

Internal examination pattern (practical): 20 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	20
		Total= 20

Reference Books:

1. Herdman SJ, Clendaniel R. Vestibular rehabilitation. FA Davis; 2014 Jul 24.

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Basic Skills in patient care**
Course Code	**BPTCLT006**
Course Description	**Clinical Training**
Semester	**Semester VI**
Credits per semester	**4 credits**
Hours per semester	**260 hours**

Students will be learning about patient evaluation, assessment techniques and critical thinking in patient care.

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	10
Q No 2	OSPE Station 2	10
Q No 3	OSPE Station 3	10
Q No 4	OSPE Station4	10
		Total = 40

*Students will be evaluated as per their level of knowledge level.

Bachelor of Physiotherapy (BPT)Semester-VII

Course Code	Course Title	Course Description	Theory Hours	Practical Hours	Clinical Hours	Credits
BPT042	Musculoskeletal Physiotherapy I Theory	Core Theory	**60**	**-**	**-**	**3**
BPT043	Musculoskeletal Physiotherapy I Practical	Core Practical	**-**	**40**	**-**	**1**
BPT044	Cardiovascular & Respiratory Physiotherapy I Theory	Core Theory	**60**	**-**	**-**	**3**
BPT045	Cardiovascular & Respiratory Physiotherapy I Practical	Core Practical	**-**	**40**	**-**	**1**
BPT046	Neuro Physiotherapy I Theory	Core Theory	**60**	**-**	**-**	**3**
BPT047	Neuro Physiotherapy I Practical	Core Practical	**-**	**40**	**-**	**1**
SEC005/SEC006	Hand Rehabilitation/ Foot Rehabilitation	Skill based elective	**20**	**40**	**-**	**2**
SEC007/ SEC008	Aquatic Therapy/ Sports Physiotherapy	Skill based elective	**20**	**40**	**-**	**2**
BPTCLT007	Basic skills in patient care	Clinical Training	**-**	**-**	**300**	**5**

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Musculoskeletal Physiotherapy I Theory**
Course Code	**BPT 042**
Course Description	**Core Theory**
Credit per Semester	**3 Credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
	Cognitive
CO 1	Identify, evaluate, analyze & discuss primary and secondary musculo-skeletal dysfunction related to upper quadrant and cervical-thoracic spine, based on biomechanical, kinesiological & patho-physiological principles using ICF model.
CO 2	Correlate impairments with radiological, electrophysiological, biochemical/ haematological investigations as applicable & arrive at the appropriate Physiotherapy diagnosis with skilful evaluation of structure and function with clinical reasoning for upper quadrant and cervical spine dysfunction.
CO 3	Understand the pharmaco-therapeutics, its interaction with physiotherapeutic measures and modify physiotherapeutic intervention appropriately
CO 4	Apply knowledge of psychosocial factors (personal and environmental factors in the context of disability associated with the musculo-skeletal system or multiple body systems) for behavioral and lifestyle modification and use appropriate training and coping strategies.
	Psychomotor
CO 5	Evaluation of mental and cognitive function including depression, anxiety, attitudes and beliefs. Apply theoretical basis of physiological effects, indications, contraindications; and best available evidence on the effectiveness, efficacy and safe application guidelines for a full range of physiotherapeutic strategies and interventions, including appropriate modes of soft tissue & joint mobilization, electrotherapy, therapeutic exercise, appropriate ergonomic advise, self-management techniques and home exercise that can be employed to manage problems of the individuals upper quadrant and cervical spine structures, functions, activities & participation, capacity and performance levels associated with the musculo-skeletal system, for relief of pain & prevention,restorationandrehabilitationmeasuresformaximumpossiblefunctional independence at home, workplace and in community.
CO6	Prescribe and train for appropriate upper quadrant and cervical-thoracic spine orthoses, prostheses and assistive devices based on musculoskeletal dysfunction

	Affective
CO7	Acquire ethical skills by demonstrating safe, respectful and effective performance of physical handling techniques taking into account the patients clinical condition, the need for privacy, the physiotherapist, the resources available and the environment.
CO 8	Demonstrate communication and behavioral skills underpinned by humanitarian approach while interacting with patients, relatives, health care team members, co-professionals and society at large.
CO 9	List patients' questions, their understanding of condition and treatment options, their views, concerns, values, preferences and extent to which patients want to be involved in decision-making regarding their care and treatment. (attitudes and beliefs)
CO 10	Examine Bioethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency
CO 11	Respond to patients concerns and preferences, and respect the rights of patients to reach decisions with their doctor about their treatment and care and to refuse or limit treatment.
CO 12	Communicate clearly, sensitively and effectively with patients, caregivers,and colleagues from the medical and other professions, by listening, sharing andresponding

Unit	**Topics**	**Hours**
1	**Manifestations of trauma and their complications**	15
	a. Bones – fractures & fracture-dislocations of upper extremities & cervical-thoracic spine and their complications &management. b. Soft tissues injuries of upper extremities & cervical-thoracic spine and their complications & management, contused lacerated wounds (CLWs) Burns complications and management, Crush injuries and its conservative and post-surgicalmanagement. c. Cumulative trauma disorders- Tennis elbow, carpal tunnelsyndrome, tendinopathyetc.	
2	**Degenerative Arthritis with associated conditions**	10
	Physiotherapy management of common shoulder , degenerative conditions of cervical Spine - Spondylosis, Spondylolysis, Spondylolisthesis, and Spinal Canal Stenosis, Cord compression syndrome	
3	**Inflammatory conditions**	5

	a. Arthritis (including seronegative) – Rheumatoid arthritis, Gout, Septic arthritis b. Cellulitis and itscomplications. c. Post incisional inflammation andinfection.	
4	**Infectious Diseases of bones & joints of upper extremity and cervical-thoracic spine-** Osteomyelitis, Tuberculosis	2
5	**Metabolic & Hormonal Disorders –** Osteoporosis, Osteomalacia	5
6	**Congenital & Acquired Deformities of upper extremity and cervical - thoracic spine-** cervical rib, kyphosis, sprengel's shoulder,cubitus varus/valgus	5
7	**Peripheral Nerve Injuries & Plexus Injuries of upper extremity and Brachial plexus -** Complications & Management	5
8	**Soft tissue injuries during sports and as a result of over-use of upper extremity and cervical-thoracic spine -** Conservative and Operative management	3
9	**Vascular disorders affecting musculoskeletal system-** Volkmann's ischemic contracture, Complex Regional Pain Syndrome, Compartment syndrome, Vertigo. Thoracic outlet syndrome, Vertebrobasilar artery syndrome	5
10	**Traumatic Amputation of upper extremity** Types, Complications and management inclusive of prosthetic prescription & training	5
	Total	**60**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

RECOMMENDED TEXT BOOKS

1. Therapeutic Exercise –O'Sullivan
2. Orthopaedic Physical Therapy -Donatelli
3. Cash's Textbook of Orthopedics & Rheumatology forPhysiotherapists
4. Tidy's PhysicalTherapy
5. Manual Mobilization of Extremity Joints -Kaltenborn
6. Therapeutic Exercise: Foundations and Techniques - Kolby & CarolynKisner
7. Physical Rehabilitation - SusanO'sullivan

RECOMMEMDED REFERENCE BOOKS

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

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Musculoskeletal Physiotherapy I Practical**
Course Code	**BPT 043**
Course Description	**Core Practical**
Credit per Semester	**1 Credit**
Hours per Semester	**40 hours**

Course Learning Outcomes: The student will be able to	
	Cognitive
CO 1	Identify, evaluate, analyze & discuss primary and secondary musculo-skeletal dysfunction related to upper quadrant and cervical-thoracic spine, based on biomechanical, kinesiological & patho-physiological principles using ICF model.
CO 2	Correlate impairments with radiological, electrophysiological, biochemical/ haematological investigations as applicable & arrive at the appropriate Physiotherapy diagnosis with skilful evaluation of structure and function with clinical reasoning for upper quadrant and cervical spine dysfunction.
CO 3	Understand the pharmaco-therapeutics, its interaction with physiotherapeutic measures and modify physiotherapeutic intervention appropriately
CO 4	Apply knowledge of psychosocial factors (personal and environmental factors in the context of disability associated with the musculo-skeletal system or multiple body systems) for behavioral and lifestyle modification and use appropriate training and coping strategies.
	Psychomotor
CO 5	Evaluation of mental and cognitive function including depression, anxiety, attitudes and beliefs. Apply theoretical basis of physiological effects, indications, contraindications; and best available evidence on the effectiveness, efficacy and safe application guidelines for a full range of physiotherapeutic strategies and interventions, including appropriate modes of soft tissue & joint mobilization, electrotherapy, therapeutic exercise, appropriate ergonomic advise, self-management techniques and home exercise that can be employed to manage problems of the individuals upper quadrant and cervical spine structures, functions, activities & participation, capacity and performance levels associated with the musculo-skeletal system, for relief of pain & prevention,restorationandrehabilitationmeasuresformaximumpossiblefunctional independence at home, workplace and in community.
CO6	Prescribe and train for appropriate upper quadrant and cervical-thoracic spine orthoses, prostheses and assistive devices based on musculoskeletal dysfunction

	Affective
CO7	Acquire ethical skills by demonstrating safe, respectful and effective performance of physical handling techniques taking into account the patients clinical condition, the need for privacy, the physiotherapist, the resources available and the environment.
CO 8	Demonstrate communication and behavioral skills underpinned by humanitarian approach while interacting with patients, relatives, health care team members, co-professionals and society at large.
CO 9	List patients' questions, their understanding of condition and treatment options, their views, concerns, values, preferences and extent to which patients want to be involved in decision-making regarding their care and treatment. (attitudes and beliefs)
CO 10	Examine Bioethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency
CO 11	Respond to patients concerns and preferences, and respect the rights of patients to reach decisions with their doctor about their treatment and care and to refuse or limit treatment.
CO 12	Communicate clearly, sensitively and effectively with patients, caregivers,and colleagues from the medical and other professions, by listening, sharing andresponding

Unit	**Topics**	**Hours**
1	**Manifestations of trauma and their complications**	08
	d. Bones – fractures & fracture-dislocations of upper extremities & cervical-thoracic spine and their complications &management. e. Soft tissues injuries of upper extremities & cervical-thoracic spine and their complications & management, contused lacerated wounds (CLWs) Burns complications and management, Crush injuries and its conservative and post-surgicalmanagement. f. Cumulative trauma disorders- Tennis elbow, carpal tunnelsyndrome, tendinopathy etc. Management of fractures and traumaticinjuries	
2	**Degenerative Arthritis with associated conditions**	05
	Physiotherapy management of common shoulder , degenerative conditions of cervical Spine - Spondylosis, Spondylolysis, Spondylolisthesis, and Spinal Canal Stenosis, Cord compression syndrome	
3	**Inflammatory conditions**	05

	e. Arthritis (including seronegative) – Rheumatoid arthritis, Gout, Septic arthritis f. Cellulitis and itscomplications. g. Post incisional inflammation andinfection.	
4	**Infectious Diseases of bones & joints of upper extremity and cervical-thoracic spine-** Osteomyelitis, Tuberculosis	02
5	**Metabolic & Hormonal Disorders –** Osteoporosis, Osteomalacia	03
6	**Congenital & Acquired Deformities of upper extremity and cervical - thoracic spine-** cervical rib, kyphosis, sprengel's shoulder,cubitus varus/valgus	03
7	**Peripheral Nerve Injuries & Plexus Injuries of upper extremity and Brachial plexus -** Complications & Management	03
8	**Soft tissue injuries during sports and as a result of over-use of upper extremity and cervical-thoracic spine -** Conservative and Operative management	03
9	**Vascular disorders affecting musculoskeletal system-** Volkmann's ischemic contracture, Complex Regional Pain Syndrome, Compartment syndrome, Vertigo. Thoracic outlet syndrome, Vertebrobasilar artery syndrome	4
10	**Traumatic Amputation of upper extremity** Types, Complications and management inclusive of prosthetic prescription & training	4
	Total	**40**

EXAMINATION SCHEME

Practical/Clinical University Semester Examination under CBCS - 80 Marks

Exercise	Description	Marks
Q No 1	Pain/ core muscle strength assessment (OSCE)	20
Q No 2	Strength/ Range of motion assessment (OSCE)	20
QNo 3	Case presentation/ OSCE of Upper extremity / Cervical-Thoracic spine conditions/	40
		Total = 80

Internal examination pattern (practical): 40marks

Exercise	Description	Marks
QNo1	Station 1 (OSCE)	20
QNo 2	Station 2 (OSCE)	20
		Total = 40

