MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)
Grade 'A++' Accredited by NAAC
Sector-01, Kamothe, Navi Mumbai -410 209
Tel 022-27432471, 022-27432994, Fax 022 -27431094
E-mail: registrar@mgmuhs.com; Website :www.mgmuhs.com

CHOICE BASED CREDIT SYSTEM

(CBCS)

(with effect from 2019-2020 Batch onwards)

Curriculum for Master of Physiotherapy

Cardiovascular and Respiratory Physiotherapy

Amended upto AC-46/2023, Dated 28/04/2023

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. 3.1.2.6, BOM 62-2020, dated 16/09/2020.
4. Amended upto Resolution No. 4.3.2.2, Resolution No. 4.3.2.5, BOM 63-2021, dated 17/02/2021.
5. Amended upto Resolution No. 3.7, Resolution No. 3.11 of AC-41/2021, dated 27/08/2021.
6. Amended upto Resolution No. 10.4 of AC-42/2022.
7. Amended upto Resolution No. 6.9 of AC-46/2023, Dated 28/04/2023

MGM SCHOOL OF PHYSIOTHERAPY

(A constituent unit of MGM INSTITUTE OF HEALTH SCIENCES)

(Deemed University u/s 3 of UGC Act 1956)
Grade "A" Accredited by NAAC
Sector 1, Kamothe Navi Mumbai-410209

Contact: at.: 02227437866
Email: mgmschoolofphysiotherapy@gmail.com
Website: www.mgmuhs.com

CHOICE BASED CREDIT SYSTEM

CURRICULUM FOR

MASTER OF PHYSIOTHERAPY (MPT)

Specialty - Cardio Vascular and Respiratory Physiotherapy

DEGREE PROGRAM

(2019)

CONTENTS

VISION AND MISSION OF MGM SCHOOL OF PHYSIOTHERAPY

Vision

MGM Institute of Health Sciences aims to be a top ranking center 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 affordable cost.

- 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 ethical standard.

Name of the Degree Offered: Master of Physiotherapy (MPT)

Duration of Program: **2** years (4 Semesters).

Program pattern:

First Semester	August
Second Semester	February
Third Semester	August
Fourth Semester	February

Eligibility Criteria:

- He/she has passed the Bachelor in Physiotherapy program recognized by any Indian University or a duly constituted Board
- 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 body systems.

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

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 employers to understand and

infer the relative performance of the students graduating from 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 for adoption.

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 and economy.

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

curriculum planning, design, delivery and review of the academic program.

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 Master of Physiotherapy (MPT) program is two years offering 90 credits with well-defined learning outcomes. The MPT 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 and prevention.

(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. Students who have passed BPT are eligible to pursue MPT program at MGM in specialty areas such as Cardiovascular Pulmonary Physiotherapy and Fitness, Neurological Physiotherapy, Musculoskeletal Physiotherapy and Sports Physiotherapy.

III. Objectives of the Master of Physiotherapy (MPT) 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 in the specialized areas of interest. 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 condition (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 other groups.
2. Ability to prevent movement disorders or maintain/restore optimal function and quality of life in individuals with movement disorders.
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 care professional.
4. Ability to promote the health and wellbeing of individuals and the general public/society, emphasizing the importance of physical activity and exercise.
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 and disabilities.
7. Ability to modify environmental, home and work access and barriers to ensure full participation in one's normal and expected societal roles.
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 residential areas, 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 research projects

IV. Physiotherapy Post-Graduate Attributes:

The following post 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 post graduate to develop expertise in the specialty area and offer exclusive services in 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 post graduate should demonstrate are as follows:

1. **Disciplinary knowledge:** The student must demonstrate comprehensive knowledge and understanding of curricular content over and above that of a graduate. The student must demonstrate enhanced cognitive learning skills, ability to receive, interpret, remember, reproduce and use information in the cognitive, psychomotor, and affective domains of learning to solve problems, evaluate work, and generate new ways of processing or categorizing similar information listed in course objectives. Students will undergo clinical "Hands on Training" with focus on rotational clinical assignments in specialty subject throughout the course which enable the student to develop expert clinical reasoning and be able to function as a consultant as well as expert clinician in the specialty. In addition to the didactic /laboratory and clinical "hands on" training, the program includes seminars, case presentations, journal article reading and appraisal and administrative work under the supervision of faculty members. During the program the student is expected to prepare and submit a dissertation based on research in a selected specialty.

2. **Psychomotor Skills:** Physiotherapy post graduate students must demonstrate psychomotor skills of locomotor ability to access lecture halls, practical laboratory and clinics.
   a. They must possess ability to move with reasonable swiftness in emergency situations to

protect the patient (e.g. from falling).

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

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

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

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

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, under graduate students, staff and personnel by asking questions, giving information, explaining conditions and procedures, or teaching home programs. They should be able to receive and send verbal communication in life threatening situations in a timely manner within the acceptable norms of clinical settings. Physiotherapy education presents exceptional challenges in the volume and breadth of required reading and the necessity to impart information to others. Students must be able to communicate quickly, effectively and efficiently in oral and written English with all members of the health care team.

4. **Critical thinking:** Post graduate **s**tudent should be able to apply analytical thought to a body of knowledge, analyse based on empirical evidence, draw relevant assumptions or implications,

formulate arguments, critically evaluate policies and theoretical framework and formulate a scientific approach to knowledge development. They should be able to identify structural and functional impairments, identify contextual factors influencing function, critically appraise treatment options and implement care that is socio-culturally relevant to each patient.

5. **Problem Solving:** Students must demonstrate capacity to extrapolate theoretical knowledge and apply competencies gained to solve non- familiar problems, complex problems and real life situations.
6. **Analytical reasoning:** Post graduate students should be able to evaluate reliability and relevance of evidence, synthesize data, assess validity of arguments supporting hypothesis, debate theoretical frameworks, draw valid conclusions and support them with evidence.
7. **Research – Related Skills:** Post graduate **s**tudents 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 in form of scientific peer reviewed publications and demonstrate a sense of scientific enquiry, reflective thinking, self-directed learning and creativity.
8. **Co-operation /Team Work:** Students should demonstrate the ability to work effectively and respectfully with a multi-disciplinary team, facilitate co-operative and co-ordinated effort for the common cause in various clinical settings.
9. **Socio-cultural and multicultural competency**: Knowledge of socio-cultural values, attitudes and beliefs relevant to a particular society, nation and global perspectives must be present to effectively engage and identify with diverse groups.
10. **Awareness of moral, ethical and legal issues:** Students must demonstrate moral /ethical values in conduct, awareness of ethical issues related to patient care, work practices, refraining from malpractice, unethical behaviour, falsification, plagiarism, misinterpretation of data, non-adherence to intellectual property rights, adhering to truthful, unbiased actions in all aspects of work without discrimination based on age, race, gender, sexual preference, disease, mental status, lifestyle, opinions or personal values.
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, under graduate students and patients.

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 and challenges.

V. Qualification Descriptors for Master of Physiotherapy (MPT) program:

Students who complete the 2 years Master of Physiotherapy program will be awarded a Master 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 cardiovascular and pulmonary Physiotherapy and Fitness, recent advances and research in Physiotherapy evaluation and treatment procedures.
2. Comprehensive information regarding appropriate use of electrotherapy modalities, exercise equipment, advanced learning material, skills and techniques as indicated.
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 care solutions.
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 life situations.
5. Demonstrate profession related transferable skills relevant to patient care and employment opportunities.

VI. Program Outcomes for Master of Physiotherapy Program

Students who complete 2 years postgraduate program in Physiotherapy would earn a Master of Physiotherapy (MPT) specialty 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, research and develop them as contributing members for overall development of the society.

The program learning outcomes relating to MPT degree program Specialty - Cardio Vascular and Respiratory Physiotherapy, are summarized below:

PO 1	To apply skills in cardiopulmonary resuscitation and physiotherapy care of patient in critical care units
PO 2	To apply behavioural skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
PO 3	To apply and examine moral, ethical values and legal aspects concerned with Physiotherapy management, demonstrate professional ethical behavior towards client and maintain respect, dignity and confidentiality of patients
PO 4	To critically analyze interactions between structure and function of human body, applied anatomy, physiology in physiotherapy practice pertaining to cardiovascular and pulmonary system with sound clinical reasoning, detailed knowledge of exercise physiology, cardio-pulmonary rehabilitation and fitness.
PO 5	To explain biopsychosocial component of pain and dysfunction
PO 6	To analyze biomechanics of human movement and its applications in cardio-respiratory conditions and application in Physiotherapy management.
PO 7	To assess and investigate functional diagnosis in cardiovascular and pulmonary conditions, outline and evaluate treatment goals, apply clinical decision-making skills to assess and design Physiotherapy treatment for people with cardiopulmonary conditions and to improve fitness
PO 8	To apply techniques of respiratory muscle strengthening, manual therapy techniques to improve lung hygiene, breathing control, ergonomics, cardiac and pulmonary rehabilitation
PO 9	To critically analyze assessment and treatment methods through scientific enquiry, experiential learning and demonstrate entrepreneurship and managerial skills related to task in day-to-day work for personal & societal growth, design

	innovative devices and techniques for treatment, invent intellectual property in specialized are of interest
PO10	To apply basic computer applications for data management, data storage, generating data bases and for research purposes.

VII. Program Specific Outcomes for Master of Physiotherapy Program Specialty - Cardio Vascular and Respiratory Physiotherapy

Graduates of the Master of Physiotherapy program will be proficient in skills imbibed in the undergraduate program and in addition demonstrate skills to:

PSO 1	Critically evaluate, prioritize and apply physiotherapy approaches, paradigms and techniques and utilize appropriate, evidence-based skills, techniques and practice in managing and treating people with injury, disability or illness in a range of health care and/or rehabilitation settings.
PSO 2	Identify, analyze and respond appropriately to ethical dilemmas and challenges, and ethical implications of patient/client presentations.
PSO 3	Develop a reasoned rationale for clinical evidence-based physiotherapy intervention and design appropriate treatment/management plans to meet the needs of patients/clients within legislative, policy, ethical, funding and other constraint.
PSO 4	Acquire and examine new knowledge, research, technologies and other appropriate resources and methods to optimize, and to ensure cost-effectiveness, quality and continuous improvement of health care delivery and outcomes.
PSO 5	Post graduates will demonstrate ability to plan, recommend and implement Physiotherapy treatment and practice independently across a range of clinical settings such as tertiary care hospitals, out-patient departments, specialized intensive care units, cardiac and pulmonary rehabilitation units, fitness centers, geriatric homes, gymnasiums, sports units, pediatric units, community health centers, research-driven institutes and other interdisciplinary health care centers/industry, in both rural and urban areas.

PSO 6	Apply creativity and competency whilst upholding professional standards and relationships with a range of stakeholders (including clients, colleagues, careers, families, employers, insurers and others whose presence impacts on the patient/client, and other treatment providers and team members) with different understandings, perspectives and priorities influencing physiotherapy practice.
PSO 7	Adapt communication styles recognizing cultural safety, cultural and linguistic diversity

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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 MPT program is inclusive of 4 semesters inclusive of 12 core courses, (35 Credits), 6 ability enhancement compulsory courses (AECC- 14 credits), 6 ability enhancement elective courses (AEEC – 6 credits) and 3 discipline specific skill electives (SEC – 4 credits) and 2 generic electives (GEC – 2 credits). Clinical training (CLT) is included in each semester (22 credits). Research project will be submitted as a mandatory requirement for award of Master's degree (7 credits).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 AND BENEFITS:

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 own pace.
- The electives are selected from a wide range of elective courses offered by the other University Departments.
- Undergo additional courses and acquire more than the required number of credits.
- Adopt an inter-disciplinary and intra-disciplinary approach in learning.

- 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 assessment pattern.

1. Definitions of Key Words:

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

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

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 learning outcomes. A course may be designed to comprise lectures/ 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 the students.

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 per week.

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 the semesters.

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 RA x. Programme: An educational programme leading to award of a Degree certificate.

ix. **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 decimal places.

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

xi. **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 that semester.

X. SEMESTER SYSTEM AND CHOICE BASED CREDIT SYSTEM

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

10.1. Semesters:

An academic year consists of two semesters:

Semesters	**PG**
Odd Semesters 1st ,3rd,	August – January
Even Semesters 2nd, 4th	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-week schedule:

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

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

10.3 Types of Courses: Courses in the programme are of three kinds:

- **Core Course**
- **Elective Course**
- **Ability Enhancement Course**

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 Courses in every semester.

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 two types

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 (GE) 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).
   Ability Enhancement Compulsory Courses (AECC) : "AECC" courses are the courses based upon the content that leads to Knowledge enhancement.
   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-based knowledge.

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

- All core courses will be restricted to a maximum of 4 credits
- All electives will be restricted to a maximum of 3 credits
- All ability enhancement courses will be restricted to a maximum of 2 credits
- Projects will be restricted to a maximum of 20-25 credits

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.

10.5 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 MPT program credits for 2 years' duration will be 94 credits in total, inclusive of clinical rotation/clinical training and research project training.

XI. CREDIT VALUE PER COURSE & STRUCTURE OF SYLLABUS:

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

a) Title of the Course
b) Learning Objectives
c) Units for syllabus Content
d) Learning Outcomes
e) References
    a. Text Books – 2
    b. Reference Books – 2
    c. Web Resources – 2 Web Portals

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

Structure of CBCS MPT Curriculum
Cardio Vascular and Respiratory Physiotherapy

Semester I		Semester II	
Course Code	**Core Course**	**Course Code**	**Core Course**
MPT001	Cardiovascular anatomy, physiology and pathophysiology in CVS disorders - Theory	MPT006	Respiratory anatomy, physiology, mechanics and path mechanics in respiratory diseases Theory
MPT002	Functional diagnosis, outcome measures and treatment techniques used in management of cardiovascular conditions -Theory	MPT007	Functional diagnosis, outcome measures and treatment techniques used in management of pulmonary conditions Theory
MPT003	Functional diagnosis, outcome measures and treatment techniques used in management of cardiovascular conditions- Practical	MPT008	Functional diagnosis, outcome measures and treatment techniques used in management of pulmonary conditions Practical
MPT004	Exercise physiology in health and disease -Theory	MPT009	Cardiac and Pulmonary Rehabilitation Theory
MPT005	Exercise physiology in health and disease -Practical	MPT010	Cardiac and Pulmonary Rehabilitation Practical

Semester III		Semester IV	
Course Code	**Core Course**	**Course Code**	**Core Course**
MPT011	Physiotherapy in the critical care unit Theory	MPT017	Recent advances and Physiotherapy management of cardiovascular disorders Theory
MPT012	Physiotherapy in the critical care unit Practical	MPT018	Recent advances and Physiotherapy management of cardiovascular disorders Practical
MPT013	Preventive physiotherapy and health promotion Theory	MPT019	Recent advances and Physiotherapy management of pulmonary disorders Theory
MPT014	Preventive physiotherapy and health promotion Practical	MPT020	Recent advances and Physiotherapy management of pulmonary disorders Practical
MPT015	Comprehensive evaluation of physical activity and fitness Theory	MPT021	Evidence Based Cardiopulmonary Physiotherapy Theory
MPT016	Comprehensive evaluation of physical activity and fitness Practical	MPT022	Evidence Based Cardiopulmonary Physiotherapy Practical

XII. SELECTION OF ABILITY ENHANCEMENT ELECTIVE AND SKILLS ENHANCEMENT COURSES:

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= 2/3)			
Sr No	Elective Code	Title	Semester
1	MPTAECC001	Cardiopulmonary Resuscitation	1
2	MPTAECC002	Research methods	1
3	MPTAECC003	Administration, management , professional ethics	1
4	MPTAECC004	Teaching technology	1
5	MPTAECC005	Legal issues and professional ethics	2
6	MPTAECC006	Intellectual property rights and publication ethics	4

List of Ability Enhancement Elective Courses (Credits=2)			
SrNo	Elective Code	Title	Semester
1	MPTAEEC001	Strengthening and relaxation techniques	3
2	MPTAEEC002	Exercise Psychology	3
3	MPTAEEC003	Radiological diagnosis	4
4	MPTAEEC004	Clinical Nutrition	4
5	MPTAEEC005	Physiotherapy in oncology	4
6	MPTAEEC006	Physiotherapy in lymphatic disorders	4

List of Skill Enhancement Elective Courses (Credits=2)			
Sr No	Elective Code	Title	Semester
1	MPTSEC001	Respiratory PNF & Manual mobilization techniques for thorax	2
2	MPTSEC002	Cardiopulmonary Surgeries	2
3	MPTSEC003	Applications of Yoga in Physiotherapy	3
List of Generic Elective Courses (Credits=2)			
Sr No	Elective Code	Title	Semester
1	MPTGEC001	Medical Device Innovation	2
2	MPTGEC002	Scientific Writing	2

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

VII. Framework of Curriculum

MPT CBCS Curriculum Framework applicable for batch admitted in 2019-2020 (BOM 63/2020)

Semester I

MPT CBCS Curriculum Framework applicable for batch admitted in 2019-2020 (BOM 63/2020)

MPT - Cardiovascular and Respiratory Physiotherapy

Semester I (20 weeks teaching : 40 hours per week)

Course Code	Course Title	Course Description	Credits per week					Hours per week				Hours per semester					Marks				
			T/S	P	RP	CL T	Total Credits	T/S	P	RP	CL T	T/S	P	RP	CL T	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Total
MPT001	Cardiovascular anatomy, physiology and pathophysiology in CVS disorders -Theory	Core Theory	2				2	2				40				40		40 #			40
MPT002	Functional diagnosis, outcome measures and treatment techniques used in management of cardiovascular conditions -Theory	Core Theory	3				3	3				60				60	20 *	80			100
MPT003	Functional diagnosis, outcome measures and treatment techniques used in management of cardiovascular conditions-Practical	Core Practical		1			1		2				40			40			20 *	80	100
MPT004	Exercise physiology in health and disease -Theory	Core Theory	2				2	2				40				40	20 *	80			100
MPT005	Exercise physiology in health and disease -Practical	Core practical		1			1		2				40			40				40 #	40
MPTAECC001	Cardiopulmonary resuscitation	Ability Enhancement Compulsory Course	1	1			2	1	2			20	40			60		40 #		20 #	60
MPTAECC002	Research methods	Ability Enhancement Compulsory Course	2				2	2				40				40		40 #			40
MPTAECC003	Bioethics, Health management and Administration	Ability Enhancement Compulsory Course	3				3	3				60				60		40 #			40
MPTAECC004	Teaching Technology	Ability Enhancement Compulsory Course	2	1			3	2	2			40	40			80		40 #		20 #	60
MPTCLT001	Clinical training I					5	5				15				300	300				40 #	40
MPTRP001	Research Protocol I				1		1			2				40		40				20 #	20
		Total	15	4	1	5	25	15	8	2	15	300	160	40	300	800					640

