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MGM INSTITUTE OF HEALTH SCIENCES

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

(With effect from 2019-20 Batches)

Curriculum for Master of Physiotherapy (Neuro Physiotherapy)

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

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Registrar
MGM Institute of Health Sciences
(Deemed University u/s 3 of UGC Act, 1956)
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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

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Vision and Mission of MGM School of Physiotherapy

Vision

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

Mission

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

Description of Degree

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 upto 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 globalised 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/Clinical 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. Practical hours will include hand-on training in evaluation and management of neurological conditions on patient population and healthy individuals.

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 undego 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. **Pyschomotor Skills:** Physiotherapy post graduate students must demonstrate psychomotor skills of locomotor ability to access lecture halls, Practical/Clinical 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, enage 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 , analyze 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 students should be able to define research problem, formulate hypothesis, manage resources, analyze and interpret data, explore cause – effect relationships, plan and execute a report, present results of the experiment 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:

I. 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.

II. Comprehensive information regarding appropriate use of electrotherapy modalities, exercise equipment, advanced learning material, skills and techniques as indicated.

III. 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.

IV. 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.

V. 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 –Neuro Physiotherapy, are summarized below:

PO 1	Professional ethic towards client respect, dignity and confidential responsibility.
PO 2	To practice communication skills with patient, caregiver and interdisciplinary relations.
PO 3	To identify the biopsychosocial component of pain and dysfunction.
PO 4	To have knowledge of basic sciences pertaining to Neurological system with sound clinical reasoning
PO 5	To have detailed knowledge of adult and paediatric neurological rehabilitation
PO 6	To understand the pathomechanics of spine and Extremities in Neurological Disorders
PO 7	To know evidence based practice and advances in clinical reasoning
PO 8	To understand the mechanism of pain and dysfunction
PO 9	To formulate hypothesis and clinical decision-making skills to assess and manage all neurological conditions
PO10	To develop skills in cardiopulmonary resuscitation and physiotherapy care of neurological patient in critical care units

VII. Program Specific Outcomes for Master of Physiotherapy Program- Neuro 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 utilize 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	Prepare students for professional practice as Physiotherapists. Graduates will be able to practice across a range of settings, including rural and remote areas. Emphasis will be placed on preparing a contemporary health professional to be client-centered and to work effectively within an interdisciplinary team.
PSO 6	Work creatively and effectively 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

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 20 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/Clinical examination OSPE , objectively structured clinical examination OSCE, problem based assignments, Practical/Clinical assignments, observation of Practical/Clinical 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/Clinical 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.

2.1. Semesters:

An academic year consists of two semesters:

Semesters	**PG**
Odd Semesters 1st ,3rd,	August – January
Even Semesters 2nd, 4th	February – July

2.2Credits:

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/Clinical/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/Clinical
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/Clinical - 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				

1.3 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.

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

2.5 Assigning total Credits for a Program: The UGC, in its notification No.F.1-1/2015 (Sec.) dated 10/4/15 has provided a set of Model curricula and syllabi for CBCS programs. In conformation with this notification, the 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
Neuro Physiotherapy

Semester I		Semester II	
Course Code	**Core Course**	**Course Code**	**Core Course**
MPT023	Neuroanatomy, Physiology and Pathomechanics in Neurological conditions - Theory	MPT028	Adult Neurological Assessment Skills and Management - Theory
MPT024	Neuroanatomy, Physiology and Pathomechanics in Neurological conditions- Practical	MPT029	Adult Neurological Assessment Skills and Management - Practical
MPT025	Functional Diagnosis and principles of management in Neurorehabilitation - Theory	MPT030	Movement Analysis & Assistive Technology in Adult Neurorehabilitation - Theory
MPT026	Functional Diagnosis and principles of management in Neurorehabilitation- Practical	MPT031	Movement Analysis & Assistive Technology in Adult Neurorehabilitation- Practical
MPT027	Electrotherapeutics in Neurorehabilitation	MPT032	Electro diagnosis
MPT023	Neuroanatomy, Physiology and Pathomechanics in Neurological conditions - Theory		
Semester III		**Semester IV**	
Course Code	**Core Course**	**Course Code**	**Core Course**
MPT033	Paediatric Neurological Assessment Skills and Management - Theory	MPT039	Recent advances in management of Adult Neurological Conditions - Theory
MPT034	Paediatric Neurological Assessment Skills and Management - Practical	MPT040	Recent advances in management of Adult Neurological Conditions - Practical
MPT035	Movement Analysis & Assistive Technology in Paediatric Neurorehabilitation - Theory	MPT041	Recent advances in management of Paediatric Neurological Conditions - Theory
MPT036	Movement Analysis & Assistive Technology in Paediatric Neurorehabilitation - Practical	MPT042	Recent advances in management of Paediatric Neurological Conditions - Practical
MPT037	Early Intervention in neonates & infants - Theory		
MPT038	Early Intervention in neonates & infants - 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)			
Sr. No	**Elective Code**	**Title**	**Semester**
1.	MPTAECC001	Cardiopulmonary Resuscitation	1
2.	MPTAECC002	Research Methods	1
3.	MPTAECC003	Bioethics, Health Management and administration	1
4.	MPTAECC004	Teaching Technology	1
5.	MPTAECC005	Legal Issues and Professional Ethics	2
6.	MPTAECC006	Intellectual Property Rights and Publication Ethics	4
7.	MPTAECC007	ICU Management in Neurorehabilitation	4
List of Ability Enhancement Elective Courses (Credits=2)			
Sr No	**Elective Code**	**Title**	**Semester**
1.	MPTAEEC002	Exercise Psychology	3
2.	MPTAEEC007	Palliative Care	3
3.	MPTAEEC003	Radiological diagnosis	4
4.	MPTAEEC004	Clinical Nutrition	4
List of Skill Enhancement Elective Courses (Credits=2)			
Sr No	**Elective Code**	**Title**	**Semester**
1.	MPTSEC009	Manual Mobilization Techniques in Neurorehabilitation	2
2.	MPTSEC010	Vestibular Rehabilitation	2
List of Skill Enhancement compulsory Courses (Credits=2)			
1.	MPTSEC003	Application 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.