RECOMMEMDED TEXT BOOKS

1. Therapeutic Exercise –O'Sullivan
2. Orthopaedic Physical Therapy -Donatelli
3. Cash's Textbook of Orthopedics & Rheumatology forPhysiotherapists
4. Tidy's PhysicalTherapy
5. Manual Mobilization of Extremity Joints -Kaltenborn
6. Therapeutic Exercise: Foundations and Techniques - Kolby & CarolynKisner
7. Physical Rehabilitation - SusanO'sullivan

RECOMMEMDED REFERENCE BOOKS

1. Manual Therapy: Nags, Snags, MWMs, etc - 6th Edition Brian RMulligan
2. Maitland's Peripheral ManipulationEllyHengeveld
3. Neural tissue mobilization –Butler
4. Brukner& Khan's Clinical Sports Medicine - Peter Brukner, Karim Khan (Mcgraw Medical)
5. Therapeutic Exercise: Moving Toward Function - Carrie M. Hall, Lori TheinBrody
6. Manual Mobilization of Extremity Joints-Kaltenborn
7. Neural Tissue Mobilization -Butler
8. Taping Techniques –Rose MacDonald
9. Clinical Orthopaedicrehabilitation-Broadsman

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Cardiovascular & Respiratory Physiotherapy I Theory**
Course Code	**BPT044**
Course Description	**Core Theory**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
	Cognitive
CO 1	Identify and analyse cardiovascular dysfunction in terms of biomechanical, and bio-physical basis and correlate the same with the health condition, routine electrophysiological, radiological, and biochemical investigations and arrive at appropriate Physical therapy diagnosis using WHO-ICF tool
CO 2	Utilise the knowledge about contextual factors to enhance capacity and performance of activities and participation in society
	Psychomotor
CO 3	Apply methods to evaluate functional impairments, perform pre-post-operative testing
CO 4	Plan, prescribe appropriate, and implement safe physiotherapy interventions with clinical reasoning for and prevention of impairments, activity limitations, participation restrictions and environmental barriers related tocardiovascular dysfunction in acute care settings, at home, work place, in society & in leisure activities.
CO 5	Utilise the skill to deliver cardiac rehabilitation
	Affective
CO 6	Acquire ethical skills by demonstrating safe, respectful and effective performance of physical handling techniques taking into account the patients clinical condition, the need for privacy, the physiotherapist, the resources available and the environment.
CO 7	Demonstrate behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
CO 8	list patients' questions, their understanding of condition and treatment options, their views, concerns, values, preferences and extent to which patients want to be involved in decision-making regarding their care and treatment.
CO 9	Examine ethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency

CO 10	Respond to patients concerns and preferences, and respect the rights of patients to reach decisions with their doctor about their treatment and care and to refuse or limit treatment.
CO 11	Communicate clearly, sensitively and effectively with patients, caregivers, and colleagues from the medical and other professions, by listening, sharing and responding

Sr. No	Topics	Hours
1	**Review of Applied Anatomy & Physiology** a. Cardiac anatomy & Physiology	5
2	**Investigation and Exercise Testing** a. Investigation & Clinical Implication - X-ray,ECG, ABG, ABI, 2D Echo, PFT, Doppler, Angiography, Blood investigations, Special tests, claudication time, pulses, auscultation, postural hypotension b. Stress testing, 6 Minute Walk test &Harward Step test Skill & Interpretation, Shuttle Walk Test & Modified BruceProtocol	10
3	**Exercise Physiology** a. Nutrition(Bioenergetics) b. Total energy expenditure (MET)sources c. Acute and chronic adaptation toexercise d. Complication of bed rest/ Immobilization &prevention e. Aerobic & AnaerobicTraining, f. Principles of ExercisePrescription	10
4	**Application Of ICF Model** Identify structural, functional impairment, activity and participation limitations, contextual factors influencing treatment, difference between performance and capacity, plan effective short term and long term goals to enhance functioning of cardiovascular system, outline patient specific goals and expected outcome within time frame with clinical reasoning, Documentation of observations	5
5	**Physiotherapy Management in Medical & Surgical Cardiovascular Diseases** a. Hypertension	15

	b. IHD, Myocardial Infarction, Rhythm Disorders, PacemakerImplantation, Angioplasty, CABG, Minimally Invasive Surgeries c. Valvular Heart Disease and Correctivesurgeries d. Congenital and Acquired Cardiovascular Diseases, CorrectiveSurgeries e. Thrombosis, Phlebitis andPhlebothrombosis f. Varicose Veins and ulcers g. Other Arterialdisorders	
6	**CARDIAC REHABILITATION (A.H.A./A.C.S.M. guidelines)** Definition,Indications, Contraindications Phases(I,II,III,& IV), Outcome Measures, Quality of Lifemeasures	**10**
7	**INTRODUCTION TO FUNCTIONAL SCALES** a Generic and diseasespecific b. Patient's perception of his disability and functioning and correlating the same with therapistevaluation	**5**
	Total Hours	**60**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

RECOMMENDED TEXT BOOKS

1. Cash's Textbook for Physiotherapists in Chest, Heart & Vasculardiseases
2. Cash's text book in General Medicine & Surgical conditions forPhysiotherapists
3. Chest Physical therapy & pulmonary rehabilitation -- Donna FrownFilter
4. Brompton's hospitalguide
5. Physiotherapy in respiratory and cardiac problem - Pryor andPrasad
6. Physiotherapy in Cardio – Vascular rehabilitation –Webber
7. Chest physiotherapy in intensive care ColinMackenzie
8. Mechanical ventilation – Ashfaq Hasan
9. Management of Mechanical ventilation –Pierce

RECOMMENDED REFERENCE BOOKS

1. Exercise & the Heart –Wenger
2. ECG – P.J.Mehta
3. Cardiopulmonary Physical Therapy -- IrwinScott
4. Essential of cardio pulmonary physical therapy –HillgassAndSodosky
5. Exercise physiology, energy, nutrition and human performance –M"cardle
6. Exercise testing and prescription - Skinner 8. Exercise in health anddisease-Pollock

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Cardiovascular & Respiratory Physiotherapy I Practical**
Course Code	**BPT045**
Course Description	**Core Practical**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Learning Outcomes	
At the end of the course, the candidate will be able to:	
	Cognitive
CO 1	Identify and analyse cardiovascular dysfunction in terms of biomechanical, and bio-physical basis and correlate the same with the health condition, routine electrophysiological, radiological, and biochemical investigations and arrive at appropriate Physical therapy diagnosis using WHO-ICF tool
CO 2	Utilise the knowledge about contextual factors to enhance capacity and performance of activities and participation in society
	Psychomotor
CO 3	Apply methods to evaluate functional impairments, perform pre-post-operative testing
CO 4	Plan, prescribe appropriate, and implement safe physiotherapy interventions with clinical reasoning for and prevention of impairments, activity limitations, participation restrictions and environmental barriers related tocardiovascular dysfunction in acute care settings, at home, work place, in society & in leisure activities.
CO 5	Utilise the skill to deliver cardiac rehabilitation
	Affective
CO 6	Acquire ethical skills by demonstrating safe, respectful and effective performance of physical handling techniques taking into account the patients clinical condition, the need for privacy, the physiotherapist, the resources available and the environment.
CO 7	Demonstrate behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
CO 8	list patients' questions, their understanding of condition and treatment options, their views, concerns, values, preferences and extent to which patients want to be involved in decision-making regarding their care and treatment.
CO 9	Examine ethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency

CO 10	Respond to patients concerns and preferences, and respect the rights of patients to reach decisions with their doctor about their treatment and care and to refuse or limit treatment.
CO 11	Communicate clearly, sensitively and effectively with patients, caregivers, and colleagues from the medical and other professions, by listening, sharing and responding

Sr. No	Topics	Hours
1.	**Application of Management techniques:** Positioning, Breathing Control, Respiratory Muscle Strengthening, Relaxation techniques, Airway Clearance Techniques, Mechanical Assistive Devices, Nebulization andHumidification, Respiratory PNF, maximal and submaximal exercise testing.	05
2	**Investigation and Exercise Testing** c. Investigation & Clinical Implication - X-ray,ECG, ABG, ABI, 2D Echo, PFT, Doppler, Angiography, Blood investigations, Special tests, claudication time, pulses, auscultation, postural hypotension d. Stress testing, 6 Minute Walk test &Harward Step test Skill & Interpretation, Shuttle Walk Test & Modified BruceProtocol	05
4	**Application Of ICF Model** Identify structural, functional impairment, activity and participation limitations, contextual factors influencing treatment, difference between performance and capacity, plan effective short term and long term goals to enhance functioning of cardiovascular system, outline patient specific goals and expected outcome within time frame with clinical reasoning, Documentation of observations	05
5	**Physiotherapy Management in Medical & Surgical Cardiovascular Diseases** h. Hypertension i. IHD, Myocardial Infarction, Rhythm Disorders, PacemakerImplantation, Angioplasty, CABG, Minimally Invasive Surgeries j. Valvular Heart Disease and Correctivesurgeries k. Congenital and Acquired Cardiovascular Diseases, CorrectiveSurgeries l. Thrombosis, Phlebitis andPhlebothrombosis m. Varicose Veins and ulcers n. Other Arterialdisorders Exercises for vascular disorders, Berger's exercises, wound care	10
6	**CARDIAC REHABILITATION (A.H.A./A.C.S.M./ AACVPRguidelines)**	10

	Definition, Indications, Contraindications Phases(I,II,III,& IV), Outcome Measures, Quality of Life measures, Coughing techniques, Cardiac Rehabilitation, Strength training, Exercises to improve flexibility and endurance, Pain Relief, Homeprogram	
7	**INTRODUCTION TO FUNCTIONAL SCALES** a Generic and disease specific b. Patient's perception of his disability and functioning and correlating the same with therapist evaluation.	**5**
	Total Hours	**40**

EXAMINATION SCHEME

Practical/Clinical University Semester Examination under CBCS - 80 Marks

Exercise	Description	Marks
Q No 1	Skill demonstration- Respiratory PNF/ Breathing exercises/Postural drainage/ AD/ACBT/ Positioning/ Relaxation technique (OSCE), maximal and submaximal exercise testing	20
Q No 2	Interpretation of ABG/ECG/X Ray/PFT (OSPE)	20
QNo 3	Case presentation/OSCE of cardiovascular conditions	40
		Total = 80

Internal examination pattern (Practical/Clinical): 40marks

Exercise	Description	Marks
Q No 1	Skill demonstration- Respiratory PNF / Breathing exercises/Postural drainage/ AD/ACBT/ Positioning/ Relaxation technique (OSPE), maximal and submaximal exercise testing.	20
Q No 2	Interpretation of ABG/ECG/X Ray/PFT (OSPE)	20
		Total = 40

RECOMMENDED TEXT BOOKS

1. Cash's Textbook for Physiotherapists in Chest, Heart & Vasculardiseases

2. Cash's text book in General Medicine & Surgical conditions forPhysiotherapists
3. Chest Physical therapy & pulmonary rehabilitation -- Donna FrownFilter
4. Brompton's hospitalguide
5. Physiotherapy in respiratory and cardiac problem - Pryor andPrasad
6. Physiotherapy in Cardio – Vascular rehabilitation –Webber
7. Chest physiotherapy in intensive care ColinMackenzie
8. Mechanical ventilation – Ashfaq Hasan
9. Management of Mechanical ventilation –Pierce

RECOMMENDED REFERENCE BOOKS

1. Exercise & the Heart –Wenger
2. ECG – P.J.Mehta
3. Cardiopulmonary Physical Therapy -- IrwinScott
4. Essential of cardio pulmonary physical therapy –HillgassAndSodosky
5. Exercise physiology, energy, nutrition and human performance –M"cardle
6. Exercise testing and prescription - Skinner 8. Exercise in health anddisease-Pollock

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Neuro Physiotherapy I Theory**
Course Code	**BPT046**
Course Description	**Core Theory**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will	
	Cognitive
CO 1	Be able to identify and analyze movement dysfunction due to neuromuscular skeletal disorders in terms of biomechanical and biophysical basis, correlate the same with the health condition, routine electrophysiological, radiological and biochemical investigations, and arrive at appropriate physical therapy diagnosis using WHO-ICF with clinical reasoning.
CO 2	Be able to examine, evaluate, diagnose, plan, execute and document physiotherapy treatment independently or along with the multidisciplinary team in client with neurological dysfunction.
CO 3	Be able to plan realistic goals based on the knowledge of prognosis of the disease of the nervous system and prescribe appropriate, safe evidence based physiotherapy interventions with clinical reasoning.
CO 4	Understand infection control principles, best practices and techniques applicable to a range of setting where clients with neurological conditions would receive physiotherapy services.
CO 5	Know determinacy of health (environmental, nutritional, self-management/ behavioral factors) and chronic disease management principles related to neurological health.
	Psychomotor
CO 5	Be able to develop psychomotor skills to implement timely and appropriate physiotherapy assessment tools/techniques to ensure a holistic approach to patient evaluation in order to prioritize patient's problems
CO6	Be able to select timely physiotherapeutic interventions to reduce morbidity and physiotherapy management strategies, suitable for the patients' problems and indicator conditions based on the best available evidence.
CO7	Implement appropriate neuro-physiotherapeutic approaches, electrotherapeutic modalities, joint and soft tissue mobilizations and ergonomic advice for neuromuscular skeletal systems, contextual factors to enhance performance of activities and participation in society.