*** Internal Assessment Exam will be conducted for 40 marks and be calculated out of 10/20 for inclusion in Semester Examination**

 # Examination will be conducted at Constituent unit level

Semester II

MPT CBCS Curriculum Framework applicable for batch admitted in 2019-2020 (BOM 63/2020)

MPT - Cardiovascular and Respiratory Physiotherapy

Semester II (20 weeks teaching: 40 hours per week)

Course Code	Course Title	Course Description	Credits per week					Hours per week				Hours per semester					Marks				
			T/S	P	RP	CLT	Total Credits	T/S	P	RP	CLT	T/S	P	RP	CLT	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Total
MPT006	Respiratory anatomy, physiology, mechanics and pathomechanics in respiratory diseases Theory	Core Theory	2				2	2				40				40		40 #			40
MPT007	Functional diagnosis, outcome measures and treatment techniques used in management of pulmonary conditions Theory	Core Theory	2				2	2				40				40	20 *	80			100
MPT008	Functional diagnosis, outcome measures and treatment techniques used in management of pulmonary conditions Practical	Core Practical		1			1		2				40			40			20 *	80	100
MPT009	Cardiac and Pulmonary Rehabilitation Theory	Core Theory	2				2	2				40				40	20 *	80			100
MPT010	Cardiac and Pulmonary Rehabilitation Practical	Core Practical		1			1		2				40			40				40 #	40
MPTAECC005	Legal issues and Professional ethics	Ability Enhancement compulsory course	2				2	2				40				40		40 #			40
MPTGEC001/002	Medical Device Innovation/ Scientific writing	General Elective Course	2				2	2				40				40		40 #			40
MPTSEC001/002	Respiratory PNF & Manual mobilisation techniques for thorax / Cardiopulmonary surgeries	Skill Enhancement Elective Course	1	1			2	1	2			20	40			60		40 #		40 #	80
MPTRP002	Research Project II				2		2			5				100		100				20 #	20
MPTCLT002	Clinical Training II					6	6				18				360	360				40 #	40
		Total	11	3	2	6	22	11	6	5	18	220	120	100	360	800					600

*** Internal Assessment Exam will be conducted for 40 marks and be calculated out of 10/20 for inclusion in Semester Examination**

 # Examination will be conducted at Constituent unit level

Semester III

MPT CBCS Curriculum Framework applicable for batch admitted in 2019-2020 (BOM 63/2020)

MPT - Cardiovascular and Respiratory Physiotherapy

Semester III (20 weeks teaching: 40 hours per week)

			Credits per week					Hours per week				Hours per semester					Marks				
Course Code	Course Title	Course Description	T/S	P	RP	CLT	Total Credits	T/S	P	RP	CLT	T/S	P	RP	CLT	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Total
MPT011	Physiotherapy in the critical care unit Theory	Core Theory	2				2	2				40				40	20 *	80			100
MPT012	Physiotherapy in the critical care unit Practical	Core Practical		1			1		2				40			40				40 #	40
MPT013	Preventive physiotherapy and health promotion Theory	Core Theory	2				2	2				40				40		40#			40
MPT014	Preventive physiotherapy and health promotion Practical	Core Practical		1			1		2				40			40				40 #	40
MPT015	Comprehensive evaluation of physical activity and fitness Theory	Core Theory	2				2	2				40				40	20*	80			100
MPT016	Comprehensive evaluation of physical activity and fitness Practical	Core Practical		1			1		2				40			40			20 *	80	100
MPTAEEC001/ 002	Strengthening and relaxation techniques/Exercise Psychology	Ability Enhancement Elective Course	1	1			2	1	2			20	40			60		40 #		40 #	80
MPTSEC003	Application of Yoga in Physiotherapy	Skill Enhancement Course	1	1			2	1	2			20	40			60		20 #		40 #	60
MPTRP003	Research Data Collection and Analysis				2		2			4				80		80				40 #	40
MPTCLT003	Clinical Training III					6	6				18				360	360				40 #	40
		Total	8	5	2	6	21	8	10	4	18	160	200	80	360	800					640

*** Internal Assessment Exam will be conducted for 40 marks and be calculated out of 10/20 for inclusion in Semester Examination**

 # Examination will be conducted at Constituent unit level

Semester IV

MPT CBCS Curriculum Framework applicable for batch admitted in 2019-2020 (BOM 63/2020)

MPT - Cardiovascular and Respiratory Physiotherapy

Semester IV (20 weeks teaching: 40 hours per week)

Course Code	Course Title	Course Description	Credits per week					Hours per week				Hours per semester					Marks				
			T/S	P	RP	CLT	Total Credits	T/S	P	RP	CLT	T/S	P	RP	CLT	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Total
MPT017	Recent advances and Physiotherapy management of cardiovascular disorders Theory	Core Theory	2				2	2				40				40	20 *	80			100
MPT018	Recent advances and Physiotherapy management of cardiovascular disorders Practical	Core Practical		1			1		2				40			40			20 *	80	100
MPT019	Recent advances and Physiotherapy management of pulmonary disorders Theory	Core Theory	2				2	2				40				40	20 *	80			100
MPT020	Recent advances and Physiotherapy management of pulmonary disorders Practical	Core Practical		1			1		2				40			40			20 *	80	100
MPT021	Evidence Based Cardiopulmonary Physiotherapy Theory	Core theory	2				2	2				40				40		40 #			40
MPT022	Evidence Based Cardiopulmonary Physiotherapy Practical	Core Practical		1			1		2				40			40				20 #	60
MPTAEEC003/004	Radiological diagnosis/Clinical Nutrition	Ability Enhancement Elective Course	1	1			2	1	2			20	40			60		40 #		20 #	60
MPTAEEC005/006	Physiotherapy in oncology/ Physiotherapy in Lymphatic disorders	Ability Enhancement Elective Course	1	1			2	1	2			20	40			60		40 #		20 #	60
MPTAECC006	Intellectual property rights and publication ethics	Ability Enhancement Compulsory Course	2				2	2				40				40		40 #			40
MPTRP004	Research Dissertation submission and manuscript preparation				2		2			4				80		80				40 #	40
MPTCLT004	Clinical Training IV					5	5				16				320	320				40 #	40
		Total	10	5	2	5	22	10	10	4	16	200	200	80	320	800					740

*** Internal Assessment Exam will be conducted for 40 marks and be calculated out of 10/20 for inclusion in Semester Examination**

 # Examination will be conducted at Constituent unit level

Semester I

MPT CBCS Curriculum Framework 2019-2020 applicable to academic batch admitted from 2020-2021 onwards as per AC 41/2021

MPT - Cardiovascular and Respiratory Physiotherapy

Semester I (20 weeks teaching:40 hours per week)

Course Code	Course Title	Course Description	Credits per week					Hours per week				Hours per semester					Marks				
			L/S	P	RP	CLT	Total Credits	L/S	P	RP	CLT	L/S	P	RP	CLT	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Total
MPT001	Cardiovascular anatomy, physiology and pathophysiology in CVS disorders -Theory	Core Theory	2				2	2				40				40	10	40			50
MPT002	Functional diagnosis, outcome measures and treatment techniques used in management of cardiovascular conditions -Theory	Core Theory	3				3	3				60				60	20	80			100
MPT003	Functional diagnosis, outcome measures and treatment techniques used in management of cardiovascular conditions-Practical	Core Practical		1			1		2				40			40			20	80	100
MPT004	Exercise physiology in health and disease - Theory	Core Theory	2				2	2				40				40	20	80			100
MPT005	Exercise physiology in health and disease - Practical	Core practical		1			1		2				40			40			10	40	50
MPTAECC001	Cardiopulmonary resuscitation	Ability Enhancement Compulsory	1	1			2	1	2			20	40			60	10	40	10	40	100
MPTAECC002	Research methods	Ability Enhancement Compulsory	2				2	2				40				40	10	40			50
MPTAECC003	Bioethics, Health management and Administration	Ability Enhancement Compulsory Course	3				3	3				60				60	10	40			50
MPTAECC004	Teaching Technology	Ability Enhancement Compulsory	2	1			3	2	2			40	40			80	10	40	10	40	100
MPTCLT001	Clinical training I					5	5				15				300	300				40	40
MPTRP001	Research Protocol				1		1			2				40		40				20	20
		Total	15	4	1	5	25	15	8	2	15	300	160	40	300	800					760

Semester II

MPT CBCS Curriculum Framework 2019-2020 applicable to academic batch admitted from 2020-2021 onwards as per AC 41/2021

MPT - Cardiovascular and Respiratory Physiotherapy

Semester II (20 weeks teaching: 40 hours per week)

Course Code	Course Title	Course Description	Credits per week					Hours per week				Hours per semester					Marks				
			T/S	P	RP	CLT	Total Credits	T/S	P	RP	CLT	T/S	P	RP	CLT	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Total
MPT006	Respiratory anatomy, physiology, mechanics and pathomechanics in respiratory diseases Theory	Core Theory	2				2	2				40				40	10	40			50
MPT007	Functional diagnosis, outcome measures and treatment techniques used in management of pulmonary conditions Theory	Core Theory	2				2	2				40				40	20	80			100
MPT008	Functional diagnosis, outcome measures and treatment techniques used in management of pulmonary conditions Practical	Core Practical		1			1		2				40			40			20	80	100
MPT009	Cardiac and Pulmonary Rehabilitation Theory	Core Theory	2				2	2				40				40	20	80			100
MPT010	Cardiac and Pulmonary Rehabilitation Practical	Core Practical		1			1		2				40			40			10	40	50
MPTAECC005	Legal issues and Professional ethics	Ability Enhancement compulsory course	2				2	2				40				40	10	40			50
MPTGEC001/002	Medical Device Innovation/ Scientific writing	General Elective Course	2				2	2				40				40	10	40			50
MPTSEC001/002	Respiratory PNF & Manual mobilisation techniques for thorax / Cardiopulmonary surgeries	Skill Enhancement Elective Course	1	1			2	1	2			20	40			60	10	40	10	40	100
MPTRP002	Research Project				2		2			5				100		100				20	20
MPTCLT002	Clinical Training II					6	6				18				360	360				40	40
		Total	11	3	2	6	22	11	6	5	18	220	120	100	360	800					660

Semester III

MPT CBCS Curriculum Framework 2019-2020 applicable to academic batch admitted from 2020-2021 onwards as per AC 41/2021

MPT - Cardiovascular and Respiratory Physiotherapy

Semester III (20 weeks teaching: 40 hours per week)

Course Code	Course Title	Course Description	Credits per week					Hours per week				Hours per semester					Marks				
			T/S	P	RP	CLT	Total Credits	T/S	P	RP	CLT	T/S	P	RP	CLT	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Tota
MPT011	Physiotherapy in the critical care unit Theory	Core Theory	2				2	2				40				40	20	80			100
MPT012	Physiotherapy in the critical care unit Practical	Core Practical		1			1		2				40			40			10	40	50
MPT013	Preventive physiotherapy and health promotion Theory	Core Theory	2				2	2				40				40	10	40			50
MPT014	Preventive physiotherapy and health promotion Practical	Core Practical		1			1		2				40			40			10	40	50
MPT015	Comprehensive evaluation of physical activity and fitness Theory	Core Theory	2				2	2				40				40	20	80			100
MPT016	Comprehensive evaluation of physical activity and fitness Practical	Core Practical		1			1		2				40			40			20	80	100
MPTAEEC001/002	Strengthening and relaxation techniques/Exercise Psychology	Ability Enhancement Elective Course	1	1			2	1	2			20	40			60	10	40	10	40	100
MPTSEC003	Application of Yoga in Physiotherapy	Skill Enhancement Course	1	1			2	1	2			20	40			60	10	40	10	40	100
MPTRP003	Research Data Collection and Analysis				2		2			4				80		80				40	40
MPTCLT003	Clinical Training III					6	6				18				360	360				40	40
		Total	8	5	2	6	21	8	10	4	18	160	200	80	360	800					730

Semester IV

MPT CBCS Curriculum Framework 2019-2020 applicable to academic batch admitted from 2020-2021 onwards as per AC 41/2021

MPT - Cardiovascular and Respiratory Physiotherapy

Semester IV (20 weeks teaching: 40 hours per week)

Course Code	Course Title	Course Description	Credits per week					Hours per week				Hours per semester					Marks				
			T/S	P	RP	CLT	Total Credits	T/S	P	RP	CLT	TS	P	RP	CLT	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Total
MPT017	Recent advances and Physiotherapy management of cardiovascular disorders Theory	Core Theory	2				2	2				40				40	20	80			100
MPT018	Recent advances and Physiotherapy management of cardiovascular disorders Practical	Core Practical		1			1		2				40			40			20	80	100
MPT019	Recent advances and Physiotherapy management of pulmonary disorders Theory	Core Theory	2				2	2				40				40	20	80			100
MPT020	Recent advances and Physiotherapy management of pulmonary disorders Practical	Core Practical		1			1		2				40			40			20	80	100
MPT021	Evidence Based Cardiopulmonary Physiotherapy Theory	Core theory	2				2	2				40				40	10	40			50
MPT022	Evidence Based Cardiopulmonary Physiotherapy Practical	Core Practical		1			1		2				40			40			10	40	50
MPTAEEC003/004	Radiological diagnosis/Clinical Nutrition	Ability Enhancement Elective Course	1	1			2	1	2			20	40			60	10	40	10	40	100
MPTAEEC005/006	Physiotherapy in oncology/Physiotherapy in Lymphatic disorders	Ability Enhancement Elective Course	1	1			2	1	2			20	40			60	10	40	10	40	100
MPTAECC006	Intellectual property rights and publication ethics	Ability Enhancement Compulsory Course	2				2	2				40				40	10	40			50
MPTRP004	Research Dissertation submission and manuscript preparation				2		2			4				80		80				40	40
MPTCLT004	Clinical Training IV					5	5				16				320	320				40	40
		Total	10	5	2	5	22	10	10	4	16	200	200	80	320	800					830

VIII. Rules and Regulation for Examination of Master of Physiotherapy Program

1. **Title of the courses offered: Master of Physiotherapy -Cardiovascular Pulmonary Physiotherapy and fitness**

2. **Duration of the course:** Two years

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

4. **Letter Grades and Grade Points:**

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 class intervals.

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

Table 1: Grades and Grade Points:

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

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

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 Equivalence Table**

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 MPT**	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 each course.

6.1 For all category of courses offered (Theory, Practical, Ability Enhancement Courses [AE]; Skills Enhancement Courses [SE] Theory or P (Practical) & RP(Research Project), assessment will comprise of Internal Assessment (IA) and the end–semester (ES) examination as applicable.

6.2 Courses in programs wherein Theory and Practical/Clinical are assessed jointly, 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 and practical.

6.3 Evaluation for a course with clinical rotation or clinical training will be done on a continuous basis.

Evaluation of elective courses and certain core courses will be carried out at the level of the constituent unit for academic batch admitted in 2019-2021. The pattern of examination is described in the curriculum.

Evaluation of all core and elective courses will be performed as End Semester University Exam from academic batch 2020-2021 onwards. Pattern of internal assessment and University Exam are described in the curriculum. As per resolution no.3.7 of AC -41/ 2021 and 3.11 AC – 41/ 2021.

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

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 **(Applicable for batch admitted in 2019-2020 and 2020-2021).**
Candidates having ≥ 75% attendance and obtaining the minimum 50% in internal assessment in each course to qualify for appearing in the end-semester university examinations **(Applicable for batch admitted from 2022-23 onwards as per Resolution no 10.4 of AC-42/2022 dated 26/04/2022)**

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

8. Passing Heads

8.1 Courses where theory and practical are involved, the minimum passing head shall be 50% in total including the internal assessment.

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

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-semester examination.

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

11 Carry over benefit:

11.1 A student will be allowed to keep term for Semester II irrespective of number of heads of failure in Semester I.
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 combined in semester I and II.

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 IV exam.

12 University End-Semester Examination

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

12.2 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.

12.3 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 written examination.

12.4 A student shall be eligible to sit for the examination only, if she / he has secured minimum 40% in internal assessment (individually in theory and practical as applicable) of that subject. The internal examinations will be conducted at college/ department level **(Applicable for batch admitted in 2019-2020 and 2020-2021).**

A student shall be eligible to sit for the examination only, if she / he has secured minimum 50% in internal assessment (individually in theory and practical as applicable) of that subject. The internal examinations will be conducted at college/ department level **(Applicable for batch admitted from 2022-23 onwards as per Resolution no 10.4 of AC-42/2022 dated 26/04/2022).**

12.5 Notwithstanding any circumstances, a deficiency of attendance at lectures or practical maximum to the extent of 10% - may be condoned by the principal / dean /director.

12.6 If a student fails either in theory or in practical, he/ she have to re-appear for both.

12.7 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 subject experts.

12.8 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 theory examination.

13. Supplementary examination: The supplementary examination will be held in the next semester. Eligibility to appear for supplementary examination will be as per rule number 11.1, 11.2 and 11.3.

14. 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 of results.

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

(15.1 to 15.4 Examination pattern applicable for batch admitted in academic year 2019-2020)

15.1 : Theory Question Paper Pattern For Core Subjects in University Examinations Under CBCS - 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	4	10	4 x 10	40
Section 2				
Long answer question	2	20	2 x 20	40
				Total= 80

15.2 University Examination Pattern (Practical): 80 Marks

Long Case	40
OSCE Station (4)	40
	Total = 80 M

15.3 Internal examination

Mid Semester Examination pattern (Theory) : 40 marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Long essays	2	10	2x10	20 marks
Short answers	4	5	4x5	20 marks
Total				**Total= 40 marks**

Note – Internal assessment marks will include continuous comprehensive evaluation inclusive of seminars, case presentations, essays, open book exams, summative evaluation (and others) and mid semester examination marks and will be converted to as per weightage.