XIII. Framework of Curriculum

Semester I

Master of Physiotherapy (MPT) - Neurophysiotherapy
Semester I (20 weeks teaching: 40 hours per week)

Code	Course	Description	Credits per week					Hours per week				Hours per semester					Marks				
			L/S	P	RP	CT	Total Credits	L/S	P	RP	CT	L/S	P	RP	CT	Total hours	IA Theory	Semester Examination Theory	IA Practical	Semester Examination Practical	Total
MPT023	Neuroanatomy, Physiology and Pathomechanics in Neurological conditions - Theory	Core Theory	2				2	2				40				40	20 *	80			100
MPT024	Neuroanatomy, Physiology and Pathomechanics in Neurological conditions- Practical	Core Practical		1			1		2				40			40				40 #	40
MPT025	Functional Diagnosis and principles of management in Neurorehabilitation - Theory	Core Theory	3				3	3				60				60	20 *	80			100
MPT026	Functional Diagnosis and principles of management in Neurorehabilitation- Practical	Core Practical		1			1		2				40			40			20 *	80	100
MPT027	Electrotherapeutics in Neurorehabilitation	Core Theory	2				2	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 20 for inclusion in Semester Exam**
 # Examination will be conducted at constituent unit level

Semester II

Master of Physiotherapy (MPT) - Neurophysiotherapy
Semester II (20 weeks teaching :40 hours per week)

Code	Course	Description	Credits per week					Hours per week				Hours per semester					Marks				
			L/S	P	RP	CT	Total Credits	L/S	P	RP	CT	L/S	P	RP	CT	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Total
MPT028	Adult Neurological Assessment Skills and Management - Theory	Core Theory	2				2	2				40				40	20 *	80			100
MPT029	Adult Neurological Assessment Skills and Management - Practical	Core Practical		1			1		2				40			40			20 *	80	100
MPT030	Movement Analysis & Assistive Technology in Adult Neurorehabilitation - Theory	Core Theory	3				3	3				60				60	20 *	80			100
MPT031	Movement Analysis & Assistive Technology in Adult Neurorehabilitation- Practical	Core Practical		1			1		2				40			40				40 #	40
MPT032	Electrodiagnosis	Core Theory	2				2	2				40				40		40 #			40
MPTAECC005	Legal Issues and Professional Ethics	Ability Enhancement Compulsory Course	2				2	2				40				40		40 #			40
MPTGEC001/ MPTGEC002	Medical Device Innovation/ Scientific Writing	General Elective Course	2				2	2				40				40		40 #			40
MPTSEC009/ MPTSEC010	Manual Mobilisation Techniques in Neurorehabilitation /Vestibular Rehabilitation	Skill Enhancement Elective Course	1	1			2	1	2			20	40			60		40 #		40 #	80
MPTRP002	Research Protocol II				2		2			4				80		80				20 #	20
MPTCLT002	Clinical Training II					6	6				18				360	360				40 #	40
	Total		12	3	2	6	23	12	6	4	18	240	120	80	360	800					600

*** Internal Assessment Exam will be conducted for 40 marks and be calculated out of 20 for inclusion in Semester Exam**
 # Examination will be conducted at constituent unit level

Semester III

Master of Physiotherapy (MPT) - Neurophysiotherapy
Semester III (20 weeks teaching :40 hours per week)

Code	Course	Description	Credits per week					Hours per week				Hours per semester					Marks				
			L/S	P	RP	CT	Total Credits	L/S	P	RP	CT	L/S	P	RP	CT	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Total
MPT033	Paediatric Neurological Assessment Skills and Management - Theory	Core Theory	2				**2**	2				40				**40**	**20 ***	**80**			**100**
MPT034	Paediatric Neurological Assessment Skills and Management - Practical	Core Practical		1			**1**		2				40			**40**			**20 ***	**80**	**100**
MPT035	Movement Analysis & Assistive Technology in Paediatric Neurorehabilitation - Theory	Core Theory	3				**3**	3				60				**60**	**20***	**80**			**100**
MPT036	Movement Analysis & Assistive Technology in Paediatric Neurorehabilitation - Practical	Core Practical		1			**1**		2				40			**40**				**40 #**	**40**
MPT037	Early Intervention in neonates & infants - Theory	Core Theory	2				**2**	2				40				**40**		**40#**			**40**
MPT038	Early Intervention in neonates & infants - Practical	Core Practical		1			**1**		2				40			**40**				**40#**	**40**
MPTSEC003	Application of Yoga in Physiotherapy	Skill Enhancement compulsary Course	1	1			**2**	1	2			20	40			**60**		**40 #**		**20 #**	**60**
MPTAEEC002/ MPTAEEC007	Exercise Psychology / Palliative Care in Neurological conditions	Ability Enhancement Elective Course	2				**2**	2				40				**40**		**40 #**			**40**
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		**10**	**4**	**2**	**6**	**22**	**10**	**8**	**4**	**18**	**200**	**160**	**80**	**360**	**800**					**600**

*** Internal Assessment Exam will be conducted for 40 marks and be calculated out of 20 for inclusion in Semester Exam**
 # Examination will be conducted at constituent unit level

Semester IV

Master of Physiotherapy (MPT) - Neurophysiotherapy
Semester IV (20 weeks teaching : 40 hours per week)