	Affective
CO8	Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society and co-professionals, to promote individual and community health.

Unit	**Topics**	**Hours**
1	**Theoretical basis of motor control and learning to understand various neurophysiotherapeutic approaches.**	10
2	**Plasticity of the intact brain**	10
	I Motorlearning ii. Training iii. Plasticity a. Plasticity following brain lesion nature of spontaneous recovery effectof environment behaviour and recovery adaptation of motor performance muscleadaptation b. Strength training and physical conditioning in neuro rehabilitationto optimize functionalperformance c. Skill acquisition in restoration of functional performanceinformation, instruction, demonstration feedbackpractice	
3	**Quality of Life scales & Independence Measures**	10
4	**PHYSIOTHERAPY MANAGEMENT – ADULT**	30
	A. Cerebrovascular Accidents - Stroke syndromesmanagement B. Traumatic Brain Injury – Coma Stimulation and pathological brain injury (S.O.L.)management C. Spinal cord disorders – traumatic and non – traumatic, management including bladdertraining D. Peripheral neuropathies – traumatic & non traumatic - upper limb & lower limb - brachial plexus - nerve root lesions - metabolic &endocrine E. Vestibular disorders – central andperipheral F. VIIth cranial nervedisorders G. Demyelinating diseases - Multiple Sclerosis & G.B.syndrome H. Cerebellar diseases andAtaxia	

	I. Extrapyramidal diseases, with emphasis on Parkinson'sdisease J. Anterior Horn Cell diseases – heredity and acquired e.g. M.N.D., P.M.A., S.M.A.,Poliomyelitis K. Myopathies, Muscular Dystrophies and Neuromuscular Junction Disorders- MyastheniaGravis L. Disorders of A.N.S. – Horner's syndrome, Hypo/Hypertension, AutonomicDysreflexia M. Psychosomatic pain &paralysis N. Infections of Nervous system – Meningitis, Encephalitis and Bulbar Polio O. Disorders of Perception andmanagement	
	Total	**60**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

RECOMMEMDED TEXT BOOKS

1. Patricia A D. Cash's Text book for Physio Therapist in Neurological disorders. Jaypee bros; 4th Edition1991
2. Adler B. PNF in practice. Springer. 4th Edition.1993
3. Hollis M. Practical Physical Therapy 4th Edition.1985
4. O'Sullivan S. Physical Rehabilitation 7th Edition.1981
5. Patricia M D. Right in the middle. Springer-Verlag.1990
6. Johnstone M. Therapy for stroke. Edinburgh: Churchill Livingstone;1991.
7. Bobath B. Adult hemiplegia. Oxford (England): Heinemann Medical Books;1990.
8. Bromley I. Tetraplegia and Paraplegia: A guide for physiotherapists 6th Edition;2006.

RECOMMEMDED REFERENCE BOOKS

1. Umphred D. Neurological rehabilitation. Saint Louis: Mosby/Elsevier;2013.
2. Donaghy M. Brain's diseases of the nervous system. Oxford: Oxford University Press; 2009.

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Neuro Physiotherapy I Practical**
Course Code	**BPT047**
Course Description	**Core Practical**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes: The student will	
	Cognitive
CO 1	Be able to identify and analyze movement dysfunction due to neuromuscular skeletal disorders in terms of biomechanical and biophysical basis, correlate the same with the health condition, routine electrophysiological, radiological and biochemical investigations, and arrive at appropriate physical therapy diagnosis using WHO-ICF with clinical reasoning.
CO 2	Be able to examine, evaluate, diagnose, plan, execute and document physiotherapy treatment independently or along with the multidisciplinary team in client with neurological dysfunction.
CO 3	Be able to plan realistic goals based on the knowledge of prognosis of the disease of the nervous system and prescribe appropriate, safe evidence based physiotherapy interventions with clinical reasoning.
CO 4	Understand infection control principles, best practices and techniques applicable to a range of setting where clients with neurological conditions would receive physiotherapy services.
CO 5	Know determinacy of health (environmental, nutritional, self-management/ behavioral factors) and chronic disease management principles related to neurological health.
	Psychomotor
CO 5	Be able to develop psychomotor skills to implement timely and appropriate physiotherapy assessment tools/techniques to ensure a holistic approach to patient evaluation in order to prioritize patient's problems
CO6	Be able to select timely physiotherapeutic interventions to reduce morbidity and physiotherapy management strategies, suitable for the patients' problems and indicator conditions based on the best available evidence.
CO7	Implement appropriate neuro-physiotherapeutic approaches, electrotherapeutic modalities, joint and soft tissue mobilizations and ergonomic advice for neuromuscular skeletal systems, contextual factors to enhance performance of activities and participation in society.

	Affective
CO8	Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society and co-professionals, to promote individual and community health.

Unit	**Topics**	**Hours**
1	**Treatment programme includes**	30
	A. Application of appropriate electro-therapeutic modes for relief of pain and functional re-education with clinicalreasoning. B. Application of skills as Neurotherapeutic approaches (Brunnstrom, Roods, Bobath, N.D.T., M.R.P., mental imagery, Constraint induced movement therapy, learning transfers), co-ordination and balancing exercise by using techniques based on neurophysiologicalprinciples. C. Tools and adaptive equipments used for neuro-rehabilitation like Vestibular balls Tilt boards, Bolsters, Wedges, Graded Benches, Therapeutic matsetc. D. Application of transfer and functional re-education exercise, postural exercise and gaittraining. E. Bladder and boweltraining F. Developing a philosophy forcaring G. Prescription for appropriate orthotic devices and fabrication of temporarysplints H. Lifting techniques, wheel chair modifications, adaptivedevices I. Ergonomic advice for prevention/rehabilitation for the patients as well as for parents/care givers education about handling ofpatients	
2	**Quality of Life scales & Independence Measures**	10
	Total	**40**

EXAMINATION SCHEME

Practical/Clinical pattern for University Semester Examination under CBCS - 80 Marks

Exercise	Description	Marks
Q No 1	Station 1 (OSCE)	20
Q No 2	Station 2 (OSCE)	20
QNo 3	Long case/OSCE on Adult neuro conditions	40
		Total = 80

Internal examination Practical/Clinical pattern (theory): 40marks

Exercise	Description	Marks
QNo1	Station 1 (OSCE)	20
QNo 2	Station 2 (OSCE)	20
		Total = 40

RECOMMEMDED TEXT BOOKS

1. Patricia A D. Cash's Text book for Physio Therapist in Neurological disorders. Jaypee bros; 4th Edition1991
2. Adler B. PNF in practice. Springer. 4th Edition.1993
3. Hollis M. Practical Physical Therapy 4th Edition.1985
4. O'Sullivan S. Physical Rehabilitation 7th Edition.1981
5. Patricia M D. Right in the middle. Springer-Verlag.1990
6. Johnstone M. Therapy for stroke. Edinburgh: Churchill Livingstone;1991.
7. Bobath B. Adult hemiplegia. Oxford (England): Heinemann Medical Books;1990.
8. Bromley I. Tetraplegia and Paraplegia: A guide for physiotherapists 6th Edition;2006.

RECOMMEMDED REFERENCE BOOKS

1. Umphred D. Neurological rehabilitation. Saint Louis: Mosby/Elsevier;2013.
2. Donaghy M. Brain's diseases of the nervous system. Oxford: Oxford University Press; 2009.

ELECTIVE COURSES

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Hand Rehabilitation**
Course Code	**SEC005**
Course Description	**Skill based Elective**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
	Cognitive
CO 1	Identify, evaluate, analyze and discuss primary and secondary dysfunction related to Wrist and hand complex based on kinesiological and pathophysiological principles
Psychomotor	
CO 2	Apply theoretical basis of physiological effects and best available evidence on effectiveness, efficacy and safe application of management guidelines
CO 3	Prescribe and train for appropriate prosthesis and orthosis based on dysfunction of wrist and hand complex
Affective	
CO 4	Acquire ethical skills by demonstrating safe and effective performance of physical handling techniques taking into account patient's clinical condition, need for privacy, resources available and environment

Unit	**Topics**	**Hours**
1	**Anatomy of Wrist and Hand Complex**	**02**
	• BasicStructure • BonyLandmarks • Muscles • Ligaments • Nervesupply • Blood supply • SurfaceAnatomy • AppliedAnatomy	
2	**Clinical Biomechanics**	**05**

	• Biomechanics of Wrist and HandComplex • Kinetics • Kinematics • Pathomechanics • Function and Architecture of Hand Functional positions of wrist andhand	
3	**Examination**	**3**
	• Specific Historytaking • Differential Diagnosis based onHistory • Screening for Red and Yellowflags • Assessment • Neurological Screening Specialtests	
4	**Traumatic Injuries of Hand**	**5**
	• Flexor tendoninjuries • Extensor tendoninjuries • Crush Injury • Fractures around the Wrist and Handcomplex	
5	**Overuse Injuries**	**2**
	Carpal tunnel syndrome de Quervain's tenosynovitis	
6	**Special Considerations**	**3**
	• Complex Regional Pain Syndrome(CRPS) • Rheumatoidhand • Dupuytren'sContracture	
	Practical : Case presentations, evaluation and management of above conditions	**40**
	Total	**60**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment will beconducted at constituent unit level

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short Answer Questions	8	5	8x5	40
Total				**Total= 40**

REFERENCE BOOKS

1. Rehabilitation of the Hand: Surgery and Therapy- James M.Hunter.
2. Rehabilitation of Hand and Upper extremity – Terri M.Skirven.
3. Examination of the Hand and Wrist- RaoulTubiana.
4. Hand and Upper extremity Rehabilitation- Rebecca J.Saunders.
5. Management of Common Musculoskeletal disorders- Randolph M.Kessler
6. Oatis- Kinesiology: The mechaniscs and pathomechanics of HumanMovement.
7. Clinical Anatomy by regions- Richard S.Snell

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Foot Rehabilitation**
Course Code	**SEC006**
Course Description	**Skill based Elective**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
Cognitive	
CO 1	Identify, evaluate, analyze and discuss primary and secondary dysfunction related to ankle and foot complex based on kinesiological and pathophysiological principles
Psychomotor	
CO 2	Apply theoretical basis of physiological effects and best available evidence on effectiveness, efficacy and safe application of management guidelines
CO 3	Prescribe and train for appropriate prosthesis and orthosis based on dysfunction of ankle and foot complex
Affective	
CO 4	Acquire ethical skills by demonstrating safe and effective performance of physical handling techniques taking into account patient's clinical condition, need for privacy, resources available and environment

Unit	Topics	Hours
1	**Anatomy of Ankle and Foot Complex**	**03**
	• BasicStructure • BonyLandmarks • Muscles • Ligaments • Nervesupply • Blood supply • SurfaceAnatomy • AppliedAnatomy	
2	**Clinical Biomechanics**	**05**
	• Biomechanics of Ankle and FootComplex • Kinetics andKinematics • Pressure distributionstudies • Pathomechanics	

	• Function and Architecture of FootArches	
3	**Examination**	**3**
	• Specific Historytaking • Differential Diagnosis based on History • Screening for Red and Yellowflags • Assessment • NeurologicalScreening • Specialtests	
4	**Traumatic Injuries of Foot**	**3**
	• Tendoachillesrupture • Crush Injury • Fractures around the Ankle and FootComplex	
5	**Overuse Injuries**	**3**
	• Tarsal TunnelSyndrome • Shinsplints • Plantarfasciitis • Tendoachillestendinitis	
6	**Special Considerations**	**3**
	• Congenital Taliopo Equino Varus(CTEV) • Pes Planus, Pes Cavus, Hallux Valgus, HalluxRigidus • RAFoot	
	Practical : Case presentations, evaluation and management of above conditions	**40**
	Total	**60**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment will beconducted at constituent unit level