15.4 Internal Examination

Mid Semester Examination Pattern (Practical): 40 Marks

Short Case	20
OSCE Station (2)	20
	Total = 40 M

(15.1 to 15.4 Examination pattern applicable for batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021)

15.1: Theory Question Paper Pattern for Core Courses in University Examinations Under CBCS – 40/ 80 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	4 out of 5	10	4 x 10	40
Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

Question type	No. of questions	Marks/question	Question X marks	Total marks
Long essays	2 out of 3	10	2x10	20 marks

Short answers	4 out of 5	5	4x5	20 marks
Total				**Total= 40 marks**

15.2 University Examination Pattern (Practical): 40/80 Marks

Long Case	40
OSCE Station (10 X 4)	40
	Total = 80 M

Short Case	20
OSCE Station (10 X 2)	20
	Total = 40 M

OSCE Station (10 X 4)	40
	Total = 40 M

15.3Internal examination

Internal assessment marks will include continuous comprehensive evaluation inclusive of seminars, case presentations, essays, open book exams, summative evaluation (and others) and mid semester examination marks and will be converted to as per weightage. For calculation of internal assessment, weightage for CCA will be 25% and for mid semester examination will be 75%.

Mid Semester Examination pattern (Theory) : 40 marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Long answers	2 out of 3	10	2x10	20 marks
Short answers	4 out of 5	5	4x5	20 marks
Total				**Total= 40 marks**

15.4 Internal Examination

Mid Semester Examination Pattern (Practical): 40 Marks

Short Case	10
OSCE Station (2X5)	10

	Total = 20 M

OSCE (10 X 2)	20
	Total = 20 M

15.5 Assessment of Seminar (100 Marks)

Description	Marks
Submission of seminar report	50
Subject knowledge	10
Concept and Methodology	10
Presentation	10
VIVA	20
	Total = 100

15.6 Clinical Evaluation:

- Students will be placed in clinical areas based on specialty on a rotator basis. Each clinical posting will be of 6 weeks duration with a minimum of 3 postings in each semester.
- Presentation of minimum 2 cases to the respective clinical supervisors and documentation in the Log book for each posting is mandatory, failing which the particular posting will be repeated.
- Attendance is mandatory at all clinical postings.

Clinical competency

Students should demonstrate clinical competency **in** assessment, functional diagnosis on ICF basis, plan of care and therapeutic interventions relating to the specific dysfunctions, in all settings (inpatient and outpatient) , on all types of conditions (surgical, non-surgical, pediatric and geriatric).They should be able to document their findings in an efficient and organized manner .

During clinical practice, student should be able to demonstrate competency
A. Competency in Assessment and Clinical Reasoning: Student should be able to apply the ICF framework in selecting measurement tools to ensure a holistic approach to evaluation of body structure and function, activities, participation; and select and administer assessment/evaluation tools and techniques suitable for the patients problems and condition(s) based on the best available evidence and interpret the information obtained demonstrating evidence-based decision-making and safe handling technique such as: 1. Risk factor screening (Red flags & Yellow flags). 2. Assessment of dysfunction.

3. Interpretation of Radiological, Electrophysiological, Hematological and Biochemical investigations.
4. Fitness and Functional performance testing as appropriate
5. Identification and quantification of environmental and home barriers and facilitators
6. Identification and analysis of body mechanics during self-care, home management, work, community, tasks, or leisure activities.
7. Identification and analysis of ergonomic performance during work /school/play)
8. Assessment of Quality of Life through use of appropriate questionnaire and generic or disease-specific scales (nice to know)
9. Identification and prioritization of impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed
10. State the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.
11. Determine the predicted level of optimal functioning and the time required to achieve that level.
12. Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame and ways to overcome them when possible.

B. Competency In Developing Plan Of Care:

Student should be able to:
1. Identify patient goals and expectations.
2. Design a Plan of Care with measurable functional goals (short-term and long-term) that are prioritized and time bound.
3. Consult patient and/or caregivers to develop a mutual agreement regarding the plan of care.
4. Identify indications/ additional needs for consultation with other professionals & appropriate referrals.
5. Select the interventions that are safe, realistic and meet the specified functional goals and outcomes in the plan of care: (a) identify precautions and contraindications, (b) provide evidence for patient-centered interventions that are identified and selected, (c) define the specificity of the intervention (time, intensity, duration, and frequency).
6. Measure and monitor patient response to intervention and modify elements of the plan of care and goals in response to changing patient/client status, as needed.
7. Establish criteria for discharge based on patient goals and current functioning and disability.

C. Competency in Physiotherapy Intervention:

Important influences on Physiotherapy management choices may include but not limited to:
1. Diverse settings of care including critical, acute, long term, rehabilitation, and community care;
2. Lifespan issues ranging from the neonatal stage to those associated with aging
3. Life style modification for diseases and for prevention
4. Skill of application of physical and electrical agents
5. Facilitation, re-education and training of mobility, strength, endurance, motor control, posture, gait, balance, fitness through skillful use of various therapeutic exercise techniques with appropriate manual treatment techniques or therapeutic gymnasium equipment.

6. Functional training in self-care, home, work (job, school and play), community and leisure activities

Evaluation criteria for clinical cases

Sr No	Criteria	Score				
		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	Recent advances in Physiotherapy techniques					
9	Documentation of case					
10	Timely submission of assignment					
	Total Score /50					
	Total Score /10					

15.7 Performance Evaluation:

An end semester performance report will be submitted to the Head of Department as per format provided.

15.8 Research Project report: -

MPT student should submit a suitable research project topic forwarded by the guide to MGM School of Physiotherapy by November in semester I. Following approval of ethics & scientific committee, work should be carried out in subsequent semesters. Completed dissertation, checked for plagiarism, accepted & signed by the guide should be submitted to MGMIHS as a mandatory requirement for completion of MPT program in Semester IV (January).

16. Research Project report Evaluation Guidelines for MPT program:

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 Research Proposal

1. **Selection of Research Problem:**
   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 of proposal/project.
   d. Prepare conceptual framework based on operational definition.
   e. Write scope of research proposal/project.

2. **Organizing Review of Literature**
   a. Study related and relevant literature which helps to decide conceptual framework and research design to be selected for the study.
   b. Add specific books, bulletins, periodicals, reports, published dissertations, encyclopedia and text books.
   c. Organize literature as per operational definition.
   d. Prepare summary table for review of literature.

3. **Research Methodology: To determine logical structure & methodology for research project.**
   a. Decide and state approach of study i.e. experimental or non-experimental.
   b. Define/find out variables to observe effects on decided items & procedure.
   c. Prepare simple tool or questionnaire or observational checklist to collect data.
   d. Determined sample and sampling method
   e. Mode of selection ii) Criteria iii) Size of sample iv) Plan when, where and how will be collected.
   f. Test validity of constructed tool.
   g. Check reliability by implementing tool before pilot study (10% of sample size)
   h. Conduct pilot study by using constructed tool for 10% selected sample size.

4. **Data collection: To implement prepared tool**

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

5. Data analysis and processing presentation

a. Use appropriate method of statistical analysis i.e. frequency and percentage.
b. Use clear frequency tables, appropriate tables, graphs and figures.
c. Interpretation of data:
d. In relation to objectives
e. Hypothesis
f. Variable of study or project
g. Writing concise report

6. Writing Research Report

a. **Aims**:

i. To organize materials to write project report
ii. To make comprehensive full factual information
iii. To make appropriate language and style of writing
iv. To make authoritative documentation by checking footnotes, references & bibliography
v. To use computers & appropriate software

b. Points to remember

i. Develop thinking to write research report
ii. Divide narration of nursing research report
iii. Use present tense and active voice
iv. Minimize use of technical language
v. Use simple, straightforward, clear & concise language
vi. Use visual aids in form of table, graphs & figures
vii. Treat data confidentially
viii. Review & rewrite if necessary

Evaluation Criteria for Research Project Report

Sr. No	SEMESTER	Criteria	Rating					Remark
			1	2	3	4	5	
I		**Statement of the problem**						
		1. Significance of the problem selected						
		2. Framing of title and objectives						
II		**Literature Review**						
		1. Inclusion of related studies on the topic and its relevance						
		2. Operational definition						
III	Semester I	**Research Design**						
		1. Use of appropriate research design						
		2. Usefulness of the research design to draw the inferences among study variables/ conclusion						
IV		**Sampling Design**						
		1. Identification & description of the target population						
		2. Specification of the inclusion & exclusion criteria						
		3. Adequate sample size, justifying the study design to draw conclusions						
V		**Data Collection Procedure**						
		1. Preparation of appropriate tool						
		2. Pilot study including validity & reliability of tool						
		3. Use of appropriate procedure/ method for data collection						
	Semester II							
VI		**Ethical Aspects**						
		1. Use of appropriate consent process						
		2. Use of appropriate steps to maintain ethical aspects & principles						
VII		**Analysis of Data & Interpretation**						
		1. Clear & logical organization of the finding						
		2. Clear presentation of tables(title, table & column heading)						
	Semester III	3. Selection of appropriate statistical tests						
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						
XI	**Semester IV**	**Dissertation Submission to MGMIHS**						
		Manuscript Writing and Submission to peer reviewed journal						

Signature of the Evaluator

IX. Eligibility for award of degree

1. A candidate shall have passed in all the subjects of all semester's I-IV, completed and submitted dissertation to be eligible for award of Master's degree.
2. 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.
3. The RA grade once awarded in the grade card of the student is not deleted even when he/she completes the course successfully later. The grade acquired later by the student will be indicated in the grade sheet of the subsequent semester in which the candidate has appeared for clearance in supplementary exams
4. If a student secures RA grade in the Project Work/Dissertation, he/she shall improve it and resubmit it, if it involves only rewriting / incorporating the revisions suggested by the evaluators. If the assessment indicates lack of student performance or data collection then the student maybe permitted to re-register by paying the prescribed re-registration fee and complete the same in the subsequent semesters.

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

(a) For Core courses CT (Core Theory) and CP (Core Practical), student shall obtain Grade C (50 % of marks) in the University End Semester Examination (ES) and in aggregate in each course which includes both Internal Assessment and End Semester Examination.

(b) For Elective Courses student shall obtain minimum Grade C (50 % of marks) in the college examination, clinical rotation, case studies, seminars, journal clubs, microteaching and research work.

X. Computation of SGPA and CGPA

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

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

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

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,

$$\text{CGPA} = \frac{20 \times 6.9 + 22 \times 6.8 + 25 \times 6.6 + 26 \times 6.0 + 26 \times 6.3 + 25 \times 8.0}{144} = 6.75/\text{B+}$$

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.

XI. Course Registration

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 the semester.

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.

XII. Re - Entry After Break of Study:

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 must seek readmission into the appropriate semester as per university norms.

b) The student shall follow the syllabus in vogue (currently approved / is being followed) for the program.

c) All re-admissions of students are subject to the approval of the Vice-Chancellor.

XIII. 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 courses only] will be taken into account

XX. CLASSIFICATION OF SUCCESSFUL CANDIDATES

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

Consolidated Grade Card		
Letter Grade	CLASSIFICATION	CGPA RANGE
O	First Class with Distinction	9.01 – 10
A+	First Class	8.01 - 9.00
A	First Class	7.01 - 8.00
B+	First Class	6.0 1- 7.00
B	Second Class	5.01- 6.00

A successful candidate will be :

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

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

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

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

Master of Physiotherapy (MPT)
Specialty - Cardio Vascular and Respiratory Physiotherapy
Semester-I (0-6 months)

Course Code	Course Title	Course Description	Lecture/ Seminar Hours	Practical Hours	Research Hours	Clinical Hours	Credits
MPT001	Cardiovascular anatomy, physiology and pathophysiology in CVS disorders - Theory	Core Theory	40				2
MPT002	Functional diagnosis, outcome measures and treatment techniques used in management of cardiovascular conditions -Theory	Core Theory	60				3
MPT003	Functional diagnosis, outcome measures and treatment techniques used in management of cardiovascular conditions-Practical	Core practical		40			1
MPT004	Exercise physiology in health and disease - Theory	Core Theory	40				2
MPT005	Exercise physiology in health and disease - Practical	Core practical		40			1
MPTAECC001	Cardiopulmonary resuscitation	Ability Enhancement Compulsory Course	20	40			2
MPTAECC002	Research methods	Ability Enhancement Compulsory Course	40				2
MPTAECC003	Bioethics, Health management and Administration	Ability Enhancement Compulsory Course	60				3
MPTAECC004	Teaching Technology	Ability Enhancement Compulsory Course	40	40			3
MPTCLT001	Clinical training I					300	5
MPTRP001	Research Protocol I				40		1

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Cardiovascular anatomy, physiology and pathophysiology in cardiovascular conditions**
Course Code	**MPT-001**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	describe development of the heart in fetus, fetal circulation, anatomical aspects of cardiac events, neural control, factors influencing circulation, abnormalities of circulation of the heart, arterial, venous and lymphatic systems, function in health and disease and physiological changes due to ageing .
CO 2	describe disease etiology, clinical features and structural impairments leading to changes in working of the heart, congenital and acquired heart diseases, examine interaction between various body systems on functional impairment based on ICF model
CO 3	examine and analyze anatomical basis of various clinical cardiovascular conditions.
CO 4	investigate signs of circulatory failure in patients with cardiac disorders, identify abnormality in heart rate and rhythm

Unit	Topics	No. of Hrs.
1	**Fetal development** Development of cardiovascular system and fetal circulation	**5**
2	**Systemic Anatomy** Review of cardiovascular anatomy with its neural, vascular and autonomic nervous structures	**5**
3	Changes occurring with growth, effects of ageing, changes seen during pregnancy	**5**
4	**Cardiovascular structure physiology** a. Properties of cardiac muscles and cardiac cycle b. Heart sounds, cardiac output, haemodynamic c. Arterial, venous, capillary pressure d. Circulatory shock e. Cardiovascular adjustments during exercises	**10**
5	**Pathophysiology/ pathomechanics related to cardiac conditions** a. Congenital heart disease b. Valvular heart disease c. Rheumatic heart disease Ischemic heart disease d. Hypertrophy of heart e. Cardiac failure f. Pericarditis g. Cardiac tumours	**10**

6	**Pathophysiology/ pathomechanics related to vascular conditions** a. Arterial b. Venous c. Lymphatic	**5**
Total		**40**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020

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

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University Semester Examination (Theory): - 40 marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks

RECOMMEMDED TEXT BOOKS

1. Chaurasia, B. D. (2004). *Human anatomy*. CBS Publisher.
2. Williams, P. L., Bannister, L., Berry, M., Collins, P., Dyson, M., Dussek, E., & Ferguson, M. W. J. (1998). Gray's anatomy. *Churchill Livingstone, Edinburgh*.
3. Sembulingam, K., & Sembulingam, P. (2012). *Essentials of medical physiology*. JP Medical Ltd.
4. Hall, J. E. (2015). *Guyton and Hall textbook of medical physiology e-Book*. Elsevier Health Sciences.
5. Cohen, M., & Michel, T. H. (Eds.). (1988). *Cardiopulmonary symptoms in physical therapy practice*. Churchill Livingstone.
6. Hoidkins, Butterworth. Pulmonary rehabilitation: guidelines to success,1984.Mosby, Elseiver.
7. Irwin, C.V. Cardiopulmonary Physiotherapy. St. Louis 1990.Mosby,

Name of the Programme	**Master of Physiotherapy (MPT)** **Specialty - Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Functional diagnosis, outcome measures and treatment techniques used in management of cardiovascular conditions Theory**

Course Code	**MPT-002**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**
Name of the Course	**Functional diagnosis, outcome measures and treatment techniques used in management of cardiovascular conditions Practical**
Course Code	**MPT003**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	Formulate treatment plan based on ICF model, analyze structural and functional impairment, examine contextual factors influencing function and compare performance and capacity of people with cardio-vascular disorders
CO 2	Outline subjective and objective assessment in cardiac, arterial, venous and lymphatic disorders
CO 3	Examine the different outcome measures in cardiac, arterial, venous and lymphatic disorders and to apply knowledge of basic investigative approaches in the medical system & surgical intervention regimes related to cardio-vascular impairment in forming a functional diagnosis.
CO 4	Prioritize treatment goals for management, identify strategies for cure, care and prevention; apply restorative & rehabilitative measures for maximum possible functional independence of a patient at home, work place and in the community following conservative or surgical management of cardiovascular disease.
	Expected Competencies : Student will be able to
EC1	Propose functional diagnosis of patients with details of structural impairment, functional impairment, participation affection, contextual factors, performance and capacity evaluation
EC2	Evaluate and record – general anthropometry and demographic characteristics, clinical history, level of dyspnea on objective scales like MRC, NYHA, respiratory rate, pattern of breathing, signs of respiratory distress, chest wall mobility – subjective and objective measurement, I:E ratio, clinical signs of low cardiac output
EC3	Interpret ECG and report heart rate, rhythm, abnormalities in rhythm, axis deviation, signs of atrial-ventricular hypertrophy, signs of ischemia /infarction, ectopic
EC4	Interpret chest radiographs and report- view, exposure, centralization, cardiothoracic ratio, CP angles, cardiac shadows, abnormalities in lung fields, causes of hyperlucency/ hypo density, pleural pathology, bony pathology of thorax and vertebrae, special views Read and understand CT scans and MRI (desirable to know)

EC5	Interpret arterial blood gas reports and comment on metabolic/respiratory acidosis/alkalosis, hypoxemia and oxygen saturation
EC6	Describe 2D echo, angiography, blood investigations, Doppler reports
EC7	Administer quality of life questionnaires- SF36, SF12, HR QoL and others tools and interpret results
EC8	Recommend short and long term goals for Physiotherapy treatment, design and implement Physiotherapy to enhance lung function, prevent de-conditioning, enhance functional abilities, prescribe home program, institute ergonomic advise in medically and surgically managed cardiovascular disorders

Unit	Topics	No. of Hrs.
1	a. ICF 2000 biopsychosocial model of care b. Concepts of structural, functional impairment, contextual factors influencing function , evaluation of performance and assessment of capacity c. Functional diagnosis **Outcome measure related to cardiovascular conditions** a. International classification of functional framework b. Selection of an outcome measure c. Measurement of body structures and functional levels d. Measurement of activity limitations e. Measurement of participation restrictions f. Quality of life	**10**
2	**Objective and subjective assessment techniques in cardiac and vascular conditions**. exertional breathlessness, dizziness, palpitations, unconsciousness, chest pain/angina, relevant histories, quality related questionnaires, general examination, inspection, palpation, percussion and auscultation with ICF, vascular symptoms	**15**
3	Outcome measures and investigations- ECG, Angiography,X-rays, CT scan, MRI, PFT, Doppler, plethysmography, scales for angina pain, activity limitations, Questionnaires evaluating function and Quality of life	**15**
4	Treatment techniques in cardiac, arterial, venous and lymphatic disorders	**20**
Practical		**40**
Total		**100**

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	4 out of 5	10	4 x 10	40
Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

Mid Semester Examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Long answers	2 out of 3	10	2x 10	20
Total				**Total= 40**

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

Exercise	Description	Marks
Q No 1	Long Case (Emphasis on assessment and outcome measures)	40
Q No 2	OSCE stations (4)	40
		Total = 80

Mid Semester Examination Pattern (Practical): 40 Marks

Short Case(Emphasis on Emphasis on assessment and outcome measures)	20
OSCE stations (2)	20
	Total = 40 M

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

Recommended books-

1. Wilkins, R. L., Stoller, J. K., & Scanlan, C. L. (2004). *Egan's fundamentals of respiratory care*
2. Hyatt, R. E., Scanlon, P. D., & Nakamura, M. (2014). *Interpretation of pulmonary function tests*. Lippincott Williams & Wilkins.