Code	Course	Description	Credits per week					Hours per week				Hours per semester					Marks				
			L/S	P	RP	CT	Total Credits	L/S	P	RP	CT	LS	P	RP	CT	Total hours	IA Theory	Semester Exam Theory	IA Practical	Semester Exam Practical	Total
MPT039	Recent advances in management of Adult Neurological Conditions - Theory	Core Theory	2				**2**	2				40				**40**	**20 ***	**80**			**100**
MPT040	Recent advances in management of Adult Neurological Conditions - Practical	Core Practical		2			**2**		4				80			**80**			**20 ***	**80**	**100**
MPT041	Recent advances in management of Paediatric Neurological Conditions -	Core Theory	3				**3**	3				60				**60**	**20 ***	**80**			**100**
MPT042	Recent advances in management of Paediatric Neurological Conditions - Practical	Core Practical		1			**1**		2				40			**40**			**20 ***	**80**	**100**
MPTAECC007	ICU Management in Neurorehabilitation	Ability Enhancement Compulsory Course	1	1			**2**	1	2			20	40			**60**		**40 #**		**40 #**	**80**
MPTAEEC003/ MPTAEEC004	Radiological Diagnosis / Clinical Nutrition	Ability Enhancement Elective Course	2				**2**	2				40				**40**		**40 #**			**40**
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					6	**6**				18				360	**360**				**40 #**	**40**
	Total		**10**	**4**	**2**	**6**	**22**	**10**	**8**	**4**	**18**	**200**	**160**	**80**	**360**	**800**					**640**

*** Internal Assessment Exam will be conducted for 40 marks and be calculated out of 20 for inclusion in Semester Exam**
 # Examination will be conducted at constituent unit level

XIV. Rules and Regulation for Examination of Master of Physiotherapy Program Under MGM School of Physiotherapy offering CBCS Pattern

1. **Title of the courses offered : Master of Physiotherapy –Neuro Physiotherapy**

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/Clinical, Ability Enhancement Courses [AE]; Skills Enhancement Courses [SE] Theory or P (Practical/Clinical) & 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 are assessed jointly, the minimum passing head has to be 50% Grade each for theory and Practical/Clinical separately. RA grade in any one of the components will amount to reappearing in both components. i.e. theory and Practical/Clinical.

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

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.

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/Clinical 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:

a. A student will be allowed to keep term for Semester II irrespective of number of heads of failure in Semester I.
b. 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.
c. 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/Clinical 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/Clinical as applicable) of that subject. The internal examinations will be conducted at college/ department level.

12.5 Notwithstanding any circumstances, a deficiency of attendance at lectures or Practical/Clinical 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/Clinical, 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/Clinical courses, for PG program of MGMSOP are given in the following tables. Changes may be incorporated as per requirements of specific courses.

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 stations (4)	40
	Total = 80 M

15.3 Internal examination

Mid Semester Examination pattern (Theory) : 40 marks

Question type	No. of questions	Marks	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 stations (2)	20
	Total = 40 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 M

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, pediatrics 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, Haematological 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

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, encyclopaedia 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 Project Report

Sr. No	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	**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						
VI	**Analysis of Data & Interpretation**						
	1. Clear & logical organization of the finding						
	2. Clear presentation of tables(title, table & column heading)						
	3. Selection of appropriate statistical tests						
VII	**Ethical Aspects**						
	1. Use of appropriate consent process						
	2. Use of appropriate steps to maintain ethical aspects & principles						
VIII	**Interpretation of the finding**						
	& appropriate discussion of the results						
IX	**Conclusion**						
	Summary & recommendations						
X	**Presentation/ Report Writing**						
	Organization of the project work including language & style of presentation						

Signature of the Evaluator

XV. 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 Masters 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/Clinical), 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.

XVI. 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,

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

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iv. 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.

XVII. Course Registration

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.

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.

XVIII. 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.

XIX. 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 Neuro Physiotherapy Semester-I (0-6 months)

Course Code	Course Title	Course Description	Theory/ Seminar Hours	Practical	Research Hours	Clinical Hours
MPT023	Neuroanatomy, Physiology and Pathomechanics in Neurological conditions - Theory	Core Theory	40			
MPT024	Neuroanatomy, Physiology and Pathomechanics in Neurological conditions- Practical	Core Practical		40		
MPT025	Functional Diagnosis and principles of management in Neurorehabilitation - Theory	Core Theory	60			
MPT026	Functional Diagnosis and principles of management in Neurorehabilitation- Practical	Core Practical		40		
MPT027	Electrotherapeutics in Neurorehabilitation	Core Theory	40			
MPTAECC001	Cardiopulmonary Resuscitation	Ability Enhancement Compulsory Course	20	40		
MPTAECC002	Research Methods	Ability Enhancement Compulsory Course	40			
MPTAECC003	Bioethics, Health Management and administration	Ability Enhancement Compulsory Course	60			
MPTAECC004	Teaching Technology	Ability Enhancement Compulsory Course	40	40		
MPTCLT001	Clinical Training I					300
MPTRP001	Research Protocol I				40	

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Neuroanatomy, Physiology and Pathomechanics in Neurological conditions - Theory**
Course Code	**MPT023**
Credit per Semester	**2 Credits**
Hours per Semester	**40 hours**
Name of the Course	**Neuroanatomy, Physiology and Pathomechanics in Neurological conditions -Practical**
Course Code	**MPT024**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Outcomes	
Student will be able to	
CO 1	identify & describe anatomical aspects of Nervous system.
CO 2	understand the physiological basis of Nervous system.
CO 3	identify & describe various structures of the Nervous system, mechanism of central and peripheral nervous system
CO 4	Apply knowledge of biomechanics and pathomechanics of joints in gait and posture in neurological condition
Expected Competencies	
EC1	Student will be able identify & describe various structures of the Nervous system, mechanism of central and peripheral nervous system
EC2	Student will be able to correlate Pathomechanics to disease condition

Unit	**Topics**	**No. of Hrs. (Lecture/ Seminar)**	**No. of Hrs. (Practical)**
1	Growth & Maturation of Nervous system, Development of nervous system and foetal development	**40**	**40**
2	Neuro Anatomy • Anatomy of central ,peripheral and autonomic nervous structures		
3	Neurophysiology a. Functioning of neurons b. Functioning of different tracts Sensory and Motor Pathways		

	c. Cerebral circulation d. Synapse- definition, properties, Electrical signals & its transmission- Ion channels, Resting membrane potential, graded potential, Generation of action Potential, Propagation of nerve impulses. e. Nerve fiber- Definition & properties, myelination Reaction of degeneration & its clinical application.		
4	Biomechanics and Pathomechanics of Spine & all joints of Extremities related to Neurological conditions		
5	Gait and Posture a. Posture & Movement Control b. Neural Basis of Postural Control c. Development of Postural Control d. Changes in Postural Control across life span		
6	Biomechanics and Pathomechanics of Gait & Posture related to Neurological condition		
Total		**80**	