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short Answer Questions	8	5	8x5	40
Total				**Total= 40**

REFERENCE BOOKS

1. Management of Common Musculoskeletal disorders- Randolph M.Kessler
2. Carol Oatis- Kinesiology: The mechanics and pathomechanics of Human Movement.
3. Clinical Anatomy by regions- Richard S.Snell

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Aquatic Therapy**
Course Code	**SEC007**
Course Description	**Skill based Elective**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
Cognitive	
CO 1	explain principles of aquatic therapy, equipment's required, techniques used in aquatic therapy, evaluate, analyze and discuss exercises and activities for orthopedic, neurologic and rheumatic patient populations using fluid mechanical principles
Psychomotor	
CO 2	apply theoretical basis of physiological effects and best available evidence on effectiveness, efficacy and safe application of aquatic therapy for management
CO 3	design treatment programs and train for orthopedic, neurologic and rheumatic patient populations using rules of motor learning and feedback in water
Affective	
CO 4	acquire ethical skills by demonstrating safe and effective performance of physical handling techniques taking into account patient's clinical condition, need for privacy, resources available and environment

Unit	Topics	Hours
1	**Aquatic Properties and Therapeutic Interventions**	**02**
	• Physical Properties ofWater • Fluid Dynamic Properties ofWater	
2	**Physiological Responses to Immersion and Aquatic Exercise**	**02**
	• PulmonarySystem • CardiovascularSystem • RenalSystem • MusculoskeletalSystem • NeuromuscularSystem	
3	**The Halliwick Concept**	**02**

	• Halliwick andICF • LearningStages • Function LevelApplications • Activity LevelApplications • Participation LevelApplications	
4	**The Bad Ragaz Ring Method**	**02**
	• Physiotherapeutic and MechanicalPrinciples • Proprioceptive NeuromuscularFacilitation • Treatment GoalSetting • Application of Techniques and ExerciseProgression • Patterns for Upper and Lower Extremities andTrunk	
5	**Ai Chi**	**02**
	• Breathingpatterns • MovementPrinciples • Stance and MovementPatterns • Applications in PatientPopulations	
6	**Watsu**	**02**
	• Physiological and PsychologicalEffects • TreatmentApplications • TreatmentProgression	
7	**Assessment and Evaluation**	**02**
	• Initial Assessment andEvaluation • Water SafetyScreening • Documenting Aquatic Programming andProgression	
8	**Core Training using Aquatic Therapy**	**02**
	• Activities to improve Mobility and MusclePerformance • Core Emphasis CardiorespiratoryTraining • Specific ExerciseRecommendations	

9	**Neuromuscular Training** • Balance and PostureControl • Aquatic WellnessPrograms	**02**
10	**Aquatic Training in Special Considerations** • CerebralPalsy • Brain Injury andStroke • RheumatoidArthritis • Pregnancy • CardiopulmonaryDisease • Obesity • GeriatricPopulations • InjuredAthletes	**02**
	Practical's: Visit to Aquatic therapy Centers, E learning , video library, simulated cases	**40**
	Total Hours	**60**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment will beconducted at constituent unit level

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short Answer Questions	8	5	8x5	40
Total				**Total= 40**

REFERENCE BOOKS

1. Aquatic exercise for rehabilitation and training: Lori Thein Brody and Paula RichleyGeigle
2. Aquatic Rehabilitation: Richard G. Ruoti, David M. Morris and Andrew J.Cole
3. Aquatic exercise therapy: Andrea Bates and Norm Hanson
4. The use of aquatics in orthopedic and sports medicine rehabilitation and physical conditioning: Kevin E. Wilk and David M.Joyner
5. Aquatic Fitness Professional Manual 7th Edition: Aquatic ExercisesAssociation

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Sports Physiotherapy**
Course Code	**SEC008**
Course Description	**Skill based Elective**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
Cognitive	
CO 1	identify, evaluate, analyze and discuss primary and secondary dysfunction and their management related to common sporting injuries
Psychomotor	
CO 2	apply theoretical basis of physiological effects and best available evidence on effectiveness, efficacy and safe application of management guidelines
Affective	
CO 4	acquire ethical skills by demonstrating safe and effective performance of physical handling techniques taking into account patient's clinical condition, need for privacy, resources available and environment

Unit	Topics	Hours
1	**Biomechanical techniques of Upper and lower extremity dependent sports**	**4**
	• Throwing, • Badminton • Swimming, • Cycling, • Football, • Running.	
2	**Sports Metabolism**	**4**
	• Carbohydrate, Protein and Fat Metabolism • Energy balance and transfer,calorimetry, • Resting metabolism and metabolicactivity, • Oxidative processes. Steadystate. • Transient phases and oxygendeficit	

	• Lactateproduction. • Alactaci anaerobic energysources • Maximal aerobic power and limitingfactors • Chronic fatigue insportspersons	
3	**Common Injuries in Sports**	**2**
	• Overuseinjuries • Traumaticinjuries • Soft tissueinjuries	
4	**On field and off field Examination**	**4**
	• Principle ofassessment • Specific Historytaking • Differential Diagnosis based onHistory • Screening for Red and Yellowflags • Assessment • NeurologicalScreening	
5	**Sportswear-** Protective gears in sports	**2**
6	**Management of Common Sports Injuries**	**2**
	• Principles • Goalsetting • Rehabilitationprotocols • Return back tosports	
7	**Sports for specially abled**	**2**
	Practical's: Visit to Sports Center, 2D motion analysis of sport related videos, assessment and management techniques,	**40**
	Total	**60**

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment will beconducted at constituent unit level

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short Answer Questions	8	5	8x5	40
Total				**Total= 40**

REFERENCE BOOKS

1. Brukner P. Brukner & Khan's clinical sports medicine. North Ryde: McGraw-Hill;2012.
2. Bartlett R. Introduction to sports biomechanics: Analysing human movement patterns. Routledge; 2007 Oct25.
3. Text book of Work Physiology Physiological basis of exercise William D. McArdle, Frank I. Katch, Victor L. KatchAstrand, P.-O. and Rodahl,K.
4. Grayson E. Ethics, injuries and the law in sportsmedicine.

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Basic Skills in patient care**
Course Code	**BPTCLT007**
Course Description	**Clinical Training**
Semester	**Semester VII**
Credits per semester	**5 credits**
Hours per semester	**300 hours**

Students will be learning about physiotherapeutic management in various conditions and application of hands on skills on patients.

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	10
Q No 2	OSPE Station 2	10
Q No 3	OSPE Station 3	10
Q No 4	OSPE Station4	10
		Total = 40

*Students will be evaluated as per their level of knowledge level.

Bachelor of Physiotherapy (BPT) Semester-VIII

Course Code	Course Title	Course Description	Theory Hours	Practical Hours	Clinical Hours	Credits
BPT048	Musculoskeletal Physiotherapy II Theory	Core Theory	**60**	**-**	**-**	**3**
BPT049	Musculoskeletal Physiotherapy II Practical	Core Practical	**-**	**40**	**-**	**1**
BPT050	Cardiovascular & Respiratory Physiotherapy II Theory	Core Theory	**60**	**-**	**-**	**3**
BPT051	Cardiovascular & Respiratory Physiotherapy II Practical	Core Practical	**-**	**40**	**-**	**1**
BPT052	Neuro Physiotherapy II Theory	Core Theory	**60**	**-**	**-**	**3**
BPT053	Neuro Physiotherapy II Practical	Core Practical	**-**	**40**	**-**	**1**
BPT054	Research Project Synopsis	Research	**-**	**40**	**-**	**1**
SEC009/SEC010	Neurodevelopmental techniques/PT in ICU	Skill based elective course theory and practical	**20**	**40**	**-**	**2**
SEC011/ SEC012	Splinting and bracing/ Integumentary Physiotherapy	Skill based elective course theory and practical	**20**	**40**	**-**	**2**
BPTCLT008	Basic skills in patient care	Clinical Training	**-**	**-**	**260**	**4**

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Musculoskeletal PT II**
Course Code	**BPT-048**
Course Description	**Core theory**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
Cognitive	
CO 1	Identify, evaluate, analyze & discuss primary and secondary musculo- skeletal dysfunctionrelatedtolowerextremity,pelvis&lumbo-sacral,basedonbiomechanical, kinesiological & patho- physiological principles using ICF model
CO 2	Correlate the same with radiological, electrophysiological, biochemical/ haematological investigations as applicable & arrive at the appropriate Physiotherapy diagnosis with skilful evaluation of structure and function with clinical reasoning for lower quadrant & lower spine dysfunction.
CO 3	Explain the pharmaco-therapeutics, its interaction with physiotherapeutic measures and modify physiotherapeutic intervention appropriately.
CO 4	Apply knowledge of psychosocial factors (personal and environmental factors in the context of disability associated with the musculo-skeletal system or multiple body systems) for behavioral and lifestyle modification and use appropriate training and coping strategies.
Psychomotor	
CO 5	Evaluation of mental and cognitive function including depression, anxiety ,attitudes and beliefs.Apply theoretical basis of physiological effects, indications, contraindications; and best available evidence on the effectiveness, efficacy and safe application guidelines for a full range of physiotherapeutic strategies and interventions, including appropriate modes of soft tissue & joint mobilization, electrotherapy, therapeutic exercise, and appropriate ergonomic advise, self management techniques and home exercise that can be employed to manage problems of the individual's lower quadrant & lumbar spine structures, functions, activities and participation, capacity and performance levels associated with the musculo-skeletal system, for relief of pain & prevention, restoration and rehabilitation measures for maximum possible functional independence at home, workplace and in community.
CO 6	Prescribe and train for appropriate lower extremity& lumbar spine orthoses, prostheses and walking aids based on musculoskeletal dysfunction.

Affective	
CO 7	Acquire ethical skills by demonstrating safe, respectful and effective performance of physical handling techniques taking into account the patient's clinical condition, the need for privacy, the physiotherapist, the resources available and the environment.
CO 8	Demonstrate communication and behavioral skills underpinned by humanitarian approach while interacting with patients, ,relatives, health care team members , co-professionals and society at large
CO 9	list patients' questions, their understanding of condition and treatment options, their views, concerns, values, preferences and extent to which patients want to be involved in decision-making regarding their care and treatment.
CO 10	Examine bioethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency
CO 11	Respond to patients concerns and preferences, and respect the rights of patients to reach decisions with their doctor about their treatment and care and to refuse or limit treatment.
CO 12	Communicate clearly, sensitively and effectively with patients, caregivers,and colleagues from the medical and other professions, by listening, sharing andresponding

Unit	Topics	Hours
1	**Manifestations of trauma and their complications:**	10
	a. Bones – fractures & fracture-dislocations of lower extremity, pelvis& lumbo-sacral spine and their complications&management b. Soft tissues injuries of lower extremities & lumbo-sacral spine and their complications & Management, contused lacerated wounds (CLWs) Burns complications andmanagement. c. Overuse-syndromes: Piriformis syndrome, Ischioglueteal bursitis, IT band friction syndrome, trochanteric bursitis, Jumpers knee, housemaid kneeetc	
2	**Degenerative Arthritis with associated conditions**	5
	a. Osteoarthritis of Hip joint, knee joint and anklejoint b. Lumbar spine degenerative conditions like Spondylosis, degenerative disc disease Spondylysis, Spondylolisthesis, and Lumbar CanalStenosis	
3	**Inflammatory conditions**	5
	a. Arthritis (including seronegative arthritis) Rheumatoid arthritis, Gout, Septic arthritis b. Spondylo-arthropathies e.g. AnkylosingSpondylitis. c. Cellulitis and itscomplications. d. Post incisional inflammation andinfection. e. Avascularnecrosis	
4.	**Infectious Diseases of bones & joints of lower extremities, pelvis and**	5

	lumbo-sacral spine a. TB Hip,TB knee Pott'sspine b. Osteomyelitis	
5.	**Metabolic & Hormonal Disorders** a. Osteoporosis	5
6.	**Congenital & Acquired Deformities of lowerextremities&lumbar spine** a. Congenital talipo-equinovarus b. Scoliosis c. Congenital hipdislocation d. Genu valgus/varus e. Coxa vara /valga	10
7.	**Peripheral Nerve Injuries of lower extremity & Lumbo-sacral plexus Injuries-**complications & management	5
8.	**Soft tissue injuries of lower extremity and lumbar spine during sports and as a result of Over-use:** conservative and operative management	5
9.	**Musculo-skeletal complications in Cerebral Palsy, Poliomyelitis and reconstructive surgeries.**	5
10.	**Traumatic Amputation of lower extremity** a.Types b.Complications and management inclusive of prosthetic prescription &training	5
	Total Hours	60