3. Schamroth, L. (1964). An introduction to electrocardiography. *Academic medicine*, *39*(10), 977.
4. Irwin, S., & Tecklin, J. S. (Eds.). (2004). *Cardiopulmonary physical therapy: A guide to practice*. Mosby Incorporated.
5. Dean, E., & Frownfelter, D. L. (2006). *Cardiovascular and pulmonary physical therapy: Evidence and practice*. Mosby.
6. Pryor, J. A., & Prasad, A. S. (2008). *Physiotherapy for respiratory and cardiac problems: adults and paediatrics*. Elsevier Health Sciences.
7. Goldberger MD FACC, Ary L (2017). Goldberger's Clinical Electrocardiography-A Simplified Approach.
8. Burton, G. G., Hodgkin, J. E., & Ward, J. J. (Eds.). (1991). *Respiratory care: a guide to clinical practice*. Lippincott Williams & Wilkins.
9. American College of Sports Medicine. (2013). *ACSM's guidelines for exercise testing and prescription*. Lippincott Williams & Wilkins.
10. Gibson, A. L., Wagner, D., & Heyward, V. (2018). *Advanced Fitness Assessment and Exercise Prescription, 8E*. Human kinetics.
11. Luther T. Clark, Cardiovascular Disease and Diabetes. McGraw Hill Professional, 2007

Name of the Programme	**Master of Physiotherapy (MPT)** **Specialty - Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Exercise Physiology in health and disease Theory**
Course Code	**MPT-004**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Code	**Exercise Physiology in health and disease Practical**
Credit per Semester	**MPT-005**
Hours per Semester	**1 credit**
Course Code	**40 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	describe the physiology of different body systems while exercising.
CO 2	examine the role of heart and lung during exercise performance.
CO 3	compare /contrast between aerobic and anaerobic exercises
CO 4	describe and assess the effects of environment on exercises.
CO 5	describe , assess and analyze physiological response to acute and long term exercise in health and disease.
	Expected Competencies: Student will be able to
EC1	perform prescreening of participants using Physical Activity Readiness Questionnaire, Health History Questionnaire, ACSM Risk Factor Profile, other appropriate screening tools – rule out contra indications/ red flags to exercise ,identify yellow flags , end points of exercise
EC2	describe pre preparation for exercise, plan and design exercise prescription based on FIIT principle,
EC3	analyze physiological response to exercise using variables like heart rate, respiratory rate, BP, SaO2 prior to test , during , post exercise and during recovery period in healthy people and people with dysfunction
EC4	document and evaluate results of exercise sessions and provide clinical interpretation

Unit	**Topics**	**No. of Hrs.**
1	**Exercise physiology** a. Energy production, expenditure and transfer during exercise in cells. b. O2 metabolism and transfer c. O2 deficit and O2 debt d. O2 measurement during exercise and recovery e. Short term and long term energy system.	**5**
2	**Role of pulmonary and cardiovascular systems during exercise performance** a. Lung function and its role in exercise	**5**

	b. Ventilation and blood pressure during exercise c. CVS adjustments during exercise d. Muscle fibres and its role in aerobic and anaerobic e. BP response and cardiac output during exercise in trained and untrained f. Cardiovascular drift g. Fatigue assessment and organization of work rest regimes to control fatigue.	
3	**Aerobic and anaerobic exercises** a. Principals of training b. Anaerobic system changes with training c. Aerobic changes during exercise d. Factors affecting aerobic and anaerobic training e. Adaptations during aerobic and anaerobic exercises f. Methods of training, circuit training, detraining g. Effect of climate on exercise.	**10**
4	**Exercise physiology and exercise prescription for special population** a. Children b. Elderly c. Obese d. Pregnant women e. Diabetes mellitus f. Hypertension g. Cardio-respiratory dysfunction h. Management of infectious diseases as COVID 19,Severe Acute respiratory syndrome, Middle East Respiratory syndrome and others	**20**
Practicals – Monitoring physiological response to exercise in healthy people and people with cardiovascular pathology		**40**
Total		**80**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
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	4 out of 5	10	4 x 10	40

Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Long answers	2 out of 3	10	2x 10	20
Total				**Total= 40**

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

College Examination Pattern (Practical): 40 Marks

Short Case	20
OSCE stations (2)	20
	Total = 40 M

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

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

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	4 out of 5	10	4 x 10	40
Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

University Examination Pattern (Practical/clinical): 40 Marks

Short Case	20
OSCE stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Long answers	2 out of 3	10	2x 10	20
Total				**Total= 40**

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

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSCE stations (5 X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Recommended books-

1. Plowman, S. A., & Smith, D. L. (2013). *Exercise physiology for health fitness and performance*. Lippincott Williams & Wilkins.
2. McArdle, W. D., Katch, F. I., & Katch, V. L. (1991). Exercise physiology: energy, nutrition, and human performance.
3. Roberg, R. A., & Roberts, S. O. (1996). Exercise physiology: exercise, performance, and clinical applications. *Boston: WBC Mcgraw-Hill*, *73*.
4. Roberts, S., Robergs, R. A., & Hanson, P. G. (1997). *Clinical exercise testing and prescription: theory and application*. Informa HealthCare.

Name of the Programme	**Master of Physiotherapy (MPT)** **Specialty – Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Cardiopulmonary Resuscitation**
Course Code	**MPTAECC-001**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Learning Outcomes	• Successful completion of the course results in an AHA BLS Provider Card. • To learn skills of high quality cardiopulmonary resuscitation for victims of all ages • To practice delivery of the skills both as a single rescuer and a member of a multi rescuer team • To be able to recognize cardiac arrest, activate emergency response system early, and respond quickly and confidently

Course Outcomes **Student should be able to**	
CO 1	To describe the importance of high quality CPR and its impact on survival
CO 2	To Describe all steps of chain of survival
CO 3	To apply BLS concepts of chain of survival
CO 4	To Recognize signs of someone needing CPR
CO 5	To Perform high quality CPR for an adult/ child/ infant
CO6	To Describe the importance of early use of Automated external defibrillator (AED)
CO7	To demonstrate appropriate use of an AED
CO8	To Provide effective ventilations by using a barrier device
CO9	To describe the importance of teams in multi- rescuer resuscitation
CO10	Describe techniques of relief of foreign-body airway obstruction for an adult/child/infant

Unit	**Topic**	**Hours**
1	Course Introduction	2
2	Adult BLS, Adult chain of survival Scene safety and assessment Adult compressions, AED and Bag Mask Device	5
4	Successful Resuscitation teams	3
5	Infant and Child BLS, Pediatric chain of survival, AED for Infants and children less than 8 years age	3
6	Special considerations: Mouth to mouth breaths	3

	Breaths with an advanced airway Opioid associated life- threatening emergency	
7	Adult, infant and child choking Relief of choking in a responsive adult or child Relief of choking in a unresponsive adult or child	4
	Practical- Skills Practice on mannequin: Adult and child CPR	40
	Total	**60**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

Internal Examination Pattern (Practical): 20 Marks

Short Case	20
	Total = 20 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

University Examination Pattern (Practical): 40 Marks

2 Short Case	20 X 2
	Total = 40 M

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks for theory

Mid Semester Examination Pattern (Practical): 20 Marks

2 Short Case	10 X 2
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Recommended books-

1. Ellis, P. D., & Billings, D. M. (1980). *Cardiopulmonary resuscitation: procedures for basic and advanced life support*. CV Mosby.
2. Safar, P. (1977). *Advances in cardiopulmonary resuscitation* (pp. 263-275). J. O. Elam (Ed.). New York: Springer.
3. Field, J. M., Gonzales, L., Hazinski, M. F., Ruple, J., Elling, B., & Drummonds, B. (2006). *Advanced cardiovascular life support: provider manual* (pp. 51-62). American Heart Association.

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Research methods**
Course Code	**MPTAECC002**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Outcomes	
Student will be able to	
CO 1	apply basic concept of research, design, problems & sampling techniques of research.

CO 2	describe types of study designs and apply basic concepts of statistics & principles of scientific enquiry in planning and evaluating the results.
CO 4	analyze various methods of quantitative and qualitative data analyses
CO 5	describe the terminology in research, ethical issues and research process.
CO 6	use important sources, and explain steps in reviewing of literature.
CO 7	apply sampling technique, research process, data collection, biostatics, correlation and statistical significance tests.
CO 8	conduct descriptive, explorative, survey studies in physical therapy practice with use of biostatistics.
Expected Competencies : Student will be able to	
EC1	formulate a research proposal with a relevant research question, with definition of PICO-population /problem under study, intervention /exposure, comparison or control group and outcome measures. Identify study design and use appropriate guidelines like PRISMA, STROBE etc
EC2	obtain ethical approval from designated ethics committee
EC3	critically analyze and review existing literature using available search engines and other legitimate sources
EC4	plan project budget and timeline
EC4	examine reliable and valid outcome measures relevant to the project
EC5	identify statistical methods to be employed in the project
EC6	apply ethics of research and publication

Unit	Topics	No. of Hrs.
1	**Introduction** Terminology in research, ethical issues in research, research process, importance, sources & steps in reviewing the literature Basic probability distribution and sampling distribution Standard error and confidence interval Skewness and Kurtosis	**5**
2	**Research design** Type of research – qualitative & quantitative. Experimental & non experimental, survey – advantages & disadvantages	**5**
3	**Research process and sampling** a. Research question, aim & objectives, assumptions, limitations & delimitations, variables, hypothesis – formation & testing	**10**

	b. Sampling technique, population, sample, sample size & determination, sampling methods, sampling error.	
4	**Data collection and analysis and interpretation & presentation of data, statistical analysis, tests of significance** a. Data sources, technique of data collection, tools, reliability & validity, process of data collection, pilot study-method, Quantitative & qualitative analysis b. Graphical representation of data c. Conclusion & discussion d. Testing of hypothesis - Parametric tests-'t' tests, Tukeys following Oneway ANOVA,ANOVA (One way, two way – for parametric & nonparametric), ANCOVA, Multistage ANOVA e. Nonparametric tests-Chi-square test, Mann Witney U test, 'Z' test Wilcoxon's matched pairs test. f. Correlation and regression analysis g.	**10**
5	**Writing a research proposal** Defining a problem , review of literature, formulating a question , inclusion exclusion criteria, operational definitions, methodology, forming groups , data collection, data analysis, informed consent	**10**
	Total	**40**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020

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

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks for theory

Recommended books-

1. Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.
2. K. S. Negi. Biostatistics. Aitbs, 2002 - Biometry
3. Radhakrishna, R. C., & Bhaskara, R. M. (1998). *Matrix algebra and its applications to statistics and econometrics*. World Scientific.

Name of the Programme	**Master of Physiotherapy (MPT)** **Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Bioethics, Health management and Administration**
Course Code	**MPTAECC-003**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes	
CO 1	describe the nature, meaning and principals of bioethics, concepts related to administration and management with professional ethics.
CO 2	apply ethical codes of physical therapy practice as well as moral and legal aspects related to human dignity and human rights.
CO 3	describe the benefit and harm of patient's right & dignity in Health care settings.
CO 4	discuss the role of governing councils, constitutions and functions of W.H.O. and W.C.P.T and IAP.

CO 5	discuss role of management and administration, budget planning, leadership and teamwork, management skills in planning and implementing the administration in clinical practice.
CO 6	use information technology for documentation, record maintenance, data storage in professional practice.

Unit	Topics	No. of Hrs.
1	**Introduction** a. Meaning and nature of ethics, b. Concept of morality, Ethics & Legality, confidentiality and responsibility	**10**
2	**Laws and responsibilities** a. Councils for regulation of professional practice b. Constitution of India, & Rights of a citizen, c. responsibilities of the Therapist, & status in health care d. Self-regulatory role of Professional Association e. Consumer protection act f. Persons with Disability Act	**10**
3	**Human dignity and human rights and benefit and harm of patient's right & dignity in health care settings** **a.** Human dignity as an intrinsic value**,** respect, care and Equality in dignity of all human beings, human dignity in different cultural and moral traditions. **b.** The WHO definition, health benefit by physiotherapy, possible harm for a patient during physiotherapy.	**15**
4	**Role of W.C.P.T. IAP and W.H.O.** a. Constitution & Functions of I.A.P. Role of W.C.P.T. and W.H.O.	**10**
5	**Administration, management and marketing** **a.** Management theories and their application to physiotherapy practice, service quality at various levels of the health delivery system, teaching institution & self-employment and principles and concepts**.** **b.** Personal policies – Communication & Contact, administration principles based on goal & functions at large hospital / domiciliary set up / private clinical / academic institution. **c.** Methods of maintaining records – Budget planning **d.** Quality control **e.** Budget planning**.**	**15**
	Total	**60**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020

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

Theory question paper pattern for College Examination under CBCS - 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

Mid Semester Examination Pattern (Theory): 20marks

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

Internal Assessment marks will be weighted out of 10 marks for theory

Recommended books-

1. C S Ram, Pedagogy Physiotherapy Education.
2. Gabard, D. L., & Martin, M. W. (2010). *Physical therapy ethics*. FA Davis.

Name of the Programme	**Master of Physiotherapy (MPT)** **Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Teaching Technology**
Course Code	**MPTAECC004**
Credit per Semester	**3 credits**
Hours per Semester	**80 hours**

Learning Outcomes	• To introduce the students to the concepts new trends, philosophies in teaching. • To understand theaims, philosophy and trend and issues in education. • To be able to understand the role of education philosophy, current issues and trends in education. • To be able to understand concepts of teaching and learning, curriculum formation. • To be able to describe the principals, measurement and evaluation in teaching. • Practical/seminars: To be able to conduct educational seminars and microteachings using new trends.

Course Outcomes	
Student will be able to	
CO 1	To describe the philosophies of education.
CO 2	To describe the role of education philosophies.
CO 3	To describe recent new trends and issues regarding education.
CO 4	To understand the concepts of teaching and learning with curriculum formation.
CO 5	To describe methods of teaching, and conduct educational seminars and microteachings using new trends in education.
	Expected Competencies : Student will be able to
EC1	To understand basic teaching methods and use them for conducting micro teaching session- didactic class, problem based learning session, experiential learning, on field learning
EC2	Formulate MCQs, prepare OSPE and OSCE stations,
EC3	To assist in conducting practical sessions for undergraduate students

Unit	**Topics**	**No. of Hrs.**
1	**Introduction** Aims, agencies, formal and in-formal education, philosophies of education (past, present & future)	**5**
2	**Role of education philosophies with current new trends and issues in education**	**5**
3	**Concepts of teaching and learning** a. Theories of teaching	**5**

	b. Relation between teaching and learning c. Dynamics of behavior d. Learning perception e. Individual differences	
4	**Curriculum formation, principles and methods of teaching** a. Development & types of curriculum b. Formation of philosophy & course objectives c. Master plans of courses d. Strategies and planning e. Organization and teaching methods - micro teaching f. Measurement and evaluation with steps of constructing test measurements, standard tools.	**5**
5	Role of an educator the environment, student teacher relationship	**5**
6	**Teaching methods** Educational objectives, Teaching learning media, Micro& small group teaching, integrated teaching, Skills in various types of teaching (including didactic, clinical etc), Learning methods of learning, problem based learning, motivation& learning	**5**
7	**Evaluation methods** mechanics of paper setting, M.C.Q's S.A.Q's, viva, O.S.C.E & O.S.P.E	**10**
	Practical- Microteaching seminars which include didactic sessions using PowerPoint presentation and supervised hands on assessment & management session for undergraduate students.	**40**
	Total	**80**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

Theory question paper pattern for College Examination under CBCS - 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

Internal Examination Pattern (Practical): 20 Marks

Short Case	20
	Total = 20 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

University Examination Pattern (Practical): 40 Marks

4 Short Exercise	10 X 4
	Total = 40 M

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Mid Semester Examination Pattern (Practical): 20 Marks

2 Short Exercise	10 X 2
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for theory and practical

Recommended books-

1. Ram C S. Pedagogy in Physiotherapy Education. AITBS Publishers.India.2013.
2. Gabard DL, Martin MW. Physical therapy ethics. FA Davis; 2010 Sep 2.
3. Grayson E. Ethics, injuries and the law in sports medicine.