Recommended Books:

1. Text book of clinical Neuroanatomy by Vishramsingh (Elsevier 2007) 3rd Edition
2. Clinical Neuroanatomy for Medical Students by Richard S Snell, 7th Edition (Lippincott Williams & Wilkins, 2010)
3. Neurophysiology by RHS Carpenter, 4th edition (Arnold 2003)
4. A physiological approach to clinical neurology by James W. Lance and James G. McLeod, 3rd edition (Butterworth's 1981)

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

Internal Examination:

Mid Semester Examination Pattern (Theory): 40marks

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

Internal Assessment marks will be weighted out of 20 marks.
Practicalcourse will not be assessed as Semester University Examination. Assessment will be conducted as Internal College Exam

Mid Semester Examination Pattern Practical: 40 Marks

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

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Functional Diagnosis and Principles of management in Neurorehabilitation- Theory**
Course Code	**MPT025**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**
Name of the Course	**Functional Diagnosis and Principles of management in Neurorehabilitation- Practical**
Course Code	**MPT026**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Outcomes	
Student will be able to	
CO 1	Describe theories and application of Motor Control and Motor Learning in Neurorehabilitation.
CO 2	Understand the basis and principles of Neuroplasitcy and Recovery in Neurological conditions.
CO 3	Apply knowledge of Neurological system on functional impairment based on ICF model
CO 4	Formulate session, short term and long term goals based on principles of goal setting.
	Expected Competencies : Student will be able to
EC 1	Apply Motor control and Motor learning principles while designing management in Neurorehabilitation.
EC2	Integrate assessment based on ICF guidelines of WHO
EC3	Formulate goals based on principles of goal setting.

Unit	**Topics**	**No. of Hrs. (Lecture/ Seminar)**	**No. of Hrs. (Practical)**
1	Theories and application of principles of Motor control & Learning in Neurorehabilitation.	**60**	**40**
2	Neuroplasticity and its application in management of Neurological disorder		
3	Integration of assessment based on ICF guidelines of WHO		
4	Goal setting & principles of management Management of infectious diseases as COVID-19,Severe acute respiratory syndrome, Middle east respiratory syndrome and others		
Practicals – Integration of assessment based on ICF guidelines of WHO in simulated neurological conditions			
Total		**100**	

Recommended Books:

1. Umphred DA, Lazaro RT. Neurological rehabilitation. Elsevier Health Sciences; 2012 Aug 14.6th Edition
2. Shumway-Cook A, Woollacott MH. Motor control: translating research into clinical practice. Lippincott Williams & Wilkins; 2007.3rd Edition
3. O'Sullivan SB, Schmitz TJ, Fulk G. Physical rehabilitation. FA Davis; 2019 Jan 25.7th Edition
4. Johnstone M. The stroke patient: Principles of rehabilitation. Churchill Livingstone; 1976.

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

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks	Question X marks	Total marks
Short answers	4	5	4x5	20
Long answers	2	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	Adult/Paediatric Case (Emphasis on functional diagnosis and principles of management)	40
Q No 2	OSCE stations (4)	40
		Total = 80

Internal Examination Pattern (Practical/Clinical): 40 Marks

Adult/ Paediatric Case (Emphasis on functional diagnosis and principles of management)	20
OSCE (2 stations)	20
	Total = 40 M

Internal Assessment marks will be weighted out of 20 marks for theory and Practical/Clinical, respectively.

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Electrotherapeutics in Neurorehabilitation**
Course Code	**MPT027**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Outcomes	
Student will be able to	
CO 1	Apply knowledge of basics of electrotherapy principles in relation to neurological disorders
CO 2	Apply knowledge of physiology of pain in neurological conditions
CO 3	Evaluate and manage pain in neurological conditions
Expected Competencies :	
EC1	Student will be able to apply the knowledge of basics of electrotherapy principles in relation to neurological disorders
EC2	Student will be able to apply the knowledge of physiology of pain in neurological conditions
EC3	Student will be able to Evaluate and manage pain in neurological conditions

Unit	**Topics**	**No. of Hrs. (Lecture/ Seminar)**
1	• Neuro-physiology of muscle contraction. • Resting membrane potential and Action Potential • Nerve physiology, Types of Nerves and Muscle fibers • Physiology of Pain	40
2	Thermal agents and its application in Neurorehabilitation	
3	Physical agents and its application in Neurorehabilitation	
4	Applied Electrotherapy in Neurorehabilitation	
5	Pain assessment and management	
	Total	40

Recommended Books:

1. Kitchen S, Denegar CR, Saliba E, Saliba S. Electrotherapy: Evidence-Based Practice. 12th edition
2. Bellew JW, Michlovitz SL, Nolan Jr TP. Michlovitz's Modalities for Therapeutic Intervention. FA Davis; 2016. 6th edition.
3. Robertson V, Ward A, Low J, Reed A, MCSP D. Electrotherapy explained: principles and practice. Elsevier Health Sciences; 2006.4th Edition

EXAMINATION SCHEME

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 X marks	Total marks
Short answers	4	5	4x5	20
Long answers	2	10	2x 10	20
Total				**Total= 40**

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Neuro 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 Breaths with an advanced airway Opioid associated life- threatening emergency	3

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**

Recommended books-

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

EXAMINATION SCHEME

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 X marks	Total marks
Short answers	8	5	8x5	40
Total				**Total= 40**