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

RECOMMEMDED TEXT BOOKS

1. Therapeutic Exercise -O'Sullivan, 5th edition
2. Orthopaedic Physical Therapy –Donatelli, 3rdedition
3. Cash's Textbook of Orthopedics & Rheumatology for Physiotherapists, 4th edition
4. Tidy's Physical Therapy,15thedition
5. Manual Mobilization of Extremity Joints –Kaltenborn, 8thedition
6. Therapeutic Exercise: Foundations and Techniques - Kolby & CarolynKisner, 7th edition
7. Physical Rehabilitation - SusanO'sullivan, 5thedition

RECOMMEMDED REFERENCE BOOKS

1. Manual Therapy: Nags, Snags, MWMs, etc - 6th Edition BrianRMulligan
2. Maitland's Peripheral ManipulationEllyHengeveld
3. Neural tissue mobilization – Butler
4. Brukner & Khan's Clinical Sports Medicine - Peter Brukner, Karim Khan(McgrawMedical)
5. Therapeutic Exercise: Moving Toward Function - Carrie M. Hall, LoriTheinBrody
6. Manual Mobilization of ExtremityJoints-Kaltenborn
7. Neural Tissue Mobilization -Butler
8. Taping Techniques –RoseMacDonald
9. ClinicalOrthopaedicrehabilitation-Broadsman

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Musculoskeletal PT II**
Course Code	**BPT-049**
Course Description	**Core Practical**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Learning Outcomes: The student will be able to	
Cognitive	
CO 1	Identify, evaluate, analyze & discuss primary and secondary musculo- skeletal dysfunction related to lower extremity, pelvis& lumbo-sacral, based on biomechanical, kinesiological & patho- physiological principles using ICF model
CO 2	Correlate the same with radiological, electrophysiological, biochemical/ haematological investigations as applicable & arrive at the appropriate Physiotherapy diagnosis with skilful evaluation of structure and function with clinical reasoning for lower quadrant & lower spine dysfunction.
CO 3	Explain the pharmaco-therapeutics, its interaction with physiotherapeutic measures and modify physiotherapeutic intervention appropriately.
CO 4	Apply knowledge of psychosocial factors (personal and environmental factors in the context of disability associated with the musculo-skeletal system or multiple body systems) for behavioral and lifestyle modification and use appropriate training and coping strategies.
Psychomotor	
CO 5	Evaluation of mental and cognitive function including depression, anxiety,attitudes and beliefs.Apply theoretical basis of physiological effects, indications, contraindications; and best available evidence on the effectiveness, efficacy and safe application guidelines for a full range of physiotherapeutic strategies and interventions, including appropriate modes of soft tissue & joint mobilization, electrotherapy, therapeutic exercise, and appropriate ergonomic advise, self management techniques and home exercise that can be employed to manage problems of the individual's lower quadrant & lumbar spine structures, functions, activities and participation, capacity and performance levels associated with the musculo-skeletal system, for relief of pain& prevention, restoration and rehabilitation measures for maximum possible functional independence at home, workplace and in community.
CO 6	Prescribe and train for appropriate lower extremity& lumbar spine orthoses, prostheses and walking aids based on musculoskeletal dysfunction.

Affective	
CO 7	Acquire ethical skills by demonstrating safe, respectful and effective performance of physical handling techniques taking into account the patient's clinical condition, the need for privacy, the physiotherapist, the resources available and the environment.
CO 8	Demonstrate communication and behavioral skills underpinned by humanitarian approach while interacting with patients, ,relatives, health care team members , co-professionals and society at large
CO 9	list patients' questions, their understanding of condition and treatment options, their views, concerns, values, preferences and extent to which patients want to be involved in decision-making regarding their care and treatment.
CO 10	Examine bioethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency
CO 11	Respond to patients concerns and preferences, and respect the rights of patients to reach decisions with their doctor about their treatment and care and to refuse or limit treatment.
CO 12	Communicate clearly, sensitively and effectively with patients, caregivers,and colleagues from the medical and other professions, by listening, sharing andresponding

Unit	Topics	Hours
1	**Management of trauma and their complications:**	10
	a. Bones – fractures & fracture-dislocations of lower extremity, pelvis& lumbo-sacral spine and their complications&management b. Soft tissues injuries of lower extremities & lumbo-sacral spine and their complications & Management, contused lacerated wounds (CLWs) Burns complications andmanagement. c. Overuse-syndromes: Piriformis syndrome, Ischioglueteal bursitis, IT band friction syndrome, trochanteric bursitis, Jumpers knee, housemaid kneeetc	
2	**Management of degenerative Arthritis with associated conditions**	5
	a. Osteoarthritis of Hip joint, knee joint and anklejoint b. Lumbar spine degenerative conditions like Spondylosis, degenerative disc disease Spondylolysis, Spondylolisthesis, and Lumbar Canal Stenosis	
3.	**Management of Inflammatory conditions**	5
	a. Arthritis (including seronegative arthritis) Rheumatoid arthritis, Gout, Septicarthrit b. Spondylo-arthropathies e.g. AnkylosingSpondylitis.	
4.	**Infectious Diseases of bones & joints of lower extremities, pelvis and lumbo-sacral spine** a. TB Hip,TB knee Pott'sspine b. Osteomyelitis	03
5.	**Congenital & Acquired Deformities of lowerextremities&lumbar spine** h. Congenital talipo-equinovarus i. Scoliosis j. Congenital hipdislocation k. Genu valgus/varus l. Coxa vara /valga	07
6.	**Peripheral Nerve Injuries of lower extremity & Lumbo-sacral plexus Injuries-** complications & management	5
7.	**Traumatic Amputation of lower extremity** a.Types b.Complications and management inclusive of prosthetic prescription & training	5
	Total hours	40

Examination Scheme

Practical question paper pattern for University Semester Examination under CBCS - 80 marks

Exercise	Description	Marks
Q No 1	Pain /Range of motion assessment (OSPE)	20
Q No 2	Strength/Core strength assessment (OSPE)	20
QNo 3	Case Presentation/OSCE of Lower extremity/ lumbar spine conditions	40
		Total-80

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	Station 1 (OSPE)	20
Q No 2	Station 2 (OSPE)	20
		Total-40

RECOMMEMDED TEXT BOOKS

1. Therapeutic Exercise -O'Sullivan, 5th edition
2. Orthopaedic Physical Therapy –Donatelli, 3rd edition
3. Cash's Textbook of Orthopedics & Rheumatology for Physiotherapists,4th edition
4. Tidy's Physical Therapy, 15th edition
5. Manual Mobilization of Extremity Joints –Kaltenborn, 8th edition
6. Therapeutic Exercise: Foundations and Techniques - Kolby & Carolyn Kisner, 7th edition
7. Physical Rehabilitation - SusanO'sullivan, 5th edition

RECOMMEMDED REFERENCE BOOKS

1. Manual Therapy: Nags, Snags, MWMs, etc - 6th Edition BrianRMulligan
2. Maitland's Peripheral ManipulationEllyHengeveld
3. Neural tissue mobilization –Butler
4. Brukner & Khan's Clinical Sports Medicine - Peter
5.Brukner, Karim Khan(McgrawMedical)
6.Therapeutic Exercise: Moving Toward Function - Carrie M. Hall, Lori TheinBrody
7.Manual Mobilization of Extremity Joints-Kaltenborn
8.Neural Tissue Mobilization -Butler
9.Taping Techniques –Rose MacDonald
10. ClinicalOrthopaedicrehabilitation-Broadsman

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Cardiovascular & Respiratory Physiotherapy II**
Course Code	**BPT-050**
Course Description	**Core Theory**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	Identify and analyze respiratory dysfunction in terms of biomechanical, and Bio-physical basis and correlate the same with the health condition, radiological, and biochemical investigations, PFT,ECG,ABG, and arrive at appropriate Physical therapy diagnosis using WHO-ICF tool
CO 2	Apply the knowledge about contextual factors to enhance capacity and performance of activities and participation in society
	Psychomotor
CO 3	Apply the skill to deliver pulmonary rehabilitation, breathing retraining, lung re-expansion, breathing control, lung hygiene, nebulisation, postural drainage, AD, ACBT, thoracic expansion, PNF, respiratory muscle strengthening, ergonomic applications, home program, training for flexibility, endurance, muscle strength and aerobic capacity, assistive devices
CO 4	Plan, prescribe appropriate, safe physiotherapy interventions with clinical reasoning for and prevention of impairments, activity limitations, participation restrictions and environmental barriers related to pulmonary dysfunction in acute care settings, at home , work place, in society & in leisure activities.
	Affective
CO 5	Acquire ethical skills by demonstrating safe, respectful and effective performance of physical handling techniques taking into account the patient's clinical condition, the need for privacy, the physiotherapist, the resources available and the environment.
CO 6	Demonstrate behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
CO 7	list patients' questions, their understanding of condition and treatment options, their views, concerns, values, preferences and extent to which patients want to be involved in decision-making regarding their care and treatment.
CO 8	Examine ethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency
CO 9	Respond to patients concerns and preferences, and respect the rights of patients to

	reach decisions with their doctor about their treatment and care and to refuse or limit treatment.
CO 10	Communicate clearly, sensitively and effectively with patients, caregivers, and colleagues from the medical and other professions, by listening, sharing and responding

Sr. No	Topics	Hours
1	**Applied Respiratory Anatomy** a. Upper respiratorytract b. Lower respiratory tract – Trachea, Bronchial tree, Broncho-pulmonary segments c. Respiratory unit, hilum oflung. d. Muscles ofrespiration e. Pleura, intra pleural space, intra pleural pressure,surfactant	**6**
2	**Applied Respiratory Physiology** a. Mechanics of respiration – Chest wall movements, lung & chest wall compliance, work ofbreathing b. V/Q relationship, airwayresistance c. Respiratory centre, Neural & chemical regulation ofrespiration d. Lung volumes and lung capacities, Spiro meter, lung functiontest e. Pulmonary circulation, Lung sounds, coughreflex.	**6**
3	**Investigations and Exercise Testing** a. Investigation & Clinical Implication - X-ray, PFT, Ventilation –perfusion scans, MRI,HRCT. b. Stress testing : 6 Minute Walk test & Harward Step test Skill &Interpretation c. Shuttle Walk Test & Modified Bruce Protocol (should beinterpretation only)	**6**
4	**Drugs Acting on Respiratory System** a. Cough b. Bronchialasthma c. C.O.P.D.	**6**
5	**Management of Pulmonary Disorders** Chronic Obstructive Lung Disease and Restrictive Lung Disease - Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following lung diseases : Chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic Fibrosis, Upper Respiratory Tract Infections, Pneumonia, Tuberculosis, Fungal Diseases,	**8**

	Interstitial Lung Diseases, Diseases of the pleura, diaphragm and chest wall Respiratory failure – Definition, types, causes, clinical features, diagnosis and management, Carcinoma of lung Physiotherapy management of infectious disease such as COVID, Severe Acute Respiratory Syndrome, Middle East Respiratory Syndrome and others	
6	**Management of Disorders of Chest Wall** Definition, Clinical features, diagnosis and choice of management for the following disorders – Chest wall deformities, Chest wall tumors, Spontaneous Pneumothorax , Pleural Effusion, Empyema Thoracis, Lung abscess, Bronchogenic Carcinoma , Bronchial Adenomas, Metastatic tumors of the Lung , Tracheal Stenosis , Congenital tracheomalacia , Neoplasms of the trachea , Lesions of the Mediastinum.	**6**
7	**Physiotherapy Skills** a. Bronchial Hygiene Therapy- Postural Drainage, Forced Expiratory Technique, ACBT, AutogenicDrainage b. Adjunct Therapy –Flutter & PEPTherapy c. Therapeutic positioning to improve ventilation & perfusionmatching, d. Therapeutic positioning to alleviatedyspnoea e. Nebulisation &Humidification, f. Lung ExpansionTherapy g. Neurophysiologic facilitation ofrespiration h. Therapeutic exercise program to strengthen respiratorymuscles i. Ergonomic advice, energy conservation advice, Home exerciseProgram, & modifications of contextualfactors. j. Applied Yoga in Respiratoryconditions	**8**
8	**Physiotherapy Management in Neonatal & Paediatric Respiratory Infection** a. ARDS b. Meconiumaspiration c. Pneumonitis d. Pneumonia e. Childhood Asthma f. Cystic fibrosis and chronic lungdisease	**6**

9	**Pulmonary Rehabilitation (A.A.C.V.P.R. /A.T.S. guidelines)**	**8**

	a. Definition, b. Indications c. Contraindications d. Components ofmanagement e. Outcomemeasures	
	TOTAL HOURS	**60**