Semester-II (7-12 months)

Course Code	Course Title	Course Description	Lecture/ Seminar Hours	Practical Hours	Research Hours	Clinical Hours	Credits
MPT006	Respiratory anatomy, physiology, mechanics and Pathomechanics in respiratory diseases Theory	Core Theory	40				2
MPT007	Functional diagnosis, outcome measures and treatment techniques used in management of pulmonary conditions Theory	Core Theory	40				2
MPT008	Functional diagnosis, outcome measures and treatment techniques used in management of pulmonary conditions Practical	Core practical		40			2
MPT009	Cardiac and Pulmonary Rehabilitation Theory		40				2
MPT010	Cardiac and Pulmonary Rehabilitation Practical			40			1
MPTAECC005	Legal issues and Professional ethics	Ability Enhancement compulsory course	40				2
MPTGEC001/ 002	Medical Device Innovation/ Scientific writing	General Elective Course	40				2
MPTSEC001/002	Respiratory PNF & Manual mobilisation techniques for thorax / Cardiopulmonary surgeries	Skill Enhancement Elective Course	20	40			2
MPTRP002	Research Project II				100		2
MPTCLT002	Clinical Training II					360	6

Name of the Programme	**Master of Physiotherapy (MPT)** **Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Respiratory anatomy, physiology, mechanics and Pathomechanics in pulmonary diseases**
Course Code	**MPT-006**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	Examine the role of anatomical structures of the upper respiratory tract, lung, thorax, pleura with function in health and disease, correlate structural impairment with functional impairment, describe anatomical aspects of respiration, neural control, factors influencing respiration, abnormalities of respiration.
CO 2	discuss principles of physiology and patho-physiology related to respiration, pulmonary circulation, mechanics of ventilation, pulmonary function test, ventilation, exchange transport or respiratory gases, high altitude and deep sea physiology. apply knowledge of pulmonary system on functional impairment based on ICF model
CO 3	explain the anatomical basis of various clinical pulmonary conditions.
CO 4	describe disease etiology, pathophysiology, clinical features and structural impairments leading to changes in working of the respiratory system, congenital and acquired lung diseases, respiratory failure- etiology of respiratory failure and types of failure
CO 5	Assess mechanics of thorax cage with ribs and vertebra, identify Pathomechanics in diseased condition and its implications on function
	Expected Competencies: Student will be able to
EC1	correlate structural and functional impairments to identify causes of increased work of breathing and reduced compliance of lung
EC2	measure chest wall mobility , report Pathomechanics

Unit	Topics	No. of Hrs.
1	**Fetal development** Development of respiratory system	**5**
2	**Systemic Anatomy** a. Review of respiratory anatomy with its neural, vascular and nervous structures	**5**
3	**Physiology of respiratory system** • Physiology anatomy of respiratory tract • Inspired air, alveolar air and expired air mechanics • Mechanics of ventilation • Pulmonary function test • Exchange transport or respiratory gases • High altitude and deep sea physiology	**10**
4	**Mechanics and Pathomechanics related to respiratory system** • Biomechanics of thorax cage with ribs and vertebra • Pathomechanics in scoliosis, kyphosis, pectus excavatum, pectus carniatum, flail chest, fracture of ribs, vertebra and sternum	**10**

	• Pathomechanics in paediatric conditions like asthma, birth asphyxia, bronchopulmonary dysplasia, ARDS, Respiratory Syndromes, bronchial stenosis, Cystic fibrosis, pertussis • Adult conditions • Obstructive conditions- Bronchitis, emphysema and asthma. • Restrictive conditions- Pleural effusion, pleuritis, pneumothorax, hydropneumothorax, pneumonia • Infective lung diseases- Tuberculosis • Occupational lung diseases- All interstitial lung diseases including silicosis, asbestosis etc.	
5	Respiratory failure	**10**
Total		**40**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University Semester Examination (Theory): - 40 marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks

Recommended books-

1. Chaurasia, B. D. (2004). *Human anatomy*. CBS Publisher.
2. Williams, P. L., Bannister, L., Berry, M., Collins, P., Dyson, M., Dussek, E., & Ferguson, M. W. J. (1998). Gray's anatomy. *Churchill Livingstone, Edinburgh*.
3. Sembulingam, K., & Sembulingam, P. (2012). *Essentials of medical physiology*. JP Medical Ltd.
4. Hall, J. E. (2015). *Guyton and Hall textbook of medical physiology e-Book*. Elsevier Health Sciences.
5. Cohen, M., & Michel, T. H. (Eds.). (1988). *Cardiopulmonary symptoms in physical therapy practice*. Churchill Livingstone.
6. Hoidkins, Butterworth. Pulmonary rehabilitation: guidelines to success,1984.Mosby, Elseiver.
7. Irwin, C.V. Cardiopulmonary Physiotherapy. St. Louis 1990.Mosb

Name of the Programme	Master of Physiotherapy (MPT) Specialty - Cardiovascular and Respiratory Physiotherapy
Name of the Course	**Functional diagnosis, outcome measures and treatment techniques used in management of pulmonary conditions Theory**
Course Code	**MPT-007**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**
Name of the Course	**Functional diagnosis, outcome measures and treatment techniques used in management of pulmonary conditions Practical**
Course Code	**MPT-008**
Credit per Semester	**1 credits**

Hours per Semester	**40 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	apply ICF model and concepts of structural, functional impairment, contextual factors influencing function, evaluation of performance and assessment of capacity
CO 2	assess and analyze impairments of people with obstructive and restrictive respiratory disorders
CO 3	use the different outcome measures and apply knowledge of basic investigative approaches in the medical system & surgical intervention regimes related to respiratory impairment in forming a functional diagnosis.
CO 4	plan goals for management, select strategies for cure, care and prevention; apply restorative & rehabilitative measures for maximum possible functional independence of a patient at home, work place and in the community following conservative or surgical management of respiratory disease.
CO 5	design relevant techniques for management of respiratory disorders to improve lung hygiene, lung expansion, optimize ventilation and perfusion, compliance and reduce work of breathing
	Expected Competencies : Student will be able to
EC1	discuss functional diagnosis of patients with details of structural impairment, functional impairment, participation affection, contextual factors, performance and capacity evaluation in respiratory disorders
EC2	evaluate and record – general anthropometry and demographic characteristics, clinical history, level of dyspnea on objective scales like MRC, NYHA, respiratory rate, pattern of breathing, signs of respiratory distress, chest wall mobility – subjective and objective measurement, I:E ratio, signs of respiratory distress
EC3	perform peak flow meter test, spirometry and evaluate PFT with respect to obstructive and restrictive disorders on basis of FEV1,FVC, FEV1/FVC ratio, small airway function
EC4	interpret chest radiographs and report- view, exposure, centralization, cardiothoracic ratio, CP angles, cardiac shadows, abnormalities in lung fields, causes of hyperluesency/ hypodensity, pleural pathology, bony pathology of thorax and vertebrae, special views Read and understand CT scans and MRI (desirable to know)
EC5	interpret arterial blood gas reports and comment on metabolic/respiratory acidosis/alkalosis, hypoxemia and oxygen saturation
EC6	interpret ECG and report heart rate, rhythm, abnormalities in rhythm, axis deviation, signs of atrial-ventricular hypertrophy, signs of ischemia /infarction, ectopic. Read and understand 2D echo, angiography, blood investigations, Doppler reports
EC7	administer quality of life questionnaires- SF36, SF12, HRQoL and others

EC8	plan short and long term goals for Physiotherapy treatment and institute Physiotherapy to enhance lung function, prevent de-conditioning, enhance functional abilities, prescribe home program, institute ergonomic advise in medically and surgically managed pulmonary disorders

Unit	Topics	No. of Hrs.
1	d. ICF 2000 biopsychosocial model of care e. Concepts of structural, functional impairment, contextual factors influencing function, evaluation of performance and assessment of capacity f. Functional diagnosis **Outcome measure related to cardiovascular conditions** g. International classification of functional framework h. Selection of an outcome measure i. Measurement of body structures and functional levels j. Measurement of activity limitations k. Measurement of participation restrictions l. Quality of life	**10**
2	**Objective and subjective assessment techniques in cardiac and vascular conditions**. exertional breathlessness, dizziness, palpitations, unconsciousness, chest pain/angina, relevant histories, quality related questionnaires, general examination, inspection, palpation, percussion and auscultation with ICF, vascular symptoms	**10**
3	Outcome measures and investigations- PFT, Diffusion studies, blood investigations, ECG, X-rays, CT scan, MRI, activity limitations, Questionnaires evaluating function and Quality of life, exercise testing	**10**
4	Treatment techniques in respiratory disorders	**10**
Practical		**40**
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	4 out of 5	10	4 x 10	40
Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

Mid Semester Examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Long answers	2 out of 3	10	2x 10	20
Total				**Total= 40**

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

Exercise	Description	Marks
Q No 1	Long Case (Emphasis on assessment and outcome measures)	40
Q No 2	OSCE stations (4)	40
		Total = 80

Mid Semester Examination Pattern (Practical): 40 Marks

Short Case(Emphasis on Emphasis on assessment and outcome measures)	20
OSCE stations (2)	20
	Total = 40 M

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

Recommended books-

1. Wilkins, R. L., Stoller, J. K., & Scanlan, C. L. (2004). *Egan's fundamentals of respiratory care*
2. Hyatt, R. E., Scanlon, P. D., & Nakamura, M. (2014). *Interpretation of pulmonary function tests*. Lippincott Williams & Wilkins.
3. Schamroth, L. (1964). An introduction to electrocardiography. *Academic medicine*, *39*(10), 977.
4. Irwin, S., & Tecklin, J. S. (Eds.). (2004). *Cardiopulmonary physical therapy: A guide to practice*. Mosby Incorporated.
5. Dean, E., & Frownfelter, D. L. (2006). *Cardiovascular and pulmonary physical therapy: Evidence and practice*. Mosby.
6. Pryor, J. A., & Prasad, A. S. (2008). *Physiotherapy for respiratory and cardiac problems: adults and paediatrics*. Elsevier Health Sciences.

7. Goldberger MD FACC, Ary L (2017). Goldberger's Clinical Electrocardiography-A Simplified Approach.
8. Burton, G. G., Hodgkin, J. E., & Ward, J. J. (Eds.). (1991). *Respiratory care: a guide to clinical practice*. Lippincott Williams & Wilkins.
9. American College of Sports Medicine. (2013). *ACSM's guidelines for exercise testing and prescription*. Lippincott Williams & Wilkins.
10. Gibson, A. L., Wagner, D., & Heyward, V. (2018). *Advanced Fitness Assessment and Exercise Prescription, 8E*. Human kinetics.
11. Luther T. Clark, Cardiovascular Disease and Diabetes. McGraw Hill Professional, 2007

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Cardiac and Pulmonary Rehabilitation Theory**
Course Code	**MPT-009**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**
Name of the Course	**Cardiac and Pulmonary Rehabilitation Practical**
Course Code	**MPT-010**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	discuss concepts of cardiac and pulmonary rehabilitation, evaluate performance and capacity
CO 2	apply international guidelines laid down by AACVPR, AHA, BVCPR,ATS, ACSM and other bodies related to cardiac and pulmonary rehabilitation
CO 3	analyze indications, contra-indications, applications, long term and short term goals, modifications, formulate tailor made programs, risk stratification, evaluate benefits of cardiac and pulmonary rehabilitation
CO 4	prescribe and implement phase I,II and III cardiac rehabilitation and pulmonary rehabilitation programs in adults and children
CO 5	identify facilitators and barriers to engagement in long term rehabilitation, apply concept of preventive and early intervention programs
	Expected Competencies : Student will be able to
EC1	assess functional diagnosis of patients with details of structural impairment, functional impairment, participation affection, contextual factors, performance and capacity evaluation in patients refereed for cardiac and pulmonary rehabilitation
EC2	evaluate and record – general anthropometry and demographic characteristics, risk factor stratification, level of habitual physical activity, clinical presentation, PFT, respiratory strength measurement, fitness testing, exercise capacity based on available investigations and exercise tolerance testing – submaximal tests like Modified Bruce's Protocol, 6 minute walk test , Incremental shuttle walk test , Step test ,and maximal stress testing
EC3	administer quality of life questionnaires- SF36, SF12, HRQoL and others
EC4	plan short and long term goals for cardiac and pulmonary rehabilitation

EC5	apply techniques related to bronchial hygiene, lung expansion, muscle strengthening, aerobic training, resistance training, functional training, ergonomics s at workplace, prescribing home program

Unit	Topics	No. of Hrs.
1	Cardiac rehabilitation(CR) – rational, guidelines, goals, indications-contraindications, short term and long term benefits, Phase I, II, III rehabilitation, outcome of CR, inter disciplinary approach and roles of individual team members CR in conservatively managed patients, following angioplasty, CABG, pacemaker implantation, heart transplantation, heart failure, patients with assistive implants, patients with corrective surgeries for developmental , acquired heart diseases , vascular surgeries	**20**
2	Pulmonary rehabilitation(PR) – rational, guidelines, goals, indications-contraindications, short term and long term benefits, components and methods used for pulmonary rehabilitation, outcome of PR, inter disciplinary approach and roles of individual team members PR in conservatively managed patients, following pulmonary surgeries , chronic obstructive and restrictive diseases, lung transplantation	**20**
Practical		**40**
Total		**80**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020Theory 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	4 out of 5	10	4 x 10	40
Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Long answers	2 out of 3	10	2x 10	20
Total				**Total= 40**

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

Internal Examination Pattern (Practical): 40 Marks

Short Case(Emphasis on Emphasis on assessment and outcome measures)	20
OSCE stations (2)	20
	Total = 40 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University Semester Examination Theory: 80 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	4 out of 5	10	4 x 10	40
Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

University Examination Pattern (Practical/clinical): 40 Marks

Short Case	20
OSCE stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Long answers	2 out of 3	10	2x 10	20
Total				**Total= 40**

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

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSCE stations (5 X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Recommended books-

1. Wilkins, R. L., Stoller, J. K., & Scanlan, C. L. (2004). *Egan's fundamentals of respiratory care*
2. Hyatt, R. E., Scanlon, P. D., & Nakamura, M. (2014). *Interpretation of pulmonary function tests*. Lippincott Williams & Wilkins.
3. Schamroth, L. (1964). An introduction to electrocardiography. *Academic medicine*, *39*(10), 977.
4. Irwin, S., & Tecklin, J. S. (Eds.). (2004). *Cardiopulmonary physical therapy: A guide to practice*. Mosby Incorporated.
5. Dean, E., & Frownfelter, D. L. (2006). *Cardiovascular and pulmonary physical therapy: Evidence and practice*. Mosby.
6. Pryor, J. A., & Prasad, A. S. (2008). *Physiotherapy for respiratory and cardiac problems: adults and paediatrics*. Elsevier Health Sciences.
7. Goldberger MD FACC, Ary L (2017). Goldberger's Clinical Electrocardiography-A Simplified Approach.
8. Burton, G. G., Hodgkin, J. E., & Ward, J. J. (Eds.). (1991). *Respiratory care: a guide to clinical practice*. Lippincott Williams & Wilkins.
9. American College of Sports Medicine. (2013). *ACSM's guidelines for exercise testing and prescription*. Lippincott Williams & Wilkins.
10. Gibson, A. L., Wagner, D., & Heyward, V. (2018). *Advanced Fitness Assessment and Exercise Prescription, 8E*. Human kinetics.
11. Luther T. Clark, Cardiovascular Disease and Diabetes. McGraw Hill Professional, 20

Name of the Programme	**Master of Physiotherapy (MPT)** **Specialty - Cardiovascular and Respiratory Physiotherapy**

Name of the Course	**Legal issues and professional ethics**
Course Code	**MPTAEEC005**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes Students will be able to	
CO 1	describe various medio-legal issues faced in the profession and laws and regulations governing them.
CO 2	discuss importance of seeking informed consent before any sort of communication or management is done for the patient / client.
CO 3	discuss rights of patient / client as well of the therapist, general ethical code of conduct as a practitioner as well as educator.

Unit	**Topics**	**No. of Hrs.**
1	Introduction to the legal system	**2**
2	Professional Issues a. Registration and the Role of the Statutory Bodies b. Professional Conduct Proceedings c. Education and the Physiotherapist	**2**
3	Client-Centred Care a. Rights of Clients b. Consent and Information Giving c. Confidentiality d. Access to Records and Information	**4**
4	The Physiotherapist as a Private Practitioner and professional	**4**
5	Physiotherapist as a educator and administrator	**4**
6	Contemporary practice issues	**4**
7	Professional development, Competence and expertise	**5**
8	Ethical principles as per WCPT	**5**
9	Professionalism in multiple contexts of the US health care system – APTA	**10**
	Total	**40**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

Theory question paper pattern for College Examination under CBCS - 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University Examination Theory- 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

Mid Semester Examination Pattern - 20 marks

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

Internal Assessment marks will be weighted out of 10 marks for theory

Recommended books-

1. Dimond, B. C. (2009). *Legal aspects of Physiotherapy*. John Wiley & Sons.
2. Dimond, B. (2016). *Legal Aspects of Health and Safety* (Vol. 1). Andrews UK Limited.
3. Swisher, L. L. D., & Page, C. G. (2005). *Professionalism in physical therapy: History, practice, and development*. Elsevier Health Sciences.
4. Gabard, D. L., & Martin, M. W. (2010). *Physical therapy ethics*. FA Davi

Name of the Programme	**Master of Physiotherapy (MPT)** **Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Medical Device Innovation**
Course Code	**MPTGEC001**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Learning Outcomes	• Understand technology innovation, product development, project and business management, intellectual property, regulatory affairs, clinical needs, entrepreneurship, emerging trends, globalization, reimbursement, and public policy. • Understand and apply a repeatable process for identifying and characterizing a significant unmet health need and inventing and evaluating a new technology to address it. • Gain exposure to the risks and challenges that are unique to medical device innovation and develop strategies for assessing and managing them. Work effectively in a multidisciplinary team.