Internal Examination Pattern Practical: 20 Marks

Short Case	20
	Total = 20 M

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro 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	understand basic concept of research, design, problems & sampling techniques of research.
CO 2	gain knowledge of various types of study designs and planning for the same.
CO 3	plan for a research study
CO 4	understand various methods of quantitative and qualitative data analyses
CO 5	describe the terminology in research, ethical issues and research process.
CO 6	describe important sources, and steps in reviewing of literature.
CO 7	understand sampling technique, research process, data collection, biostatics, correlation and statistical significance tests.
CO 8	identify and to be able to participate in or conduct descriptive, explorative, survey studies in physical therapy practice with statistics.
	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	carry out a thorough review of literature using available search engines and other legitimate sources
EC4	prepare a project budget and timeline
EC4	identify reliable and valid outcome measures relevant to the project
EC5	identify statistical methods to be employed in the project
EC6	understand ethics of research and plagiarism

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 b. Sampling technique, population, sample, sample size & determination, sampling methods, sampling error.	**10**
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	**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**

Recommended books-

1. Portney LG, Watkins MP. Foundations of clinical research: applications to practice. Upper Saddle River, NJ: Pearson/Prentice Hall; 2009.
2. Hicks C. Practical/Clinical research methods for physiotherapists. Edinburgh: Churchill Livingstone; 1988.
3. Kothari CR. Research methodology: Methods and techniques. New Age International; 2004.
4. Mahajan BK. Methods in biostatistics. Jaypee Brothers Publishers; 2002.

EXAMINATION SCHEME

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 X marks	Total marks
Short answers	8	5	8x5	40
Total				**Total= 40**

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Bioethics, Health Management and Administration**
Course Code	**MPTAECC003**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**

Course Outcomes	
CO 1	To describe the nature, meaning and principals of bioethics.
CO 2	To describe human dignity and human rights.
CO 3	To describe the benefit and harm of patient's right & dignity in Health care settings.
CO 4	To understand the role of constitutions and functions of W.H.O. and W.C.P.T and IAP.
CO 5	To be able to understand regarding management and administration, budget planning, leadership and teamwork.

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**.**	**15**

	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**.**	
	Total	**60**

Recommended books-

1. Pedagogy Physiotherapy Education –C S Ram
2. Physical Therapy Ethics: Gabard Donald L

EXAMINATION SCHEME

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	5	8 x 5	40
				Total= 40

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

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/Clinical 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 b. Relation between teaching and learning c. Dynamics of behavior d. Learning perception e. Individual differences	**5**

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

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	5	8 x 5	40
				Total= 40

Internal Examination Pattern Practical: 20 Marks

Short Case	20
	Total = 20 M

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.

Master of Physiotherapy MPT Neuro Physiotherapy Semester-II (7-12 months)

Course Code	Course Title	Course Description	Theory/ Seminar Hours	Practical	Research Hours	Clinical Hours
MPT028	Adult Neurological Assessment Skills and Management - Theory	Core Theory	40			
MPT029	Adult Neurological Assessment Skills and Management - Practical	Core Practical		40		
MPT030	Movement Analysis & Assistive Technology in Adult Neurorehabilitation - Theory	Core Theory	60			
MPT031	Movement Analysis & Assistive Technology in Adult Neurorehabilitation- Practical	Core Practical		40		
MPT032	Electrodiagnosis	Core Theory	40			
MPTAECC005	Legal Issues and Professional Ethics	Ability Enhancement Compulsory Course	40			
MPTGEC001/ MPTGEC002	Medical Device Innovation/ Scientific Writing	General Elective Course	40			
MPTSEC009/ MPTSEC010	Manual Mobilisation Techniques in Neurorehabilitation /Vestibular Rehabilitation	Skill Enhancement Elective Course	20	40		
MPTRP002	Research Protocol II				80	
MPTCLT002	Clinical Training II					360

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Adult Neurological Assessment Skills and Management -Theory**
Course Code	**MPT028**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**
Name of the Course	**Adult Neurological Assessment Skills and Management- Practical**
Course Code	**MPT029**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Outcomes	
Student will be able to	
CO 1	Evaluate a client with Neurological condition with detailed knowledge regarding approaches for various adult neurological assessment and management.
CO 2	Plan and deliver management strategies to a client with Neurological condition
CO 3	correlate clinical observations with investigations and be able to follow ICF pattern for identification of structural and functional impairments, identify difference in capacity and performance and factors affecting performance, and identify positive contributors and influence of negative barriers to treatment.
CO 4	Perform evaluation of disability, legislation & social care applicable to various neurological conditions as a mean of prevention and management.
	Expected Competencies : Student will be able to
EC 1	Have detailed knowledge regarding approaches for various adult neurological assessment and management.
EC2	Skill to adult neuro assessment skills, fitness testing and exercise prescription as per various neurological conditions based on ICF model.
EC3	Skill to apply disease specific and generic outcome measures used for neurorehabilitation along with their psychometric properties.

Unit	Topic	No. of Hrs. (Lecture/ Seminar)	No. of Hrs. (Practical/ Clinical)
1.	Adult Neuro Assessment skills and standardized outcome measures and PT Management of • Conditions of Central Nervous System • Conditions of Peripheral Nervous System • Conditions of Autonomic Nervous System	**40**	**40**
2.	Legislation & social care; Disability evaluation in adult Neurological condition.		
3.	Therapeutic skills: Neurophysiological approaches like Rood's, Brunnstrom's, PNF, Motor Relearning Programme, MFR, CIMT, Mental Imagery, Mirror Therapy, Virtual reality etc: Basic Principles and Philosophies of approaches, Principles and techniques of application		
4.	Routine investigations for Neurological conditions X ray, MRI, CT scan etc		
5.	Acute care of Adult neurological conditions: a. Acute Care: Physical Therapy Examination, Physiologic Monitors and patient-support equipments b. Bed rest, deconditioning and hospital acquired neuromuscular disorders		
6.	Fitness testing & exercise prescription in Neuro rehabilitation.		
	Total	**80**	

Recommended Books:

1. Brain's diseases of the nervous system by John Walton, 12th edition (Oxford University press)
2. Muscle and its diseases: An outline primer of basic science and clinical methods by Irwin M. Siegel (Year book medical publishers 1986) 1st edition
3. Adams & Victor's Principles Of Neurology 10 th edition by Victor, Maurice; Ropper,Allan H. published by McGraw-Hill
4. Nerve and nerve injury by Sydney Sunderland, Churchill living stone. (1st edition)
5. Neurological Rehabilitation, Darcy A. Umphred, 6th edition, 2013 MOSBY Elsevier.
6. Cash's Textbook of Neurology for Physiotherapists, Patricia A. Downie, 4th edition, 1992, Jaypee Brothers.
7. Spinal cord injury functional rehabilitation by Martha Freeman Somers, 4th edition (Prentice Hall publication)

8. Physiotherapy in disorders of the brain : A clinical guide by Janet H.Carr and Roberta B. Shepherd (William Heinemann medical books limited)
9. Tetraplegia and Paraplegia, Ida Bromley; 6th edition
10. Bickerstaff's neurological examination in clinical practice by John Spillane, 6th edition (Blackwell science limited 1996)
11. Illustrated neurology and neurosurgery by Kenneth Lindsay and Ian Bone 5th Edition (Churchill Livingston, 2004)
12. Neurological differential diagnosis by John Patten , 2 nd edition Springler
13. Dejong's The Neurologic Examination by Campbell 7th edition 2013
14. Neurological Physiotherapy, Maria Stokes
15. Neurologic Intervention for Physical Therapist Assistant, Martin Kessler, 2nd Edition, 2008, W.B.Saunders Company Ltd.
16. Functional neurorehabilitation through the life span by Dolores B. Bertoti 1st edition (F.A. Davis Company 2004)
17. Brunnstrom's movement therapy in hemiplegia: A neurophysiological approach by Kathryn A. Sawner and Jeanne M. La Vigne, 2nd edition (Lippincott Company 1992)
18. PNF in practice: Susan Adler 3rd edition 2007
19. Stroke Rehabilitation: Guidelines for exercise and training to optimize motor skill By Janet Carr and R. Shepherd 1st edition (Elsevier, 2003)
20. Neurological Rehabilitation, Optimizing motor performance by Janet Carr and R. Shepherd 2nd edition (Butterworth and Heinemann Ltd, 2010)
21. A Motor Relearning Programme for Stroke by Janet Carr and R. Shepherd 2nd edition (Butterworth and Heinemann Ltd, Oxford Publication)
22. Right in the middle : Selective Trunk Activity in the Treatment of Adult Hemiplegia by Davis Patricia, Springler 2nd edition (2006)
23. Steps to follow by Davis Patricia, 2nd edition (2000) Springler
24. Stroke rehabilitation: A functional approach by Gillen , Elsevier (4th edition)

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

Internal examination pattern (Theory): 40marks

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

Practicalquestion paper pattern for University Semester Examinations under CBCS - 80 marks

Exercise	Description	Marks
Q No 1	Adult Case (Emphasis on functional diagnosis and principles of management)	40
Q No 2	OSCE stations (4)	40
		Total = 80

Internal Examination Pattern Practical: 40 Marks

Adult Case (Emphasis on functional diagnosis and principles of management)	20
OSCE stations (2)	20
	Total = 40 M

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

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Movement Analysis & Assistive Technology in Adult Neurorehabilitation- Theory**
Course Code	**MPT030**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**
Name of the Course	**Movement Analysis & Assistive Technology in Adult Neurorehabilitation – Practical**
Course Code	**MPT031**
Credit per Semester	**1 credit**
Hours per Semester	**40 hours**

Course Outcomes	
Student will be able to	
CO 1	Identify the essential components of task and perform a task analysis in neurological conditions
CO 2	Apply knowledge of assistive technology applicable to various neurological conditions as a mean of prevention and management.
	Expected Competencies : Student will be able to
EC 1	Perform task analysis of movement dysfunction in adult neurological conditions
EC2	Prescribe appropriate assistive technology applicable to various neurological conditions as a mean of prevention and management.

Sr. No.	**Topics**	**No. of Hrs. (Lecture/ Seminar)**	**No. of Hrs. Practical**
1.	Analysis of movement for reach, grasp, manipulation, sit to stand, squatting etc.	**60**	**40**
2.	Assistive technology: Principles & practice in Neuro rehabilitation		
	Total	**100**	

Recommended Books:

1. Stroke Rehabilitation: Guidelines for exercise and training to optimize motor skill ByJanet Carr and R. Shepherd 1st edition (Elsevier, 2003)
2. Neurological Rehabilitation, Optimizing motor performance by Janet Carr and R. Shepherd 2nd edition (Butterworth and Heinemann Ltd, 2010)
3. Orthotics and Prosthetics in Rehabilitation, By Michelle M. Lusardi, PhD, PT and Caroline C Nielsen, PhD - Butterworth-Heinemann. 3 nd edition

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

Internal examination pattern (Theory): 40marks

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

Internal Assessment marks will be weighted out of 20 marks.

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

Mid Semester Examination Pattern Practical: 40 Marks

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

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Electrodiagnosis**
Course Code	**MPT032**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Outcomes	
Student will be able to	
CO 1	Have detailed knowledge regarding various neuro physiology of muscle and effect of various current on muscle applicable for neurological condition.
CO 2	Knowledge regarding various advanced electro diagnosis and its applicability to various pediatric and adult neurological conditions
Expected Competencies : Student will be able to	
EC 1	Perform basic electrodiagnositic testing
EC2	Apply the knowledge of advanced electro diagnosis for clinical decision making.