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				
Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answer	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

RECOMMEMDED TEXT BOOKS

1. Respiratory Physiology – John B.West
2. Respiratory pathophysiology – John B.West.
3. Nunn's Applied respiratoryPhysiology
4. Cardiorespiratory Physiotherapy – DonnaFrownfelter

RECOMMEMDED REFERENCE BOOKS

1. Egan's RespiratoryPhysiology.
2. Tidy'sPhysiotherapy
3. Cardiorespiratory physiotherapy - Pryor &Prasad

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Cardiovascular & Respiratory Physiotherapy II**
Course Code	**BPT-051**
Course Description	**Core Practical**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Cognitive	
At the end of the course, the candidate will be able to:	
CO 1	Identify and analyze respiratory dysfunction in terms of biomechanical, and Bio-physical basis and correlate the same with the health condition, radiological, and biochemical investigations, PFT,ECG,ABG, and arrive atappropriate Physical therapy diagnosis using WHO-ICF tool
CO 2	Apply the knowledge about contextual factors to enhance capacity and performance of activities and participation in society
	Psychomotor
CO 3	Apply the skill to deliver pulmonary rehabilitation, breathing retraining, lung re-expansion, breathing control, lung hygiene, nebulisation, postural drainage, AD, ACBT, thoracic expansion, PNF, respiratory muscle strengthening, ergonomic applications, home program, training for flexibility, endurance, muscle strength and aerobic capacity, assistive devices
CO 4	Plan, prescribe appropriate, safe physiotherapy interventions with clinical reasoning for and prevention of impairments, activity limitations, participation restrictions and environmental barriers related to pulmonary dysfunction in acute care settings, at home , work place, in society & in leisure activities.
	Affective
CO 5	Acquire ethical skills by demonstrating safe, respectful and effective performance of physical handling techniques taking into account the patient's clinical condition, the need for privacy, the physiotherapist, the resources available and the environment.
CO 6	Demonstrate behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
CO 7	list patients' questions, their understanding of condition and treatment options, their views, concerns, values, preferences and extent to which patients want to be involved in decision-making regarding their care and treatment.
CO 8	Examine ethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency
CO 9	Respond to patients concerns and preferences, and respect the rights of patients to

	reach decisions with their doctor about their treatment and care and to refuse or limit treatment.
CO 10	Communicate clearly, sensitively and effectively with patients, caregivers, and colleagues from the medical and other professions, by listening, sharing and responding

Sr. No	Topics	Hours
1	Positioning, Breathing Control, Mechanical Assistive Devices, Nebulization and Humidification, Respiratory PNF, Maximal and submaximal exercise testing.	**10**
2	Respiratory Muscle Strengthening, Relaxation techniques, Airway Clearance Techniques, PEP devices.	**10**
3	Exercises for vascular disorders, Special test for venous and arterial disorders, Berger's exercises, Wound Care, Coughing and huffing techniques, Pulmonary Rehabilitation.	**10**
4	Strength training, exercises to improve flexibility and endurance, Pain Relief, Home program	**10**
Total		**40**

Internal Practical/Clinical Examination under CBCS - 40 Marks

Exercise	Description	Marks
Q No 1	Skill demonstration- Respiratory PNF / Breathing exercises/Postural drainage/ AD/ACBT/ Positioning/ Relaxation technique (OSPE)	20
Q No 2	Interpretation of ABG/ECG/X Ray/PFT (OSPE)	20
		Total = 40

Practical/Clinical University Semester Examination under CBCS - 80 Marks

Exercise	Description	Marks
Q No 1	Skill demonstration- Respiratory PNF / Breathing exercises/Postural drainage/ AD/ACBT/ Positioning/ Relaxation technique (OSPE)	20
Q No 2	Interpretation of ABG/ECG/X Ray/PFT (OSPE)	20
Q No 3	Case presentation/OSCE of respiratory condition	40
		Total = 80

RECOMMEMDED TEXT BOOKS

1. Respiratory Physiology – John B.West
2. Respiratory pathophysiology – John B.West.
3. Nunn's Applied respiratoryPhysiology
4. Cardiorespiratory Physiotherapy – DonnaFrownfelter

RECOMMEMDED REFERENCE BOOKS

1. Egan's RespiratoryPhysiology.
2. Tidy'sPhysiotherapy
3. Cardiorespiratory physiotherapy - Pryor &Prasad

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Neurophysiotherapy PT II**
Course Code	**BPT-052**
Course Description	**Core theory**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
Cognitive	
CO 1	Be able to identify and analyze movement dysfunction due to neuromuscular skeletal disorders in terms of biomechanical and biophysical basis, correlate the same with the health condition, routine electrophysiological, radiological and biochemical investigations, and arrive at appropriate physical therapy diagnosis using WHO-ICF with clinical reasoning.
CO 2	Be able to plan realistic goals based on the knowledge of prognosis of the disease of the nervous system and prescribe appropriate, safe evidence based physiotherapy interventions with clinical reasoning
CO 3	Understand infection control principles, best practices and techniques applicable to a range of setting where clients with neurological conditions would receive physiotherapy services.
CO 4	Know determinants of health (environmental, nutritional, self-management/behavioural factors) and chronic disease management principles related to neurologicalhealth
Psychomotor	
CO 5	Be able to develop psychomotor skills to implement timely and appropriate physiotherapy assessment tools/techniques to ensure a holistic approach topatient evaluation in order to prioritize patient's problems.
CO 6	Be able to select timely physiotherapeutic interventions to reduce morbidity and physiotherapy management strategies, suitable for the patients‟ problems and indicator conditions based on the best available evidence.
CO7	Implement appropriate neuro-physiotherapeutic approaches, electrotherapeutic modalities, joint and soft tissue mobilizations and ergonomic advice for neuromuscular skeletal systems, contextual factors to enhance performance of activities and participation in society.
Affective	
CO 8	Be able to develop behavioural skills and humanitarian approach while communicating with patients, relatives, society and co-professionals, to promote

	individual and community health

Unit	Topics	Hours
	PHYSIOTHERAPY MANAGEMENT – PAEDIATRIC	
1	Cerebral Palsy • Etiology andtype • Assessment • Differentialdiagnosis • Management	6
2	Down's syndrome and other genetic disorders	5
3	Neural tube defects : Spina Bifida and Hydrocephalus	5
4.	Brachial Plexus Injuries	5
5.	Infectious disorders of CNS	5
6.	Post Poliomyelitis Residual Paralysis	5
7.	D.M.D. & other Myopathies	7
8.	S.M.A. / H.S.M.N.	5
9.	Pediatric extra pyramidal disorders	5
10.	Autism spectrum disorders	6
11.	High Risk infant and NICU management and Early intervention with Neurodevelopmental screening tests	6
Total		60

EXAMINATION SCHEME

Theory question paper pattern for University Semester Examination under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	8 out of 10	5	8x5	40
Section 2				

Long answer question	4 out of 5	10	4 x 10	40
				Total= 80

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4 x 5	20
Long answers	2	10	2 x 10	20
Total				**Total= 40**

RECOMMENDED TEXT BOOKS:

1. Patricia A D. Cash's Text book for Physio Therapist in Neurological disorders Jaypee bros; 4th Edition 1991
2. Adler B. PNF in practice. Springer. 4th Edition.1993
3. Hollis M. Practical Physical Therapy 4th Edition.1985
4. O'Sullivan S. Physical Rehabilitation 7th Edition.1981
5. Patricia M D. Right in the middle. Springer-Verlag.1990
6. Johnstone M. Therapy for stroke. Edinburgh: Churchill Livingstone;1991.
7. Shepherd R. Cerebral palsy in infancy. Edinburgh: Churchill Livingstone Elsevier;2014.
8. Levitt S, Addison A. Treatment of cerebral palsy and motor delay.5th Edition.2010
9. Pourtney T. Physiotherapy for children.1st Edition.2007
10. Campbell S K. Peadritic Neurologic Physical Therapy. 2nd Edition. 1998
11. Bundy A C. Sensory Integration Theory and Practice.2nd Edition.2002

RECOMMENDED REFERENCE BOOKS:

1. Umphred D. Neurological rehabilitation. Saint Louis: Mosby/Elsevier;2013.
2. Tecklin J. Pediatric physical therapy. Philadelphia: Lippincott, Williams & Wilkens; 1999.
3. Donaghy M. Brain's diseases of the nervous system. Oxford: Oxford University Press; 2009.
4. Janet C, Roberta S. Neurological Rehabilitation - Optimising Motor Performance. 2nd Edition. 1998

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Neurophysiotherapy PT II**
Course Code	**BPT-053**
Course Description	**Core practical**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Learning Outcomes: The student will be able to	
Cognitive	
CO 1	Be able to identify and analyze movement dysfunction due to neuromuscular skeletal disorders in terms of biomechanical and biophysical basis, correlate the same with the health condition, routine electrophysiological, radiological and biochemical investigations, and arrive at appropriate physical therapy diagnosis using WHO-ICF with clinical reasoning.
CO 2	Be able to plan realistic goals based on the knowledge of prognosis of the disease of the nervous system and prescribe appropriate, safe evidence based physiotherapy interventions with clinical reasoning
CO 3	Understand infection control principles, best practices and techniques applicable to a range of setting where clients with neurological conditions would receive physiotherapy services.
CO 4	Know determinants of health (environmental, nutritional, self-management/behavioural factors) and chronic disease managementprinciples related to neurological health
Psychomotor	
CO 5	Be able to develop psychomotor skills to implement timely and appropriate physiotherapy assessment tools/techniques to ensure a holistic approach topatient evaluation in order to prioritize patient's problems.
CO 6	Be able to select timely physiotherapeutic interventions to reduce morbidity and physiotherapy management strategies, suitable for the patients‟ problems and indicator conditions based on the best availableevidence.
CO7	Implement appropriate neuro-physiotherapeutic approaches,electrotherapeutic modalities, joint and soft tissue mobilizations and ergonomic advice for

	neuromuscular skeletal systems, contextual factors to enhance performance of activities and participation insociety.
Affective	
CO 8	Be able to develop behavioural skills and humanitarian approach while communicating with patients, relatives, society and co-professionals, to promote individual and community health

Unit	Topics	Hours
PHYSIOTHERAPY MANAGEMENT – PAEDIATRIC		
1	Management of Cerebral Palsy	5
2	Management of Down's syndrome and other genetic disorders	4
3	Management of Neural tube defects : Spina Bifida and Hydrocephalus	4
4.	Management of Brachial Plexus Injuries	4
5.	Management of Infectious disorders of CNS	2
6.	Management of Post Poliomyelitis Residual Paralysis	4
7.	Management of D.M.D. & other Myopathies	4
8.	Management of S.M.A. / H.S.M.N.	3
9.	Management of Pediatric extra pyramidal disorders	2
10.	Management of Autism spectrum disorders	4
11.	Management of High Risk infant and NICU management andEarly intervention with Neurodevelopmental screening tests	4
Total		40

EXAMINATION SCHEME

Practical question paper pattern for University Semester Examination under CBCS - 80 marks

Exercise	Description	Marks
Q No 1	Station 1(OSPE)	20
Q No 2	Station 2 (OSPE)	20
QNo 3	Case Presentation/OSCE on pedriatric neuro conditions (OSCE)	40

		Total-80

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	Station 1 (OSPE)	20
Q No 2	Station 2 (OSPE)	20
		Total-40

RECOMMENDED TEXT BOOKS:

1. Patricia A D. Cash's Text book for Physio Therapist in Neurological disorders Jaypee bros; 4th Edition1991
2. Adler B. PNF in practice. Springer. 4th Edition.1993
3. Hollis M. Practical Physical Therapy 4th Edition.1985
4. O'Sullivan S. Physical Rehabilitation 7th Edition.1981
5. Patricia M D. Right in the middle. Springer-Verlag. 1990
6. Johnstone M. Therapy for stroke. Edinburgh: Churchill Livingstone;1991.
7. Shepherd R. Cerebral palsy in infancy. Edinburgh: Churchill Livingstone Elsevier; 2014.
8. Levitt S, Addison A. Treatment of cerebral palsy and motor delay.5th Edition.2010
9. Pourtney T. Physiotherapy for children.1st Edition.2007
10. Campbell S K. Peadritic Neurologic Physical Therapy. 2nd Edition. 1998
11. Bundy A C. Sensory Integration Theory and Practice.2nd Edition.2002

RECOMMENDED REFERENCE BOOKS:

1. Umphred D. Neurological rehabilitation. Saint Louis: Mosby/Elsevier; 2013.
2.Tecklin J. Pediatric physical therapy. Philadelphia: Lippincott, Williams & Wilkens; 1999.
3. Donaghy M. Brain's diseases of the nervous system. Oxford: Oxford University Press; 2009.
4. Janet C, Roberta S. Neurological Rehabilitation - Optimising Motor Performance. 2nd Edition. 1998

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Research Project**
Course Code	**BPT-054**
Course Description	**Practical**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Learning Outcomes: The student will be able to	
CO 1	Apply the steps in Physiotherapy research process, define research question, frame research hypothesis using PICO format, choose the appropriate study design, sampling method, study location, apply guidelines such as STROBE, CONSORT, GRASS etc as applicable to the study design, determine sample size, inclusion-exclusion criteria, select reliable-valid tools for evaluation of participants, describe detailed methods to be followed and statistical plan for data analysis
CO 2	Apply knowledge of biostatistics for research work.
CO 3	Acquire skills of reviewing literature
CO 4	Prepare project synopsis and submit to institutional ethical committee for approval

Unit	Topics	
1.	**Review literature in proposed area of project**	05
2.	**Write a Research Proposal**	10
	a. Define aproblem b. Review Literature c. Formulate aquestion d. Inclusion & Exclusioncriteria e. Study design, Sampling technique, Samplesize f. Methodology- Data collection & method f oranalysis g. Informed Consent Steps of documentation	
3.	**Research Fundamentals**	10
	a. Definemeasurement b. Measurementframework c. Scales ofmeasurement d. Pilot Study e. Types ofvariables f. Reliability&Validity g. DataSheet	
4.	**Research Ethics**	05

	a. Apply Ethics inResearch b. Ethical principles that govern research with humansubjects c. Prepare ethically valid informed consent form forresearch project	
5.	**Statistical Plan**	10
	a. Basics of testing of hypothesis – Null and alternate hypothesis, typeI and type II errors, level of significance and power of the test,pvalue. b. Tests of significance (parametric) - t – test (paired and unpaired), Chi square test and test of proportion, one way analysis of variance. c. Repeated measures analysis ofvariance. d. Tests of significance (non-parametric)-Mann-Whitney utest, Wilcoxontest, e. Kruskal-Wallis analysis of variance. Friedman's analysis ofvariance. f. Correlation andRegression g. Simple correlation – Pearson's and Spearman's; testing the significance of correlation coefficient, linear and multipleregressions.	
6.	**Submission of Research Proposal**	
	Total	40

RECOMMENDED TEXTBOOKS

1.Hicks CM. Research Methods for Clinical Therapists
2. Portney LG. Foundations of Clinical Research: Applications to Evidence-Based Practice.
3. Kothari CR. Research methodology: Methods and techniques.
4. Mahajan BK. Methods inbiostatistics.

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Neuro developmental Techniques**
Course Code	**SEC09**
Course Description	**Skill based Elective Course Theory and Practical**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
1.	To apply the knowledge of theories of development as a basis for developmental therapy for children and young adults with disability.
2.	To develop observational skills of motor and functional abilities/disabilities relative to their clients' abilities.
3.	To demonstrate techniques for physical and functional assessment and clinical measurements using NDT approach
4.	To be able to identify systems impaired underlying developmental difficulty leading to delayed physical and functional milestones and offer preventive advice.
5.	To provide functional therapeutic skills in developing effective intervention strategies using NDT approach based on developmental principles
6.	To effectively plan and implement therapeutic Intervention strategies for physical and functional development and management in the contexts of the home and the community
7.	To Understand the process and be able to perform documentation of progress based on functional goals.

Unit	Topics	Theory	Practical
1.	Principles of Growth and Development	1	-
2.	Development from 0 – 6 months of age, 6-12 months of age, 12-18 months of age, 18-24 monthsofage and 2 years onwardswith emphasis on Motor & Sensory system.	4	6
3.	Principles of Neuro developmental Therapy	2	-
4.	Neuro developmental Treatment Practice and ICF Model	2	-
5.	NDT approach based evaluation based on various age groups	3	10
6.	**Goal setting and documentation**	2	
7.	**Treatment skills** • Preparing theclient • Headcontrol • Trunkcontrol • Transitions in and out from supine to sit, sit to stand, quadriped, vaulting, kneeling, standing andgait	6	20
8.	**Case based demonstration**		4
	Total	**20**	**40**

EXAMINATION SCHEME

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
SAQ	4	5	4 x 5	20 Marks
LAQ	2	10	2 x10	20 Marks
Total				**Total= 40**

RECOMMEMDED TEXT BOOKS

1. Howle JM. Neuro-developmental treatment approach: theoretical foundations and principles of clinical practice. NeuroDevelopmental Treatment;2002.
2. Bly L. Components of typical and atypical motor development. Neuro-Developmental Treatment Association, Incorporated;2011.

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Physiotherapy in Intensive Care Unit**
Course Code	**SEC10**
Course Description	**Skill based Elective Course Theory and Practical**
Semester	**Semester VIII**
Credits per semester	**2 credit**
Hours per semester	**60 hours**

Course Learning Outcomes: The student will be able to	
	Cognitive
CO 1	Explain alterations in normal human structure and functions due to artificial ventilation, prolonged bed-rest, decubitus position in ICU and examine the correlation between structural and functional impairment.
CO 2	Explain indication and contra-indication of care in intensive care unit (ICU), provide appropriate interventions to the patient.
CO3	Analyze the roles and expertise of health and social care professionals in the context of working and functioning as a multi-professional teamto the delivery of safe and high-quality care.
CO 4	Explain function of artificial airways, ventilators, oxygen therapy, equipments used in ICUs, investigations and their interpretations
	Psychomotor
CO 5	Apply assessment skills, planandimplement physiotherapy interventionsfor patient in Medical and Surgical ICUs, Pediatric ICU, Cardiac Care ICU
CO 6	Monitor function during Physiotherapy treatment
	Affective
CO 7	Demonstrate ability to work with colleagues in ways that best serve the interests of patients, passing on information and handing over care, demonstrating flexibility, adaptability and a problem-solving approach.
CO 8	Examine ethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency
CO 9	Communicate clearly, sensitively and effectively with patients, caregivers, and colleagues from the medical and other professions, by listening, sharingand responding.

Sr. No.	Topics	No. of Hrs.
1	Anatomical and Physiological differences between the Adult and Paediatric lung	1
2	Respiratory failure – Oxygen Therapy and Mechanical Ventilation.	2
3	Bedside assessment of the patient-Adult &Paediatric	1
4	Introduction to ICU : ICU monitoring –Apparatus, Airways and Tubes used in the ICU - Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU.	3
5	Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG, Haematological and Biochemical Tests.	2
6	Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP,IPPB.	2
7	Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP.	2
8	Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning	2
9	Pharmacological management – Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs toinhibitcoughing,Drugstoimproveventilation,Drugstoreducepulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers.	2
10	Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit	3
	Practicals: Introduction to ICU, simulated case discussions, treatment techniques	**40**
	Total	**60**

Examination Scheme

This course will not be assessed as Semester University Examination. Assessment willbe conducted at constituent unit level

Theory question paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 10	5	8 x 5	40
				Total = 40

RECOMMENDED TEXT BOOKS:

1. Chest physiotherapy in ICU – IanMckenzie
2. Mechanical ventilation – David Chang
3. Management of mechanically ventilated patient – LynellePierce

Name of the Programme	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Splinting and Bracing**
Course Code	**SEC011**
Course Description	**Skill based Elective Course theory and practical**
Credit per Semester	**2 credit**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will	
1.	Acquire knowledge about biomechanical principles of application of variety of aids & appliances used for ambulation, protection &prevention.
2.	Learn about the principles oftheprescription&thecheckoutproceduresofaids&appliancesasperthephysicaldysfunction of the person.
3.	Acquire in brief knowledge about various material used for splints/ Orthoses &prostheses and their selection criteria

Unit	Topics	Theory	Practical
1.	**Introduction to bioengineering-** Classification of Aids & appliances (Splints/ Orthoses for spine, upper & lower limb; Prostheses for Lower limbs & Upper limbs)	2	3
2.	**Biomechanical principles in designing of appliances & assessment;Procedures for static & dynamic alignment of the Orthoses &Prostheses:**	10	
	a. Introduction to Orthotics, Solid Ankle foot Orthoses (AFO)		1
	b. Articulated AFO, Various Shoe modifications		1
	c. Knee Ankle Foot Orthoses (KAFO)		1
	d. Knee Orthoses (KO)		1
	e. Hip Knee Ankle Foot orthoses (HKAFO), Hip Orthoses (HO)		1
	f. Fracture Bracing and Flexible Lumbo-sacral Orthoses (LSO) and Thoraco-Lumbo-sacral Orthoses(TLSO)		1
	g. Rigid TLSOs and Cervical Orthoses (CO)		1
	h. Orthotic mgmt. of Scoliosis, Milwaukee and low profile scoliosis orthoses, Scheuermann‟s Kyphosis & Osteoporosis		1
	i. Orthoses for LBP, Introduction to Upper limb Orthotics and Shoulder orthoses(SO)		1
	j. Shoulder (SO),Elbow Orthoses (EO) & Wrist Hand Orthoses (WHO)		2
	k. Introduction to Gait in relation to the use of Orthoses / Prostheses		1 hr

	l. Prosthetic management of Forefootamputees		1
	m. Prosthetic management of Syme's and hind foot Amputees		1
	n. Below Knee Prosthesis & Prosthetic foot pieces		1
	o. Alignment of Below Knee Prosthesis and gait deviations		1
	p. Prosthetic Knees and Knee Disarticulation mgmt.		1
	q. Above Knee Prosthesis, alignment, gait deviations		1
	r. AK Checkouts, Prosthetic mgmt. of Hip Disarticulation, hemipelvectomy, Bilateral amputees and Congenitalcases		1
	s. Introduction to Upper Limb Prosthetics, Prosthetic mgmt. of Partial Hand amputees		3
	t. Cosmetic Prostheses for all levels of Amputations		1
	u. Task Specific Prostheses, Prosthetic mgmt. of Wrist Disarticulation, MyoelectricBelow Elbowprosthesis		3
	v. Body Powered Below Elbow Prostheses and it's components		1
	w. Harnessing in BE		1
	x. Prosthetic management of Elbow Disarticulation and Above Elbow Amputation.		1
3.	Orthosis prescription criteria based on clinical scenario	5	5
4.	**Project**: Temporary splints: To fabricateONE splint each[to use P.O. P, aluminum strips /sheets /wires rubber bands, Rexin, Orfit,etc] Splinting- Practical Demonstration of the following a) Cock up(dorsal/volar) b) Outrigger, c) Opponencesplint d) Anterior and posterior guard splints for gaittraining, e) Foot dropsplint f) Facialsplint g) Mallet FingerSplint h) C bar for 1st web space ofhand	3	3
	Total	**20**	**40**

EXAMINATION SCHEME

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
SAQ	4	5	4 x 5	20 Marks
LAQ	2	10	2 x10	20 Marks
Total				**Total= 40**

RECOMMEMDED TEXTBOOKS

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

Name of Program	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Integumentary Physiotherapy**
Course Code	**SEC012**
Course Description	**Skill based Elective Course Theory and Practical**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes: The student will be able to	
CO1	Explain diseases and disorders of the skin, Describe the effect of injury to the skin and the process of healing
CO 2	Explain the, etiology, pathophysiology, clinical manifestations & m e d i c a l / surgical management of various integumentary disease.
CO 3	Perform clinical examination; apply and interpret special tests in both preoperative and post-operative patients

Unit	Topics	Hours
1.	**Integumentary system-** Applied Anatomy, Structure and function of skin	2
2.	Assessment of integumentary system	2
3.	Burns (Head, neck , face thoracic and inhalations burns)	4
4.	Scars and Keloid	2
5.	Bed sores(Pathophysiology, Management)	2
6.	Wounds and ulcer- Wounds &Ulcers, Cellulitis– classification, healing process, management, bandaging, Dressing solutions and its uses and debridement Procedure, hand washing and universal precautions.	4
7.	Basal cell carcinoma, Squamous cell carcinoma	2
	Practical's: Burns dressings, mobilization, splints and bracing, wound management, electrotherapy for wound healing	40
	Total	58

EXAMINATION SCHEME

This course will not be assessed as Semester University Examination. Assessment willbe conducted at constituent unit level

Internal examination pattern (theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
SAQ	8	5	8 x 5	40 Marks
Total				**Total= 40**

RECOMMEMDED TEXT BOOKS

1. Cash's text book in General Medicine & Surgical conditions for Physiotherapists

Name of the Programme	**Bachelor of Physiotherapy**
Name of the Course	**Basic Skills in patient care**
Course Code	**BPTCLT008**
Course Description	**Clinical Training**
Semester	**Semester VIII**
Credits per semester	**4 credits**
Hours per semester	**260 hours**

Students will be learning about physiotherapeutic management in various conditions and application of hands on skills on patients.