Course Outcomes **Students will be able to**	
CO 1	Understand phases of device innovation
CO 2	Understand unmet health needs, inventing and evaluating a new technology
CO 3	Understand risks and challenges that are unique to medical device innovation

Unit	Topics	No. of Hrs.
1	**Introduction to Medical Device Innovation** • Orientation to the curriculum • Approaches in Device Innovation • Future scope	**2**
2	**Clinical Foundations of Medical Device Innovation** • Identifying need for device innovation: A problem-solution based approach to understand unmet healthcare needs	**2**
3	**Product Innovation and Development Management** • Concept of prototype and design development	**4**

	• Framework for conceptualization, design, development and the commercialization process for medical products, with a survey of key steps 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 value chain.	**4**
5	**Role of IPR in device innovation** • Understanding various policies and steps for safeguarding newly designed devices through filing of copyright and patent	**4**
6	**Technical Writing** • Develop the professional skills required to communicate technical information to a broad audience in an effective manner	**4**
7	**Visit to Healthcare centers** • Interviews, Surveys among clinicians to identify problem	**5**
8	**Visit to Macro environment of Technology incubation centers**: • Understanding basics of mechanics, availability, functioning and cost of resources	**5**
9	**Development of Product design** • Multi-disciplinary team building to develop prototype, work on fabrication, making of final product and plan for commercialization	**10**
	Total	**40**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

Theory question paper pattern for College Examination under CBCS - 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University Examination Theory- 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

Mid Semester Examination Pattern - 20 marks

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

Internal Assessment marks will be weighted out of 10 marks for theory

Recommended books-

1. Yock, P. G., Zenios, S., Makower, J., Brinton, T. J., Kumar, U. N., Watkins, F. J., ... & Kurihara, C. Q. (2015). *Biodesign: the process of innovating medical technologies*. Cambridge University Press.
2. Timmermann, C., & Anderson, J. (Eds.). (2006). *Devices and designs: medical technologies in historical perspective*. Springer.
3. Ogrodnik, P. (2012). *Medical Device Design, Innovation from concept to market*. Academic Press/Elsevier.
4. Dr.Jagdish Chaturvedi. Medical device innovation- Perspective from India.2018. Notion press.

General Elective Course	
Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Scientific Writing**
Course Code	**MPTGEC-002**
Credits per semester	**2 credits**
Hours per semester	**40 hours**

Course Learning Outcomes Students will be able to	
CO 1	Discuss factors influencing quality of writing and dissemination with a view to improve readability, maximize the contribution of the research done and improve the opportunities for publishing.
CO 2	discuss the role of author, responsibility, ethics administration issues and accountability of the scientific content.
CO 3	apply scientific writing process, components of a research paper, methods of literature search, skills of organizing and composing a scientific paper, discuss types of articles and methods of literature search through search engines,
CO4	reflect on what constitutes a research problem to be addressed in a scientific paper, , organizing and composing a scientific paper, journal selection, use of software used in scientific writing.
CO5	comprehend ethics of scientific writing, analyze and review scientific papers in terms of key message, consistency and justification; reflect on the benefits of working in teams in scientific writing and describe the rules of co-authorship; publication ethics
CO6	understand the editorial process for publication

Sr. No.	Topics	No. of Hrs.
1	Introduction to medical writing	**3**
2	Overview of types of articles	**3**
3	Methods of literature search and PubMed search	**3**
4	Concept of understanding research problem, article writing and editorial process	**3**
5	Journal Selection	**3**
6	Reviewing, Editing and Publishing	**3**
7	Software used in Medical writing a. Referencing software b. Plagiarism Software	**4**

8	Guidelines for scientific writing Duties of Author, Authorship dispute, Editor, Reviewer, etc. • Guidelines of ICMJE and other bodies • Guidelines and Checklists of relevant to medical writing in diverse medical fraternities • Publication Ethics • Journal quality and impact assessment of article	**4**
9	**Documents in Clinical Research** • Clinical study report • Grant proposal writing	**14**
		40

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

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 9	5	8x5	40
				Total= 40

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University Examination Theory- 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

Mid Semester Examination Pattern - 20 marks

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

Internal Assessment marks will be weighted out of 10 marks for theory

Reference Books:

1. Day, R.A. and Gastel, B. 2006. How to write and publish a scientific paper. 6th edition. Cambridge University Press, Cambridge.
2. American Psychological Association, 2009. Publication Manual of the American Psychological Association, 6th ed. American Psychological Association, Washington, DC.

Skill Enhancement Course	
Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Respiratory PNF and manual mobilization of thorax**
Course Code	**MPTSEC001**
Credits per semester	**2**
Hours per semester	**60 Hours**

Course Learning Outcomes Students will be able to	
CO 1	apply principles and techniques of respiratory PNF in patients with cardiorespiratory dysfunction techniques in patient with cardiorespiratory dysfunction, analyze objective improvement in lung function and thoracic mobility following PNF
CO 2	apply and evaluate principles and applications of manual mobilization techniques in patients with cardiorespiratory dysfunction , analyze objective improvement in lung function and thoracic mobility following mobilization
CO 3	demonstrate efficacy of PNF and mobilization in acute and chronic conditions

Sr. No.	Topics	No. of Hrs.
1	Introduction to Respiratory PNF	**2**
2	Principles, indications-contraindications and benefits	**2**
3	Techniques of application of PNF: Peri oral stimulation, vertebral lift, anterior basal stretch, intercostal stretch, co-contraction	**4**
4	Mobilization of costovertebral, costotransverse and intervertebral zygapophyseal thoracic joints	**3**
5	Soft tissue mobilization – Cyriax , massage, deep friction , myofascial stretch	**3**
6	Upper thoracic functional mobilization , post ant glides , gentle rotatory oscillation, unilateral , alternating levels ,	**3**
7	Thoracic self-mobilization , functional rib mobilization	**3**
8	Practical applications of PNF and thoracic mobilization techniques: Documentation of Case studies	**40**
	Total	**60**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020

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

Practical paper pattern for internal assessment under CBCS - 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
OSCE stations (4)	4	10	4x10	40
				Total= 40

Internal Examination Pattern (Practical): 40 Marks

Short Case(Emphasis on Emphasis on assessment and outcome measures)	20
OSCE stations (2)	20
	Total = 40 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University Examination Theory- 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

Mid Semester Examination Pattern - 20 marks

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

Internal Assessment marks will be weighted out of 10 marks for theory

University Examination Practical- 40 marks

Short Case	20
OSCE stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSCE stations (5 X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Reference Books:

1. Pryor, J. A., & Prasad, A. S. (2008). *Physiotherapy for respiratory and cardiac problems: adults and paediatrics*. Elsevier Health Sciences.
2. Frownfelter, D., & Dean, E. (2014). *Cardiovascular and pulmonary physical therapy-E-Book: evidence to practice*. Elsevier Health Sciences.
3. Jones, M., & Moffatt, F. (2002). *Cardiopulmonary physiotherapy*. Taylor & Fran

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Cardiopulmonary surgeries**
Course Code	**MPTSEC002**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Outcomes	
Students will be able to	
CO 1	describe concepts of cardio-pulmonary surgeries, assessment and management following different surgical techniques in respiratory conditions.
CO 2	describe concepts of cardio-pulmonary surgeries, assessment and management following different surgical techniques in cardiovascular conditions
CO 3	describe recent advances related physical therapy management in cardio-pulmonary surgical conditions
CO 4	assess surgical patients in clinical setup and institute physiotherapy.
	Expected Competencies: Student will be able to
EC1	apply pre-operative physiotherapy assessment and management techniques to optimize post-surgical functional ability
EC2	demonstrate familiarity with surgical intensive care unit, awareness of role of interdisciplinary team in management of post-surgical patient, awareness of post-surgical monitoring equipment, drains, positioning of patient , post-surgical scar management, Physiotherapy following cardiovascular-pulmonary surgeries
EC3	develop soft skills for effective patient communication, patient education and imparting ergonomic advise

Unit	**Topics**	**No. of Hrs.**
1	**Pulmonary surgeries** Pulmonary resection, Pleurectomy, Lobectomy/Bilobectomy, window operation, decortications, rib resection, wedge or segmental resection, thoracotomy, thoracoplasty, lung transplantation, recent advances	**3**
2	**Cardiovascular surgeries** Open heart surgery, closed heart surgery, minimally invasive surgeries, angioplasty, CABG, repairs , vascular surgeries , pacemaker implantation, Ventricular assist devices, heart transplantation, recent advances	**3**
3	Preoperative Physiotherapy assessment and management	**3**
4	Post-operative Physiotherapy assessment and management	**3**
5	Pain and wound management	**3**
6	Effects of bed rest and deconditioning	**5**
	Practical- Observation of surgeries	**40**
	Total	**60**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020

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

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University Examination Theory- 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

Mid Semester Examination Pattern - 20 marks

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

Internal Assessment marks will be weighted out of 10 marks for theory

University Examination Practical- 40 marks

Short Case	20
OSCE stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSCE stations (5 X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Recommended books-

1. Gravlee, G. P. (Ed.). (2008). *Cardiopulmonary bypass: principles and practice*. Lippincott Williams & Wilkins.
2. Shields, T. W. (Ed.). (2005). *General thoracic surgery* (Vol. 1). Lippincott Williams & Wilkins.
3. Williams, N. S., Bulstrode, C. J., & O'Connell, P. R. (2008). *Bailey & Love's short practice of surgery*. Crc Press.
4. Ingbar, D. H. (2015). Fishman's pulmonary diseases and disorders. *Annals of the American Thoracic Society*, *12*(8).

Semester-III (13-18 months)

Course Code	Course Title	Course Description	Lecture Hours	Practical Hours	Research Hours	Clinical Training Hours	Credits
MPT011	Physiotherapy in the critical care unit Theory	Core Theory	40				2
MPT012	Physiotherapy in the critical care unit Practical	Core Practical		40			1
MPT013	Preventive physiotherapy and health promotion Theory	Core Theory	40				2
MPT014	Preventive physiotherapy and health promotion Practical	Core Practical		40			1
MPT015	Comprehensive evaluation of physical activity and fitness Theory	Core Theory	40				2
MPT016	Comprehensive evaluation of physical activity and fitness Practical	Core Practical		40			1
MPTAEECOO1/OO2	Strengthening and relaxation techniques/Exercise Psychology	Ability Enhancement Elective Course	20	40			2
MPTSEC003	Application of Yoga in Physiotherapy	Skill Enhancement Course	20	40			2
MPTRP003	Research Data Collection and Analysis				80		2
MPTCLT003	Clinical Training III					360	6

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Physiotherapy in the critical care unit Theory**
Course Code	**MPT-011**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**
Name of the Course	**Physiotherapy in the critical care unit Practical**
Course Code	**MPT-012**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	discuss etiology of respiratory failure, types of failure and methods of assessing and managing respiratory failure, artificial airways and mechanical ventilation, management of patient on mechanical ventilator, phases of ventilation, modes of artificial ventilation, volumes and settings on the ventilator – implications of settings on Physiotherapy treatment, special needs of patients on ventilator.
CO 2	analyze structural, functional impairment, evaluate physical and cardio-respiratory function of patients in the critical care unit, implement specialized Physiotherapy techniques applicable in medical ICU, Surgical ICU, Cardiac ICU, Pediatric and neonatal ICUs, Burns, Artificial kidney Unit and others
CO 3	assesse neuro-musculoskeletal and cardio-respiratory function in ICU patients
CO 4	describe the different outcome measures and apply knowledge of basic investigative approaches in the medical system & surgical intervention regimes related to respiratory impairment
CO 5	plan goals for, prevention and management of deleterious effects of immobilization /prolonged bed rest, select strategies for cure, care and prevention; apply restorative & rehabilitative measures for maximum possible functional independence of a patient in the ICU following conservative or surgical management of respiratory disease.
CO 6	prioritize relevant techniques for management of respiratory disorders to improve lung hygiene, lung expansion, optimize ventilation and perfusion, compliance and reduce work of breathing, optimize physical function
CO 7	demonstrate behavioral skills and humanitarian approach while communicating with patients and care givers, and inter disciplinary team members, bed side behavior, respect & maintain patients' confidentiality
	Expected Competencies : Student will be able to

EC1	propose functional diagnosis of patients with details of structural impairment, functional impairment, participation affection, of patients in ICU using sound clinical assessment and clinical reasoning
EC2	record history, level of consciousness, neurological function, level of dyspnoea on objective scales like MRC, NYHA, respiratory rate, pattern of breathing, signs of respiratory distress, chest wall mobility – subjective and objective measurement, I:E ratio, signs of respiratory distress in spontaneously breathing patients and ventilator settings in patients being artificially ventilated
EC3	interpret chest radiographs and report- view, exposure, centralization, cardiothoracic ratio, CP angles, cardiac shadows, abnormalities in lung fields, causes of hyperluesency/ hypodensity, pleural pathology, bony pathology of thorax and vertebrae, special views Read and understand CT scans and MRI (desirable to know)
EC4	interpret arterial blood gas reports and comment on metabolic/respiratory acidosis/alkalosis, hypoxemia and oxygen saturation
EC5	interpret ECG and report heart rate, rhythm, abnormalities in rhythm, axis deviation, signs of atrial-ventricular hypertrophy, signs of ischemia /infarction, ectopics. Read and understand 2D echo, angiography, blood investigations, Doppler reports
EC6	administer physical function scales like Glasgow Coma Scale, Berg Balance Scale, Physical function in ICU Test (PFIT), ICU Mobility Scale (IMS), Functional Status Score (FSS-ICU), Chelsea Critical Care Physical Assessment tool (CPAx), Surgical intensive care unit Optimal Mobilization Score (SOMS), Quality of Life questionnaires- SF36, SF12, HRQoL and others.
EC7	plan short and long term goals and plan of care for Physiotherapy treatment and institute Physiotherapy to enhance lung function, prevent de-conditioning, enhance functional abilities, enhance wound/operative scar healing , relieve pain, improve mobility, posture ,strengthen respiratory muscles, ergonomics , musculoskeletal facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skillful use of various therapeutic exercise techniques

Unit	Topics	No. of Hrs.
1	Etiology of respiratory failure, types of failure and methods of assessing and managing respiratory failure.	4
2	Artificial airways and mechanical ventilation- phases of ventilation, modes of artificial ventilation, volumes and settings on the ventilator – implications of settings on Physiotherapy treatment, weaning from ventilator, special needs of patients on ventilator.	4
3	Deleterious effects of prolonged bed rest in musculoskeletal, neurologic, cardiovascular, respiratory, metabolic, urinary and integumentary system	4
4	Oxygen Therapy , Humidification and aerosol therapy	4
5	Bronchial Hygiene, lung re-expansion therapy, respiratory muscle strengthening, positioning, relaxation, postural retraining, wound management, nutritional aspects	4
6	Optimizing physical activity in ICU	4
7	Special concerns in neonatal and pediatric ICU	4

8	Special concerns in surgical ICU and ICCU	4
9	Special concerns in Burns ICU	4
10	Special concerns in artificial kidney ICU	4
Practical		**40**
Total		**80**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
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	4 out of 5	10	4 x 10	40
Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Long answers	2 out of 3	10	2x 10	20
Total				**Total= 40**

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

Internal Examination Pattern (Practical): 40 Marks

Short Case(Emphasis on Emphasis on assessment and outcome measures)	20
OSCE stations (2)	20
	Total = 40 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University Semester Examination Theory - 80 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Section 1				
Short answer questions	4 out of 5	10	4 x 10	40
Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

University Examination Pattern (Practical/clinical): 40 Marks

Short Case	20
OSCE stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Long answers	2 out of 3	10	2x 10	20
Total				**Total= 40**

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

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSCE stations (5X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Recommended books-

1. Wilkins, R. L., Stoller, J. K., & Scanlan, C. L. (2004). *Egan's fundamentals of respiratory care*
2. Hyatt, R. E., Scanlon, P. D., & Nakamura, M. (2014). *Interpretation of pulmonary function tests*. Lippincott Williams & Wilkins.
3. Schamroth, L. (1964). An introduction to electrocardiography. *Academic medicine*, *39*(10), 977.
4. Irwin, S., & Tecklin, J. S. (Eds.). (2004). *Cardiopulmonary physical therapy: A guide to practice*. Mosby Incorporated.
5. Dean, E., & Frownfelter, D. L. (2006). *Cardiovascular and pulmonary physical therapy: Evidence and practice*. Mosby.
6. Pryor, J. A., & Prasad, A. S. (2008). *Physiotherapy for respiratory and cardiac problems: adults and paediatrics*. Elsevier Health Sciences.
7. Goldberger MD FACC, Ary L (2017). Goldberger's Clinical Electrocardiography-A Simplified Approach.
8. Burton, G. G., Hodgkin, J. E., & Ward, J. J. (Eds.). (1991). *Respiratory care: a guide to clinical practice*. Lippincott Williams & Wilkins.
9. Luther T. Clark, Cardiovascular Disease and Diabetes. McGraw Hill Professional, 2007
10. Chang, D. W. (2013). *Clinical application of mechanical ventilation*. Cengage Learning.
11. Pierce, L. N. (Ed.). (2007). *Management of the mechanically ventilated patient*. Saunders.