Unit	**Topics**	**No. of Hrs. (Lecture/ Seminar)**
1	Basic Electro diagnosis: Use of various low frequency currents in Electrodiagnosis – Faradic, Galvanic and Micro-currents. Strength-Duration curve, F-G Tests.	40
2	Advanced Diagnostic Skills in Electrophysiology: a. Principles of application of EMG& NCV b. Application of EMG& NCV in Neurogenic and myogenic disorders c. Single fiber EMG d. Repetitive Nerve Stimulation e. Evoked Potentials: Brainstem, Auditory, Visual, Motor and Cognitive	
	Total	40

Recommended Books:

1. Electrodiagnosis in disease of nerve and muscles. Principles and Practice; Jun kimura,4th Edition. (2014
2. Nerve and nerve injury by Sydney Sunderland, Churchill living stone. (1st edition)

EXAMINATION SCHEME

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 X marks	Total marks
Short answers	8	5	8 x 5	40
Total				**Total= 40**

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Legal issues and Professional ethics**
Course Code	**MPTAECC005**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Outcomes	
CO 1	To provide the basis for participation in clinical risk management, risk management and patient safety committees and for further training as a risk / patient safety
CO 2	To ensure improvement of patient safety and care, to the prevention and management of legal claims and to healthcare delivery in general
CO 3	To understand the professional ethics and responsibility as a therapist.
	Expected Competencies: Student will be able to
EC1	Understand the legal framework encompassing the Physiotherapy practice in India and abroad.
EC2	Understand the importance of the statutory bodies who regulate the profession.
EC3	Understand the rights of the patients, importance of maintaining confidentiality and abide by the professional ethics.

Unit	**Topics**	**No. of Hrs.**
1	**Healthcare Delivery System In India** • Healthcare delivery system in India at Primary, Secondary and Tertiary level • Community participation in healthcare delivery system • Health system in Private Sector • National Health Mission • National Health Policy • National Five year plans • Issues in Health Care Delivery System in India	**5**
2	**Professional Issues** • Registration and the Role of the Statutory Bodies(WCPT, State Council, IAP) • Professional Conduct and Ethics • Education and the Physiotherapist	**10**

3	**Patient-Centred Care** • Rights of Patients • Consent and Information Giving • Confidentiality and Privacy • Access to Records and Information	**10**
4	**Professional Accountability** • Direction and supervision • Liability, Negligence, Malpractice	**10**
5	**Legal Framework** • Definition and approach to Medicolegal case • Medical Litigation Issues: Plaintiff and Defendant perspectives • Professional Indemnity for Physiotherapy Practitioners	**5**
	Total	**40**

EXAMINATION SCHEME

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

Recommended books-

1. Legal aspects of documenting: 2nd edition. Scott, Ronald. Jones & Bartlett Learning publication.
2. Public Power & Administration. 1st edition. Peter Wilenski. Hale & Iremonger pvt. Ltd.
3. APTA guidelines for standards of physical therapy practice. Available from: URL: http://www.apta.org/uploadedFiles/APTAorg/About_Us/Policies/Practice/StandardsPractice. pdf.

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Medical Device Innovation**
Course Code	**MPTGEC-001**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

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 • 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**
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**

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.

EXAMINATION SCHEME

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

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Scientific Writing**
Course Code	**MPTGEC-002**
Credits per semester	**2 credits**
Hours per semester	**40 hours**

Course Outcomes Students will be able to	
CO 1	Understand scientific writing process, components of a research paper, formulation of research problem
CO 2	Methods of literature search
CO 3	Attain skills of organizing and composing a scientific paper
CO4	Analyze and review scientific papers
CO5	comprehend ethics of scientific writing
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. Plagarism 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**
	Total	**40**

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.

EXAMINATION SCHEME

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 10	5	8x5	40
				Total= 40

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	Manual Mobilisation Techniques in Neurorehabilitation
Course Code	**MPTSEC009**
Credits per semester	**2 credits**
Hours per semester	**60 Hours**

Course Outcomes Students will be able to	
CO 1	Apply manual techniques of mobilsation in patient with neurological dysfunction
CO 2	Study objective improvement in mobility following mobilisation
CO 3	Demonstrate efficacy of mobilisation in adult and paediatric neurological conditions
Expected Competencies	
EC1	Apply techniques in patient with Neurological dysfunction
EC2	Study objective improvement in mobility following intervention

Sr. No.	**Topics**	**No. of Hrs. (Lecture/ Seminar)**	**No. of Hrs. Practical**
1	Mobilisation of costovertebral, costotransverse and intervertebral zygapophyseal thoracic joints	**20**	**40**
2	Soft tissue mobilization		
3	Upper thoracic functional mobilisation , post ant glides , gentle rotatory oscillation, unilateral , alternating levels ,		
4	Thoracic self mobilization , functional rib mobilization		
5	Practical applications – case studies		
Total		**60**	

Reference books:

1. Mulligan B. Manual Therapy: NAGS, SNAGS, MWMS, etc, 5 th. Plane View Services: New Zealand. 2006.

EXAMINATION SCHEME

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 10	5	8x5	40
				Total= 40

Name of the Programme	**Master of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Vestibular Rehabilitation**
Course Code	**MPTSEC010**
Credits per semester	**2 credits**
Hours per semester	**60 Hours**

Course Outcomes Students will be able to	
CO 1	Explain the anatomy and physiology of the vestibular system , recognize and state the clinical significance of diagnostic studies and lab data.
CO 2	Identify the signs, symptoms and co-existing problems of the client.
CO 3	Based on evaluation findings and medical records, formulate and give rationale for plan of care.
Expected Competencies	
EC1	Recognize disorders that may affect the vestibular system but are not appropriate for treatment by physical therapists
EC2	Demonstrate the assessment and treatment of unilateral and bilateral vestibular hypofunction, benign paroxysmal positioning vertigo, central vestibular disorders.
EC3	Perform appropriate therapeutic procedures

Sr. No.	**Topics**	**No. of Hrs. (Lecture/ Seminar)**	**No. of Hrs. Practical**
1	Lecture: Anatomy & Physiology of the Vestibular System	**20**	**40**
2	Lecture: Role of vestibular system in postural control		
3	Lecture: Assessment of Balance and vestibular ocular reflex		
4	Practical/Clinical: Balance and Gait Assessment		
5	Practical/Clinical: Oculomotor Exam		
6	Lecture: Assessment of Subjective Complaints		
7	Lecture: Vestibular Function Tests: Caloric & VEMP		
8	PRACTICAL/CLINICAL : Vestibular Function Tests: Caloric & VEMP		
9	demo - BPPV – management of PC		
10	demo - BPPV – management of AC, HC		
11	Practical/Clinical: BPPV – assessment and treatment		
12	Treatment theory, goals, development of plan of care		
13	Treatment progression and decision making		
Total		**60**	