Internal examination pattern (practical): 40 marks

Exercise	Description	Marks
Q No 1	OSPE Station 1	10
Q No 2	OSPE Station 2	10
Q No 3	OSPE Station 3	10
Q No 4	OSPE Station4	10
		Total = 40

*Students will be evaluated as per their level of knowledge level.

Internship - Semester IX

BPT CBCS 2019 - Internship - 26 weeks /40 hours per week supervised clinical practice					
Course Code	**Course Description**	**Clinical Postings**	**Credits**	**Hours**	**Semester Examination #**
					Marks
BPTCLT009	**Core Clinical Training**	Musculoskeletal PT	3	260	10
BPTCLT010	**Core Clinical Training**	Cardiovascular and Respiratory PT	3	260	10
BPTCLT011	**Core Clinical Training**	Neurophysiotherapy	3	260	10
BPTCLT012	**Core Clinical Training**	Public Health Promotion	1	80	10
BPT055	**Research Project**	Research Project	2	180	40
		Total	12	1040	80
# Examination will be conducted at Constituent unit level					

Name of Program	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Core Clinical training**
Course Code	**BPTCLT009, BPTCLT010/ BPTCLT011/ BPTCLT012**
Course Description	**Clinical Practice**
Credit per Semester	**3+3+3+1 credits**
Hours per Semester	**260+260+260+80= 860 hours**

Course Learning Outcomes : The student will be able to	
	Cognitive
CO 1	demonstrate academic skills and knowledge related to understanding the structural and functional of human body and applied anatomy, physiology in physiotherapy practice.
CO 2	apply and outline pathology of medical and surgical conditions in context with Physiotherapy, interpret& use medical communication.
CO 3	apply knowledge of biomechanics of human movement in musculoskeletal, neurological and cardio-respiratory conditions in planning, recommending, and executing Physiotherapy management.
CO 4	outline and implement Physiotherapy management by co-relating assessment and examination skills of clinical subjects like Orthopedics, General Surgery, Medicine, Neurology, Pediatrics, Dermatology & Gynecology & Obstetrics, Community Medicine and Sociology
CO 5	describe and analyze concepts of energy conservation, global warming and pollution and justify optimal use of available resources.
	Psychomotor
CO 6	record a patient's medical history, including family and social history; communicate with relatives or other caretakers where ever appropriate.
CO 7	assess structural, functional impairments, compare performance and capacity through clinical examination and risk evaluation, prioritize goals, recommend Physiotherapy treatment and carry out independent consultation with a patient.
CO 8	demonstrate skill in maneuvers of passive movements, massage, stretching, strengthening, and various manual therapy techniques, integrate Physiotherapy evaluation skills including electro diagnosis on patients to arrive at a Functional/ Physical Diagnosis in musculoskeletal, neurological, cardiovascular and pulmonary conditions and health promotion strategies
CO 9	conduct health and sport promotion camps and offer services in evaluation of fitness and ergonomic applications to special populations like school children, college students, industrial workers, geriatric homes, specially abled children, pregnant women, etc
CO 10	Listpatients'questions,theirunderstandingofconditionandtreatmentoptions,their views,concerns,values,preferencesandextenttowhichpatientswanttobeinvolved

	in decision-making regarding their care and treatment.
CO 11	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.
CO 12	manage time and prioritize tasks, and work autonomously when necessary and appropriate.
CO 13	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.
CO 14	Assess and recognize the severity of a clinical presentation and a need for immediate emergency care.
CO 15	Apply basic first aid and cardio-pulmonary resuscitation or direct other team members to carry out resuscitation.
CO 16	Write accurate, legible and complete clinical records, use computers and other information systems for data storage, retrieval, prepare health promotion materialfor patients, research and education.
	Affective
CO 17	communicate clearly, sensitively and effectively with individuals, groups, patients, care-givers, colleagues, professionals regardless of their age, social, cultural or ethnic backgrounds or their disabilities including when English is not the persons first language.
CO 18	communicate by spoken, written and electronic methods (including medicalrecords), and be aware of other methods of communication used by patients.
CO 19	communicate appropriately in difficult circumstances, such as when breaking bad news, and when discussing sensitive issues, such as alcohol consumption, smoking or obesity, with difficult or violent patients, people with mental illness and with vulnerable population
CO 20	respond to patients concerns and preferences, and respect the rights of patients to reach decisions with their doctor about their treatment and care and to refuse or limit treatment.
CO 21	examine ethical and legal issues in patient care, obtain informed consent, demonstrating community responsibility, good communication skills and socio-cultural competency
CO 22	establish the foundations for lifelong learning and continuing professional development, including a professional development portfolio containing reflections, achievements and learning needs.
CO 23	continually and systematically reflect on practice and, whenever necessary, integrate that reflection into action, using improvement techniques and audit.
CO 24	demonstrateabilitytoworkwithcolleaguesinwaysthatbestservetheinterestsof patients, passing on information and handing over care, demonstratingflexibility,

	adaptability and a problem-solving approach.
CO 25	demonstrate ability to build team capacity and positive working relationships and undertake various team roles including leadership and the ability to accept leadership by others.

During the course of Internship, students will be expected to

- present cases and document the same in 3 clinical placement areas and conducthealth promotionalactivities.
- Present required number of cases to the respective clinical supervisors, document the same in the Log book, seek scoring on Case Evaluation Assessment Form from clinical supervisors, for each case, failing which the particular posting will be repeated.
- Attendall clinical postings with not more than one day of absenteeism per month. Interns remaining absent for a greater number of days will have to compensate the days of absenteeism after completion of the rotatory internship placementschedule.
- follow appropriate dress code to be followed at all the clinical posting areas.

Clinical Placement Area	**Duration in Weeks**	**Assignment/Case Documentations**
Musculoskeletal PT	6	3
Neurophysiotherapy	6	3
Cardiovascular & Pulmonary PT	6	3
Public Health Promotion	2	2 camps/promotional activity

Case Evaluation Assessment Form

Sr No	Criteria	5	4	3	2	1
1	Attitude –Towards patient,self-introduction Relevant history taken					
2	Physical Assessment Skills Choice of tests Testing of all functional impairments ICF					
3	Cognitive- problem solving clinical decision & reasoning					
4	Planning treatment- short term goals					
5	Long term goals – revaluation					
6	Explanation of home program to patient and relatives					
7	Skills of Treatment maneuvers					
8	Skills of equipment handling					
9	Documentation of case					
10	Timely submission of assignment					
	Total Score					

Remarks:-

Signature ofClinical Supervisor Date:-

Students will be required to seek the following Summative Evaluation Assessment from clinical supervisors before rotating to another unit. Unsatisfactory report will result in student having to repeat the posting.

Sr No	Criteria	5	4	3	2	1
1	Punctuality and dress code					
2	Attitude towards patients & colleagues					
3	Urge for Learning/ Initiative					
4	Accountability/Responsibility					
5	Administrative ability (Records/Maintenance of equipments)					
	Total Score/ 25					

Remarks:-

Signature ofClinical Supervisor Date:-

Name of Program	**Bachelor of Physiotherapy (BPT)**
Name of the Course	**Research Project**
Course Code	**BPT 055**
Course Description	**Research Project**
Credit per Semester	**2 credits**
Hours per Semester	**180 hours**

Course Learning Outcomes	
The student will be able to	
CO 1	Explain the scientific basis for common musculoskeletal, neurological, cardio-respiratory, women's health related, geriatric and sports related disorders, compare and contrast Physiotherapy treatment techniques applicable in relevant case scenarios.
CO 2	Justify selection of appropriate clinical examination and investigation for common clinical conditions and critically analyze clinical findings
CO 3	Plan, and conduct research experiments to evaluate current practices and design innovative physiotherapy interventions, based on evidence, to provide highest level of healthcare.
CO 4	develop understanding appropriate research tools, approaches and theories applicable to that theme, develop well-defined and clear research question of scholarly significance, and that the dissertation develops a theoretically and methodologically informed and evidence-based answer to that question.
CO 5	Critically appraise the results of relevant qualitative and quantitative studies as reported in scientific literature.
CO 6	Outline the ethical issues involved in clinical research.
CO 7	Write accurate, legible and complete clinical records, use computers and other information systems for data storage, retrieval, prepare health promotion materialfor patients, research and education.
CO 8	Demonstrate confidentiality, use data protection legislation and codes of practice in all dealings with information.

Students would have submitted synopsis of their research projects and received ethical approval to conduct project from Institutional Ethics Committee in Semester VIII. They will be expected to carry out data collection, analysis, interpretation and prepare project report. Completed project report along with Research Project Evaluation Report signed by the guide, should be submitted at least a month before end of internship.

Research Project Report Evaluation Guidelines:

Criteria for evaluating a research project report: The following guidelines and criteria should be applied when assessing a dissertation.

Guidelines to Prepare Internship Research Proposal & Project

7. **Selection of ResearchProblem:**
   Identify research question based on area of interest, local health care needs, issues of social concern.
   f. State the problem in brief, concise,clear.
   g. State the purpose of selected study &topic.
   h. State the objectives ofproposal/project.
   i. Prepare conceptual framework based on operationaldefinition.
   j. Write scope of researchproposal/project.

8. **Organizing Review ofLiterature**
   e. Study related and relevant literature which helps to decide conceptual framework and research design to be selected for thestudy
   f. Search specific books, bulletins, periodicals, reports, published dissertations, encyclopaedia and textbooks
   g. Organize literature as per operationaldefinition
   h. Prepare summary table for review ofliterature

9. **Research Methodology: To determine logical structure & methodology for researchproject.**
   i. Decide and state approach of study i.e. experimental ornon-experimental
   j. Define/find out variables to observe effects on decided items &procedure
   k. Prepare simple tool or questionnaire or observational checklist to collectdata.
   l. Determined sample and samplingmethod
   m. Mode of selection ii) Criteria iii) Size of sample iv) Plan when, where andhow data will becollected.
   n. Test validity of constructedtool
   o. Check reliability by implementing tool before pilot study(10% of samplesize)
   p. Conduct pilot study by using constructed tool for 10% selected samplesize

10. **Data collection: To implement preparedtool**
    d. Decidelocation
    e. Time

f. Write additional information in separate exercise book to support inferences and interpretation

11. Data analysis and processingpresentation

h. Use appropriate method of statistical analysis i.e. frequency andpercentage
i. Use clear frequency tables, appropriate tables, graphs andfigures.
j. Interpretation ofdata:
k. In relation toobjectives
l. Hypothesis
m. Variable of study orproject
n. Writing concisereport

12. Writing ResearchReport

c. **Aims**:

vi. To organize materials to write projectreport
vii. To make comprehensive full factualinformation
viii. To make appropriate language and style ofwriting
ix. To make authoritative documentation by checking footnotes, references & bibliography
x. To use computers & appropriatesoftware

Evaluation Criteria for Project Report

Sr. No	Criteria	Rating					Remark
		1	2	3	4	5	
I	**Statement of the problem**						
	3. Significance of the problemselected						
	4. Framing of title andobjectives						
II	**Literature Review**						
	3. Inclusion of related studies on the topic andits relevance						
	4. Operationaldefinition						
III	**Research Design**						
	2. Use of appropriate researchdesign						
	2. Usefulness of the research design to drawthe inferences among study variables/ conclusion						
IV	**Sampling Design**						
	4. Identification & description of thetarget population						
	5. Specification of the inclusion &exclusion criteria						
	6. Adequate sample size, justifying thestudy design to draw conclusions						
V	**Data Collection Procedure**						
	4. Preparation of appropriatetool						
	5. Pilot study including validity & reliabilityof tool						
	6. Useofappropriateprocedure/methodfordata collection						
VI	**Analysis of Data & Interpretation**						
	4. Clear & logical organization of thefinding						
	5. Clear presentation of tables(title, table& column heading)						
	6. Selection of appropriate statisticaltests						
VII	**Ethical Aspects**						
	3. Use of appropriate consentprocess						
	4. Use of appropriate steps to maintainethical						

	aspects & principles						
VIII	**Interpretation of the finding**						
	& appropriate discussion of the results						
IX	**Conclusion**						
	Summary & recommendations						
X	**Presentation/ Report Writing**						
	Organization of the project work including language & style of presentation						