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Preventive physiotherapy and health promotion Theory**
Course Code	**MPT-013**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**
Name of the Course	**Preventive physiotherapy and health promotion Practical**
Course Code	**MPT-014**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	discuss health and its components, - five approaches to health promotion: medical; behavioral change; educational; client-centered, and societal change., five principles: (1) A broad and positive health concept; (2) Participation and involvement; (3) Action and action competence; (4) A settings perspective and (5) Equity in health. Levels of Health promotion categorized in three levels: primary, secondary and tertiary prevention describe the various purpose ,strategies, approaches and principles of health promotion and Who guidelines for health promotion, morbidity and mortality due to non-communicable diseases, health promotion strategies in child, women and geriatrics, Health Policies
CO 2	assess and counsel for smoking cessation (or at least its initiation), identify risk factors for noncommunicable diseases basic nutritional assessment and counseling, recommend physical activity and exercise, stress assessment and basic stress reduction, sleep assessment and basic sleep hygiene recommendations
CO 3	plan strategies for health promotion in child, women and geriatric population
CO 4	Recommend pre-rehabilitation and work ergonomics for preventing musculoskeletal and cardiovascular – respiratory problems
CO 5	develop behavioral skills and humanitarian approach while communicating with patients and care givers, and inter disciplinary team members while promoting health education in community

Unit	Topics	No. of Hrs.
1	Definition of Health, Components &Prerequisites for Health	4
2	Purpose ,Strategies ,Approaches & Principles of Health promotion	4
3	WHO Guidelines for health promotion Health Policies	4
4	Risk factors for Non communicable diseases (WHO)	4
5	Counselling for smoking and smoking cessation (or at least its initiation), basic nutritional assessment and counseling, recommendations for physical activity and exercise, stress assessment and basic stress reduction recommendations, and sleep assessment and basic sleep hygiene recommendations.	6
6	PRE-Rehabilitation and work ergonomics for preventing Musculoskeletal problems	4
7	Health Promotion in Child	4
8	Health Promotion in Women	
9	Health Promotion in Geriatrics	4
10	Community visit -Health Education	6
Practical		**40**
Total		**80**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020

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

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 9	5	8x5	40
				Total= 40

College Examination Pattern (Practical): 40 Marks

Short Case(Emphasis on Emphasis on assessment and outcome measures)	20
OSCE stations (2)	20
	Total = 40 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

University Examination Pattern (Practical): 40 Marks

Short Case	20
OSCE stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks for theory

Mid Semester Examination Pattern (Practical): 20Marks

Short Case	10
OSCE stations (5X 2)	10
	Total =20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Recommended books-

1. Smith, B. J., Tang, K. C., & Nutbeam, D. (2006). WHO health promotion glossary: new terms. *Health promotion international*, *21*(4), 340-345.
2. Global recommendations on physical activity for health. World Health Organization. ISBN 978 92 4 159 997 9.
3. Porter, S. (2013). *idy's Physiotherapy E-Book*. Elsevier Health Sciences.
4. Sapsford, R., Bullock-Saxton, J., & Markwell, S. (Eds.). (1998). *Women's health: a textbook for physiotherapists*. WB Saunders.
5. Sharma, A. (2007). Textbook of physiotherapy for obstetric and gynecological conditions. *Indian Journal of Physiotherapy and Occupational Therapy-An International Journal*, *1*(2), 24-24.
6. Guccione, A. A., Avers, D., & Wong, R. (2011). *Geriatric Physical Therapy-eBook*. Elsevier Health Sciences.

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Comprehensive evaluation of physical activity and fitness**
Course Code	**MPT-015**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**
Name of the Course	**Comprehensive evaluation of physical activity and fitness**
Course Code	**MPT-016**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	define physical activity and Fitness, differentiate between physical activity and fitness, discuss importance of physical activity, fitness and its components, effects of lack of physical activity and its contribution to burden of non-communicable diseases, WHO recommended guidelines for physical activity, recommend physical activity for different age groups for optimal health
CO 2	assess physical activity and quantify physical activity using questionnaires, discuss direct measures of physical activity- doubly labeled water method, perform testing of indirect/direct calorimetry, accelerometry, pedometry, heart rate monitoring, GPS, direct observation
CO 3	apply and evaluate strategies to increase physical activity in various age groups
CO 4	assess health related and skill related physical fitness
CO 5	design and apply strategies to increase fitness in various age groups
	Expected Competencies : Student will be able to
EC4	asses indirect measures of physical activity terms -self-report, diaries, logs, questionnaires, surveys, interviews
EC5	conduct health promotion camps emphasizing on importance of physical fitness and physical activity in maintaining health

EC6	evaluate health related physical fitness components • Cardiovascular Endurance. • Muscular Strength. • Muscular endurance. • Flexibility. • Body Composition.
EC7	evaluate Skill related physical fitness components • Agility. • Balance. • Power. • Reaction Time. • Coordination. • Speed
EC8	recommend strategies to increase fitness in different age groups

Unit	Topics	No. of Hrs.
1	Introduction to Physical activity , Fitness	2
2	Importance of physical activity, Burden of Non communicable diseases ,Various recommendations of physical activity for different age groups	4
3	Direct measures of physical activity - doubly labeled water method, indirect/direct calorimetry, accelerometry, pedometry, heart rate monitoring, GPS, direct observation	6
4	Indirect measurement of physical activity - self-report, diaries, logs, questionnaires, surveys, interviews	6
5	Strategies to increase physical activity in different age groups	2
6	Importance of fitness and its various components	2
7	Recommended Guidelines for fitness component	2
8	Assessment of Health related physical fitness components- anthropometry, flexibility, muscle strength, power , endurance, cardio-respiratory endurance,	6
9	Assessment of Skill related physical fitness components- balance, agility, speed and co-ordination	6
10	Strategies to increase fitness in different age groups	4
Practical		**40**
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	4 out of 5	10	4 x 10	40
Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

Mid Semester Examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Long answers	2 out of 3	10	2x 10	20
Total				**Total= 40**

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

Exercise	Description	Marks
Q No 1	Long Case (fitness evaluation)	40
Q No 2	OSPE Stations (4)	40
		Total = 80

Mid Semester Examination Pattern (Practical): 40 Marks

Short Case (fitness evaluation)	20
OSPE Stations (2)	20
	Total = 40 M

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

Recommended books-

1. Pescatello, L. S., Riebe, D., & Thompson, P. D. (Eds.). (2014). *ACSM's guidelines for exercise testing and prescription*. Lippincott Williams & Wilkins.
2. WHO Library Cataloguing-in-Publication Data
3. Global recommendations on physical activity for health. World Health Organization ISBN 978 92 4 159 997 9

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Strengthening and relaxation Techniques**
Course Code	**MPTAEEC001**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes Student should be able to	
CO 1	apply physical principles of various strengthening techniques like Pilates, resistant band, vestibular ball and relaxation exercises like Jacobson, Mitchell. Biofeedback, PNF.
CO 2	analyze effects, advantages disadvantages of various strengthening and relaxation techniques.
CO 3	apply and evaluate breathing movements for relaxation techniques and positions for strengthening different muscle groups.
CO 4	design treatment programs using equipments like bands, tubes, mats, reformer, vestibular ball, biofeedback.
CO5	describe safety precautions while using various techniques and equipment
CO6	describe and apply techniques used for recruitment of various muscle groups while strengthening and relaxation for respiratory, neurological, orthopedic conditions and for fitness training

Unit	**Topic**	**Hours**
1	Introduction of various strengthening and relaxation exercises including Pilates, resistant band, vestibular ball, Jacobson, Mitchell, biofeedback and PNF	2
2	Principles, effects andadvantages of strengthening and relaxation techniques	2
3	Equipments used -bands ,tubes, Mats, vestibular ball, reformer, biofeedback	2
4	Assessment of skills related to thoracic mobility, different breathing patterns and musculoskeletal disorders.	2
5	Application of exercises of Jacobson, Mitchell, PNF for relaxation and thera bands, pilates on mat and vestibular ball for strengthening of respiratory and musculoskeletaldisorders.	4
6	Application of exercises of thera bands, pilates on mat and vestibular ball for fitness.	4
7	Detailed Safety Precautions while using instruments	2
	Practical	40
	Total	60

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

Internal Examination Pattern (Practical): 40 Marks

Short Case (fitness evaluation)	20
OSPE Stations (2)	20
	Total = 40 M

College Examination Pattern (Theory): 40 Marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

University Examination Pattern (Practical): 40 Marks

Short Case	20
OSPE Stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks for theory

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSPE Stations (5 X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Recommended Text books-

1. Page, P., & Ellenbecker, T. S. (2019). *Strength band training*. Human Kinetics Publishers.
2. Spector-Flock, N. (2002). *Get Stronger by Stretching with Thera-Band*. Dance Horizons.

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Exercise Psychology**
Course Code	**MPTAEEC-002**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Outcomes At the end of the course , the candidate will be able to	
CO 1	discuss psychological aspects concerned with promotion of physical activity and exercise; psychological and emotional benefits linked with physical activity, exercise and sport and consequences of lack of exercise on behavior, inter personal skills and mental wellbeing, discuss how psychological factors that influence exercise behavior.
CO 2	describe factors influencing and serving as barriers to sustaining positive health behavior - self-esteem, depression, body image, anxiety, motivation, social support, and perceived control influence exercise behavior.
CO 3	apply methods to encourage positive health behavior, importance of understanding psychology of a person in designing sustainable programs to initiate and maintain positive health behavior
CO 4	discuss benefits of physical activity and exercise on mental health and well being
CO 5	discuss psychological factors influencing high skill performance and sports engagement
CO6	apply methods that can be used for psychological skills training

Unit	**Topics**	**No. of Hrs.**
1	Introduction to exercise psychology	**5**
2	Psychological issues affecting performance: anxiety, depression, self-esteem, motivation, body image	**5**
3	Barriers and facilitators for adherence to positive health behavior : social factors, cultural factors	**5**
4	Group dynamics	**5**
5	Psychological skills training – relaxation, yoga, positive reinforcement, mental imagery	**20**
6	Case studies	**20**
	Total	**60**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

Theory question paper pattern for College Examination under CBCS - 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

College Examination Pattern (Practical): 40 Marks

Short Case(Emphasis on Emphasis on assessment and outcome measures)	20
OSCE stations (2)	20
	Total = 40 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

University Examination Pattern (Practical): 40 Marks

Short Case	20
OSCE stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks for theory

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSCE stations (5 X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Recommended books-

1. Buckworth, J., & Tomporowski, P. (2013). *Exercise psychology*. Human kinetics.
2. Willis, J. D., & Campbell, L. F. (1992). *Exercise psychology*. Human Kinetics Publishers.
3. Berger, B. G., Pargman, D., & Weinberg, R. S. (2002). *Foundations of exercise psychology*. Fitness Information Technology, Inc..
4. Van Raalte, J. L., & Brewer, B. W. (1996). *Exploring sport and exercise psychology* (pp. xxix-487). American Psychological Association.
5. Moran, A. (2013). *Sport and exercise psychology: A critical introduction*. Routledge.
6. Weinberg, R. S., & Gould, D. S. (2014). *Foundations of sport and exercise psychology*. Human Kinetics.

Name of the Programme	**Master Of Physiotherapy (MPT)** **Specialty – Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Application of Yoga in Physiotherapy**
Course Code	**MPTSEC003**
Credit per Semester	**2 credits**
Hours per Semester	**60 hours**

Course Learning Outcomes **Student should be able to**	
CO 1	Describe origin of Yoga & its brief development and apply principles of Yoga for patient care in musculoskeletal, neurological and cardio-respiratory disorders
CO 2	Demonstrate effective communication skills for understanding effect of yoga on health condition
CO 3	Describe types of Yoga- Hatha Yoga , Raja Yoga, Laya Yoga, Bhakti Yoga, Gyan Yoga, Karma Yoga, compare and contrast differences in philosophies, plan appropriate program for patient care
CO 4	Demonstrate and apply pranayama, techniques for patients (Anulom-vilom, Bhastrika, Bhramri, Nadishuddhi, Kapalbharti, Omkar, Suryabhedana) , analyze difference between Pranayama and deep breathing and its implications, explain meaning of meditation and its types and principles.
CO 5	Demonstrate different types of asana, principles, effects. limitations to performing asanas, biomechanical implications of asanas and recommend modifications that can be used by patients
CO 6	Conduct basic yoga session for patients with musculoskeletal, neurological and cardio-respiratory disorders

Unit	**Topic**	**Hours**
1	• Origin of Yoga & its brief development. • Principles of Yogic Practices. • Meaning of meditation and its types and principles. • Classification of Yoga/Types of Yoga • Hatha Yoga, Raja Yoga, Laya Yoga, Bhakti Yoga, Gyan Yoga, Karma Yoga.	3
2	Meaning of Pranayama, its types and principles. (Anulom-vilom Bhastrika, Bhramri, Nadishuddhi, Kapalbharti, Omkar, Suryabhedana), Difference between Pranayama and deep breathing	5
3	Yoga Asana- types, principles, muscle work and kinematics	5
4	Yogic Diet.	2
5	Yoga for musculoskeletal, neurological and cardio-respiratory and sports conditions	5
	Practical- application of yoga therapy in rehabilitation	40
	Total	60

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

Internal Examination Pattern (Theory): 20 Marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4	5	4x5	20
Total				**Total= 20**

Internal Examination Pattern (Practical): 40 Marks

Short Case (fitness evaluation)	20
OSPE Stations (2)	20
	Total = 40 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

University Examination Pattern (Practical): 40 Marks

Short Case	20
OSPE Stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks for theory

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSPE Stations (5X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Recommended Text books-

1. Field, T. (2009). *Complementary and alternative therapies research*. American Psychological Association.
2. Mahajan, A. S., &Babbar, R. (2003). Yoga: A Scientific Lifestyle. *JOY: The Journal of Yoga*, *2*(10).
3. Dutta Ray,Yogic Exercises (2003). 1st Edition. Jaypee Publications.

Semester-IV (19-24 months)

Course Code	Course Title	Course Description	Lecture Hours	Practical Hours	Research Hours	Clinical Training Hours	Credits
MPT017	Recent advances and Physiotherapy management of cardiovascular disorders Theory	Core Theory	40				2
MPT018	Recent advances and Physiotherapy management of cardiovascular disorders Practical	Core Practical		40			1
MPT019	Recent advances and Physiotherapy management of pulmonary disorders Theory	Core Theory	40				2
MPT020	Recent advances and Physiotherapy management of pulmonary disorders Practical	Core Practical		40			1
MPT021	Evidence Based Cardiopulmonary Physiotherapy Theory	Core theory	40				2
MPT022	Evidence Based Cardiopulmonary Physiotherapy Practical	Core Practical		40			1
MPTAEEC003/004	Radiological diagnosis/Clinical Nutrition	Ability Enhancement Elective Course	20	40			2
MPTAEEC005/006	Physiotherapy in oncology/Physiotherapy in Lymphatic disorders	Ability Enhancement Elective Course	20	40			2
MPTAECC006	Intellectual property rights and publication ethics	Ability Enhancement Compulsory Course	40				2
MPTRP004	Research Dissertation submission and manuscript preparation				80		2
MPTCLT004	Clinical Training IV					320	5

Name of the Programme	**Master of Physiotherapy (MPT)** **Specialty - Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Recent Advances in management of cardiovascular disorders Theory**
Course Code	**MPT-017**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**
Name of the Course	**Recent Advances in management of cardiovascular disorders Practical**
Course Code	**MPT-018**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	Review literature for recent advances in assessment and management of cardio vascular disorders.
CO 2	demonstrate clinical skills relevant to recent advances in Physiotherapy treatment techniques pertinent to cardiopulmonary and vascular conditions
CO 3	correlate clinical observations with investigations and be able to follow the ICF pattern for identification of structural and functional impairments, identify difference in capacity and performance and factors affecting performance ,identify positive contributors and influence of negative barriers to treatment.
CO 4	perform ergonomic assessment in cardiopulmonary dysfunction
CO 5	institute relevant techniques for management of cardiovascular disorders to improve cardiovascular endurance.
CO 6	Plan short and long term goals for Physiotherapy treatment and institute Physiotherapy based on the recent advances to enhance lung function, prevent de-conditioning, enhance functional abilities, enhance wound/operative scar healing , relieve pain, improve mobility, posture ,strengthen respiratory muscles, ergonomics , musculoskeletal facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skillful use of various therapeutic exercise techniques
CO 7	correlate clinical observations with investigations and be able to follow the ICF pattern for identification of structural and functional impairments, analyze difference in capacity and performance and factors affecting performance, analyze positive contributors and influence of negative barriers to treatment.

Unit	Topics	No. of Hrs.
1	Recent advances in management of Congenital heart diseases – Atrial Septal defect, Ventricular septal defect, Tetralogy of fallot	5
2	Recent advances in management of Rheumatic heart disease (RHD)	5
3	Recent advances in management of Ischemic heart disease (IHD)	5
4	Recent advances in management of Heart failure.	5
5	Recent advances in management of Cardiomyopathies.	5
6	Recent advances in management of patients with pacemakers, ACID	5
7	Recent advances in management of vascular disorders – arterial and venous	5
8	Recent advances in management of Heart transplantation.	5
Practical		**40**
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	4 out of 5	10	4 x 10	40
Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

Mid Semester Examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Long answers	2 out of 3	10	2x 10	20
Total				**Total= 40**

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

Exercise	Description	Marks
Q No 1	Long Case (Emphasis on assessment and outcome measures)	40
Q No 2	OSCE Stations (4)	40
		Total = 80

Mid Semester Examination Pattern (Practical): 40 Marks

Short Case(Emphasis on Emphasis on assessment and outcome measures)	20
OSCE Stations (2)	20
	Total = 40 M

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

Recommended books-

1. Wilkins, R. L., Stoller, J. K., & Scanlan, C. L. (2004). *Egan's fundamentals of respiratory care*
2. Khan, E. (2004). Clinical skills: the physiological basis and interpretation of the ECG. *British journal of nursing*, *13*(8),
3. Irwin, S., & Tecklin, J. S. (Eds.). (2004). *Cardiopulmonary physical therapy: A guide to practice*. Mosby Incorporated.
4. Dean, E., & Frownfelter, D. L. (2006). *Cardiovascular and pulmonary physical therapy: Evidence and practice*. Mosby.
5. Pryor, J. A., & Prasad, A. S. (2008). *Physiotherapy for respiratory and cardiac problems: adults and paediatrics*. Elsevier Health Sciences.
6. Goldberger MD FACC, Ary L (2017). Goldberger's Clinical Electrocardiography-A Simplified Approach.

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Recent Advances in management of Pulmonary disorders Theory**
Course Code	**MPT-019**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**
Name of the Course	**Recent Advances in management of Pulmonary disorders Practical**
Course Code	**MPT-020**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	Review literature for recent advances in assessment and management of pulmonary disorders.
CO 2	demonstrate clinical skills relevant to recent advances in Physiotherapy treatment techniques pertinent to pulmonary conditions .
CO 3	correlate clinical observations with investigations and be able to follow the ICF pattern for identification of structural and functional impairments, analyze difference in capacity and performance and factors affecting performance, analyze positive contributors and influence of negative barriers to treatment.
CO 4	recommend ergonomic assessment in pulmonary dysfunction
CO 5	apply relevant techniques for management of pulmonary disorders to improve cardiovascular endurance.
CO 6	Plan short and long term goals for Physiotherapy treatment and design Physiotherapy program based on the recent advances to enhance lung function, prevent de-conditioning, enhance functional abilities, enhance wound/operative scar healing , relieve pain, improve mobility, posture ,strengthen respiratory muscles, ergonomics , musculoskeletal facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skilful use of various therapeutic exercise techniques in pulmonary disorders
CO 7	correlate clinical observations with investigations and be able to follow the ICF pattern for identification of structural and functional impairments, analyze difference in capacity and performance and factors affecting performance, analyze positive contributors and influence of negative barriers to treatment.

Unit	Topics	No. of Hrs.
1	Recent advances in management of Obstructive respiratory disorders	5
2	Recent advances in management of Restrictive respiratory disorders	5
3	Recent advances in management of Respiratory failure and acute respiratory distress syndrome.	5
4	Recent advances in management of Lung transplant	5
5	Recent advances in management of pleural disorders.	5
6	Recent advances in management of pulmonary artery hypertension	5
7	Recent advances in management of Occupational lung diseases	5
8	Recent advances in management of post-operative care – Pneumonectomy, Lobectomy, Thoracoplasty/ thoracotomy.	5
Practical		**40**
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	4 out of 5	10	4 x 10	40
Section 2				
Long answer question	2 out of 3	20	2 x 20	40
				Total= 80

Mid Semester Examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Long answers	2 out of 3	10	2x 10	20
Total				**Total= 40**

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

Exercise	Description	Marks
Q No 1	Long Case (Emphasis on assessment and outcome measures)	40
Q No 2	OSCE Stations (4)	40
		Total = 80

Mid Semester Examination Pattern (Practical): 40 Marks

Short Case(Emphasis on Emphasis on assessment and outcome measures)	20
OSCE Stations (2)	20
	Total = 40 M

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

Recommended books-

1. Wilkins, R. L., Stoller, J. K., & Scanlan, C. L. (2004). *Egan's fundamentals of respiratory care*
2. Hyatt, R. E., Scanlon, P. D., & Nakamura, M. (2014). *Interpretation of pulmonary function tests*. Lippincott Williams & Wilkins.
3. Lumb, A. B. (2016). *Nunn's applied respiratory physiology eBook.* Elsevier Health Sciences.
4. Michael A. Grippi, Jack A. Elias. (2015). *Fishman's pulmonary diseases and disorders.*
5. Dean, E., & Frownfelter, D. L. (2006). *Cardiovascular and pulmonary physical therapy: Evidence and practice*. Mosby.
6. Pryor, J. A., & Prasad, A. S. (2008). *Physiotherapy for respiratory and cardiac problems: adults and paediatrics*. Elsevier Health Sciences.
7. Burton, G. G., Hodgkin, J. E., & Ward, J. J. (Eds.). (1991). *Respiratory care: a guide to clinical practice*. Lippincott Williams & Wilkins.

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Evidence based Cardiopulmonary Physiotherapy Theory**
Course Code	**MPT021**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**
Name of the Course	**Evidence based Cardiopulmonary Physiotherapy Practical**
Course Code	**MPT022**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Outcomes	
Student will be able to	
CO 1	Describe foundational overview of evidence-based practice (EBP) in Physiotherapy, including the important steps of EBP process as well as research supported strategies for implementing EBP in real world settings, importance of EBP in improving healthcare quality and patient outcomes.
CO 2	Describe the important steps of EBP and how to implement EBP in real world settings.
CO 3	Discuss barriers to EBP and strategies to overcome them.
CO 4	Describe current trends and challenges in the shift from traditional practice approaches to an evidence-based approach to care and decision making.

Unit	**Topics**	**No. of Hrs.**
1	The concept of evidence based practice in Physiotherapy.	2
2	The hierarchies and classification of evidence.	2
3	Sources of Therapeutic knowledge	2
4	Basic searching strategies of evidence.	4
5	Critically Appraising an article.	5
6	Integrating Evidence into Decision Making and Measuring Outcomes	5
7	Making EBP Happen in Real World Clinical Settings	5
8	Application of EBP in Cardiovascular Physiotherapy.	5
9	Application of EBP in Pulmonary Physiotherapy.	5
10	Application of EBP in Health promotion and fitness.	5
Practical		**40**
Total		**80**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

Theory question paper pattern for College Examination under CBCS - 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

Internal Examination Pattern (Practical): 20 Marks

OSCE Stations (2)	20
	Total = 20 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

University Examination Pattern (Practical): 40 Marks

Short Case	20
OSCE Stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks for theory

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSCE Stations (5 X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Recommended books-

1. Evidence-Based Practice: An Integrative Approach to Research, Administration, and Practice. Heather R. Hall, Linda A. Roussel. 2012
2. Evidence-based Practice for Health Professionals: An Interprofessional Approach Teresa - Gabiola Shelton. 2013
3. Evidence-Based Health Practice- Joanne Ramsbotham. 2014.
4. Hall, H. R., & Roussel, L. A. (2014). Evid-ence-based practice: An integrative approach to research, administration, and practice. Bur lington, MA.
5. Howlett, B., Rogo, E. J., & Shelton, T. G. (2014). *Evidence-based practice for health professionals: an interprofessional approach*. Jones & Bartlett Publishers.
6. Clair, W. S., Reid, D., Shaw, S., & Ramsbotham, J. (2014). *Evidence-based health practice*. Oxford University Press.
7. Wilkins, R. L., Stoller, J. K., & Scanlan, C. L. (2004). *Egan's fundamentals of respiratory care.*
8. Ellen Hellegas
9. Dean, E., & Frownfelter, D. L. (2006). *Cardiovascular and pulmonary physical therapy: Evidence and practice*. Mosby.
10. Pryor, J. A., & Prasad, A. S. (2008). *Physiotherapy for respiratory and cardiac problems: adults and paediatrics*. Elsevier Health Sciences.
11. Burton, G. G., Hodgkin, J. E., & Ward, J. J. (Eds.). (1991). *Respiratory care: a guide to clinical practice*. Lippincott Williams & Wilkins.
12. Physiotherapy in Cardiovascular Rehabilitation – Webber

Ability Enhancement Elective Course	
Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Radiological Diagnosis**
Course Code	**MPTAEEC003**
Credits per semester	**2 credit**
Hours per semester	**60 hours (20 Theory +40 Practical)**

Course Outcomes	
Student will be able to	
CO 1	describe significance of radiology in the field of Physiotherapy and importance of radiology as an adjunct to the confirmation of clinical diagnosis of the patient.
CO 2	describe various modalities in the field of radiology and applications in the management of patients.
CO 3	identify abnormalities in chest radiographs
CO 4	Outline findings of MRI, CT scans and correlate the findings to functional impairments

Sr. No.	Topics	No. of Theory Hrs.	No of practical hours
1	Radiology as an adjunct to clinical examination and diagnosis.	**2**	**3**
2	Introduction to basic radiology and its principles	**3**	**2**
3	Chest radiograph – Reading and interpretation, Reporting of chest radiograph	**3**	**7**
4	High resolution Computed tomography (HRCT) of chest - Reading and interpretation, Reporting of chest radiograph	**3**	**7**
5	Cardiac Magnetic resonance imaging	**3**	**7**
6	Difference between adult and pediatric radiography.	**3**	**7**
7	Pediatric Chest radiographs	**3**	**7**
Total		**20**	**40**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

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 9	5	8x5	40
				Total= 40

Internal Examination Pattern (Practical): 20 Marks

OSCE Stations (2)	20
	Total = 20 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

University Examination Pattern (Practical): 40 Marks

OSCE Stations (10 X 4)	40
	Total = 40 M

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks for theory

Mid Semester Examination Pattern (Practical): 20 Marks

OSCE Stations (10 x 2)	20
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Reference Books:

1. Corne, J., & Kumaran, M. (2015). *Chest X-Ray Made Easy E-Book*. Elsevier Health Sciences.
2. Joarder, R., & Crundwell, N. (2009). *Chest X-ray in clinical practice*. Springer Science & Business Media.
3. De Lacey, G., Morley, S., & Berman, L. (2012). *The Chest X-Ray: A Survival Guide E-Book*. Elsevier Health Sciences.

Ability Enhance Elective Course	
Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Clinical Nutrition**
Course Code	**MPTAEEC004**
Credits per semester	**2 credit**
Hours per semester	**60 hours (theory – 20 hours; Practicals – 40 hours)**

Course Outcomes	
Student will be able to	
CO 1	describe importance of clinical nutrition in enhancing capability of patients with special nutritional requirements in pathological conditions.
CO 2	describe the importance of nutrition, healthy diet and malnutrition.
CO 3	describe role and importance of different types of diets and malnutrition

Sr. No.	Topics	No. of Theory Hrs.	No of practical hours
1	Role and importance of nutrition and diet – • Nutritional problems confronting our country, • Concept of Community Nutrition, • Methods of assessment of nutritional status	**2**	**4**
2	Diet Therapy: • Routine hospital diet, • Types of diet - Regular diet, Light diet, Soft Diet, Full liquid diet.	**2**	**4**
3	Malnutrition & Infection: • Strategies to combat Nutritional problems – Fortification, supplementation, - Immunization Programme	**2**	**4**
4	Diet in fevers and infections – Typhoid, Malaria and Tuberculosis.	**2**	**4**
5	Diet in gastro intestinal disorders: Diarrhea, Constipation, Peptic ulcer	**2**	**4**
6	Diet in Diabetes mellitus – Classification, predisposing factors, Diagnosis, Dietary management.	**2**	**4**
7	Diet in Cardiovascular diseases – Dietary management in Atherosclerosis and hypertension.	**2**	**4**
8	Diet in diseases of liver and gall bladder.	**2**	**4**
9	Diet in Renal diseases	**2**	**4**

10	Nutritional Education - Importance of nutrition education. Nutrition education methods: - Posters, Charts, Audio visual aids, lectures	**2**	**4**
Total		**20**	**40**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

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 9	5	8x5	40
				Total= 40

Internal Examination Pattern (Practical): 20 Marks

OSCE Stations (2)	20
	Total = 20 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

University Examination Pattern (Practical): 40 Marks

Short Case	20
OSCE Stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks for theory

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSCE Stations (5 X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Reference Books:

1. Srilakshmi, B. (2007). *Dietetics*. New Age International.
2. Srilakshmi, B. (2003). *Food science*. New Age International.
3. Joshi, S. A. (1995). *Nutrition and dietetics*. McGraw-Hill Education.

Ability Enhancement Elective Course	
Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Physiotherapy in Oncology**
Course Code	**MPTAEEC 005**
Credits per semester	**2 credit**
Hours per semester	**60 hours (theory – 20 hours; Practical's – 40 hours)**

Course Learning Outcomes	
Student will be able to	
CO 1	discuss current management strategies fin oncology, related surgeries, sequelae to chemotherapy and radiotherapy, clinical overview of exercise prescriptions in oncology and post-operative physiotherapy care of the patient.
CO 2	discuss the physiological effect of cancer treatments and the side effect.
CO 3	plan exercise prescription protocol for oncology rehabilitation.
CO 4	discuss the scope and importance of physiotherapy in Oncology.
CO 5	Demonstrate the different treatment techniques and apply recent evidences in patient care.

Sr. No.	Topics	No. of Hrs.	No of practical hours
1	Cancer – Pathophysiology, Medical and surgical management, Staging of cancer, various investigations and tumour markers.	**2**	**4**
2	Foundation of oncology rehabilitation	**2**	**4**
3	Head and neck cancer rehabilitation	**2**	**5**
4	Breast cancer – surgeries, management and complications	**2**	**5**
5	Post-operative care for oncology patients	**2**	**5**
6	Physiotherapy management of shoulder and scapulothoracic dysfunction in the breast cancer population	**2**	**5**
7	Pelvic, GI and digestive system cancer rehabilitation	**2**	**4**
8	Chemo induced cognitive impairment	**2**	**4**
9	Chemotoxicity and cancer exercise management	**2**	**4**
Total		**20**	**40**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

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 9	5	8x5	40
				Total= 40

Internal Examination Pattern (Practical): 20 Marks

OSCE Stations (2)	20
	Total = 20 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

University Examination Pattern (Practical): 40 Marks

Short Case	20
OSCE Stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks for theory

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSCE Stations (5 X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Reference Books:

1. O'Dell, M., & Stubblefield, M. (2009). *Cancer rehabilitation: principles and practice*. Demos Medical Publishing.
2. Rankin, J., Robb, K., Murtagh, N., Cooper, J., & Lewis, S. (Eds.). (2009). *Rehabilitation in Cancer Care*. John Wiley & Sons.
3. Ward, E. C., & van As-Brooks, C. J. (Eds.). (2014). *Head and neck cancer: treatment, rehabilitation, and outcomes*. Plural Publishing

Ability Enhancement Elective Course	
Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Cardiovascular and Respiratory Physiotherapy**
Name of the Course	**Physiotherapy in Lymphatic Disorders**
Course Code	**MPTAEEC006**
Credits per semester	**2 credit**
Hours per semester	**60 hours (Theory – 20 hours; Practicals – 40 hours)**

Teaching Objective	The course provides a detailed overview of the latest research and therapeutic approaches to exercise in the management of patients with lymphoedema.
Learning Outcomes	At the end of the course, student will be able to: • Understand the anatomy of the lymphatic system • Understand the physiology and pathophysiology of the lymphatic system • Gain knowledge of the factors leading to edema/lymphedema formation • Demonstrate knowledge of safe patient specific exercise prescription for those at risk for or those with lymphoedema. • Demonstrate knowledge of specific exercise considerations for patients undergoing chemotherapy and/or radiation therapy. • Demonstrate the ability to integrate current research findings into exercise prescription for those with or at risk for lymphedema. • Demonstrate an awareness of post-operative breast cancer exercise restrictions

Course Outcomes	
Student will be able to	
CO 1	describe and correlate anatomy of the lymphatic system, physiology and pathophysiology of the lymphatic system to functional impairments in lymphatic disorders
CO 2	describe factors leading to edema / lymphoedema formation
CO 3	apply different edema prevention and lymphatic drainage exercises
CO 4	examine specific exercise considerations for patients undergoing chemotherapy and/or radiation therapy.
CO 5	demonstrate the ability to integrate current research findings into exercise prescription for those with or at risk for lymphedema.
CO 6	analyse precautions and risk stratification in planning exercise program for post-operative breast cancer patients

Sr. No.	Topics	No. of Theory Hrs.	No of practical hours
1	Lymphatic system – Anatomy and Physiology	**2**	**4**
2	Primary Lymphatic disorders – Pathophysiology, medical and surgical management.	**2**	**4**
3	Secondary Lymphatic disorders – Pathophysiology, medical and surgical management.	**2**	**4**
4	Factors that lead to edema/lymphedema formation	**2**	**4**
5	Lymphedema management - Compression bandages and garments, Skin care, Lymphatic drainage exercises, Specialized massage techniques	**3**	**4**
6	Decongestive Lymphatic Therapy (DLT) - Compression bandages and garments, Skin care and Manual Lymphatic drainage techniques	**2**	**8**
7	Chronic edema of Lower Limb (COLL)	**2**	**4**
8	Physiotherapy management of lymphedema	**3**	**4**
9	Home programme for lymphedema	**2**	**4**
Total		**20**	**40**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020
This course will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

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 9	5	8x5	40
				Total= 40

Internal Examination Pattern (Practical): 20 Marks

OSCE Stations (2)	20
	Total = 20 M

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University examination pattern (Theory): 40marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	8 out of 9	5	8x5	40
Total				**Total= 40**

University Examination Pattern (Practical): 40 Marks

Short Case	20
OSCE Stations (10 X 2)	20
	Total = 40 M

Mid Semester Examination Pattern (Theory): 20marks

Question type	No. of questions	Marks/question	Question X marks	Total marks
Short answers	4 out of 5	5	4x5	20
Total				**Total= 20**

Internal Assessment marks will be weighted out of 10 marks for theory

Mid Semester Examination Pattern (Practical): 20 Marks

Short Case	10
OSCE Stations (5 X 2)	10
	Total = 20 M

Internal Assessment marks will be weighted out of 10 marks for practical

Reference Books:

1. Greene, A. K., Slavin, S. A., & Brorson, H. (Eds.). (2015). *Lymphedema: Presentation, Diagnosis, And Treatment*. Springer.
2. Zuther, J. E., & Norton, S. (2017). *Lymphedema management: the comprehensive guide for practitioners*. Thieme.

Ability Enhancement Compulsory Course	
Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Cardio Vascular and Respiratory Physiotherapy**
Name of the Course	**Intellectual property rights and publication ethics**
Course Code	**MPTAEEC006**
Credits per semester	**2 credit**
Hours per semester	**40 hours**

Course Outcomes	
Student will be able to	
CO 1	describe types of intellectual property, copyrights, patent, laws and rights based on intellectual property,
CO 2	Apply ethics of publication in journals, different methods of misconduct carried out during

Sr. No.	Topics	No. of Theory Hrs.
1	Introduction to Intellectual property rights	**4**
2	Patents and Trademarks	**4**
3	Copyright and related laws	**4**
4	Introduction to Publication ethics – Aim and Scope	**4**
5	Categories of publication / scientific misconduct – Falsification, Fabrication of data, Plagiarism, Unjustified authorship, Duplicate publication, Redundant publication.(Salami publication), Sanctions	**6**
6	Research ethics in journal articles – Human rights, privacy & confidentiality, Cultural heritage, Biosecurity	**4**
7	Ethical Standards and Process – Authorship, authorship disputes, Funding, Peer review, Conflicts of interest	**6**
8	Appeals and corrections	**4**
9	Data protection legislation	**4**
Total		**40**

EXAMINATION SCHEME

Examination pattern applicable for batch admitted in academic year 2019-2020

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

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 9	5	8x5	40
				Total= 40

EXAMINATION SCHEME

Examination pattern applicable from batch admitted in academic year 2020-2021 onwards as per Resolution 3.7 & 3.11 of AC 41/2021

University Examination Theory- 40 marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

Mid Semester Examination Pattern - 20 marks

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

Internal Assessment marks will be weighted out of 10 marks for theory

Reference Books:

1. Campbell, R., Pentz, E., & Borthwick, I. (Eds.). (2012). Academic and professional publishing. Elsevier.
2. Mayer, T., & Steneck, N. (2012). Promoting research integrity in a global environment. World Scientific.

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Sector-01, Kamothe, Navi Mumbai - 410209

Tel 022-27432471, 022-27432994, Fax 022-27431094

E-mail- registrar@mgmuhs.com Website :www.mgmuhs.com