Reference Books:

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

EXAMINATION SCHEME

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

Theory for internal assessment under CBCS - 20 Marks
Practicaldemo for internal assessment - 20 Marks

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

Master of Physiotherapy (MPT) Neuro Physiotherapy Semester-III (13-18 months)

Course Code	Course Title	Course Description	Theory/ Seminar Hours	Practical	Research Hours	Clinical Hours
MPT033	Paediatric Neurological Assessment Skills and Management - Theory	Core Theory	40			
MPT034	Paediatric Neurological Assessment Skills and Management - Practical	Core Practical		40		
MPT035	Movement Analysis & Assistive Technology in Paediatric Neurorehabilitation - Theory	Core Theory	60			
MPT036	Movement Analysis & Assistive Technology in Paediatric Neurorehabilitation - Practical	Core Practical		40		
MPT037	Early Intervention in neonates & infants - Theory	Core Theory	40			
MPT038	Early Intervention in neonates & infants - Practical	Core Practical		40		
MPTSEC003	Application of Yoga in Physiotherapy	Skill Enhancement compulsory Course	20	40		
MPTAEEC002/ MPTAEEC007	Exercise Psychology / Palliative Care in Neurological conditions	Ability Enhancement Elective Course	40			
MPTRP003	Research Data Collection and Analysis				80	
MPTCLT003	Clinical Training III					360

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Pediatric Neurological Assessment Skills and Management -Theory**
Course Code	**MPT033**
Credit per Semester	**2 credits**
Hours per Semester	**40**
Name of the Course	**Pediatric Neurological Assessment Skills and Management- Practical**
Course Code	**MPT034**
Credit per Semester	**1 credits**
Hours per Semester	**40**

Course Outcomes Students will be able to	
CO 1	To introduce the students to the concepts related to Pediatric Neuro Assessment, task analysis and advances in treatment techniques and approaches for various disorders, outcome measures, disability evaluation and evaluation
Expected Competencies	
EC1	Have detailed knowledge regarding approaches for various Pediatric neurological assessment and management
EC2	Be able to correlate clinical observations with investigations and be able to follow ICF pattern for identification of structural and functional impairments, identify difference in capacity and performance and factors affecting performance, and identify positive contributors and influence of negative barriers to treatment.
EC3	Skill to apply pediatric neuro assessment skills as per various neurological conditions based on ICF model and apply disease specific and generic outcome measures used for neurorehabilitation along with their psychometric properties.

Unit	**Topic**	**No. of Hrs. (Lecture/ Seminar)**	**No. of Hrs. Practical**
1.	Development of Postural Control Neural Basis of Growth & Development	**40**	**40**
2.	Pediatric Neuro Assessment skills and standardized outcome measures and PT Management of • Conditions of Central Nervous System • Conditions of Peripheral Nervous System • Conditions of Autonomic Nervous System		
3.	Advanced Therapeutic Skills: NDT, Principles of SI, Vojta's, Brazelton's, MFR, CIMT, Mental Imagery, Mirror Therapy, Virtual reality etc.: Basic Principles and Philosophies of approaches, Principles and techniques of application		

4.	Routine investigations for Pediatric Neurological conditions X ray, MRI, CT scan etc		
5.	Acute care of Pediatric neurological conditions: c. Acute Care: Physical Therapy Examination, Physiologic Monitors and patient-support equipments d. Bed rest, deconditioning and hospital acquired neuromuscular disorders		
Total		**80**	

Recommended Books:

1. Motor control: Translating research into clinical practice by Anne Shumway – Cook And Marjorie Woollacott, 3 edition (Lippincott Williams and Wilkins)
2. Neurological Rehabilitation, Darcy A. Umphred, 6th edition, 2013 MOSBY Elsevier.
3. Cash's Textbook of Neurology for Physiotherapists, Patricia A. Downie, 4th edition, 1992, Jaypee Brothers.
4. Physiotherapy in disorders of the brain : A clinical guide by Janet H.Carr and Roberta B. Shepherd (William Heinemann medical books limited)
5. The development of the infant young child: Normal and Abnormal by R.S. Illingworth, 10th edition (Churchill Livingstone 2013)
6. Pediatric Physical Therapy, Jan Stephen Tecklin, 4th (2008) editions, Lippincott Williams & Wilkins.
7. Physical Therapy for Children, Suzann K.Campbell, 4th edition, 2011, Saunders Elsevier.
8. Physiotherapy for Children, Teresa Pountney, 2007, Butterworth Heinemann Elsevier.(1st edition)
9. Meeting the Physical Therapy Needs of Children, Susan K.Effgen, 2013 (2nd edition), F.A.Davis Company, Philadelphia.
10. Physiotherapy in Pediatrics, Roberta B. Shepherd, 3rd edition, 1995, Butterworth Heinemann
11. Physiotherapy and the growing child, Yvonne R Borns& Julie MacDonald, 1996, W.B.Saunders Company Ltd.
12. Pediatric Rehabilitation, Gabriella E. Molnar, 3rd edition, 1999. Hanly & Belfus, Philadelphia.
13. Pediatric rehabilitation. Principles and practice. Micheal Alexander and Dennis Mathews 2015 (5th edition)
14. Treatment of Cerebral Palsy & Motor Delay, Sophie Levett, 5th edition. Blackwell Publishing.
15. Pediatric Therapy, A Systems Approach, Susan Miller Porr, 1999, F.A.Davis Company (1st edition).
16. Cerebral palsy, Freeman miller, (2005)

17. Components of typical and atypical motor development, Lois Bly;2011; Neurodevelopmental Treatment Association
18. Sensory Integration : theory and practice; Anne G. Fisher, Elizabeth A. Murray, Anita C. Bundy.(2002)
19. Illustrated neurology and neurosurgery by Kenneth Lindsay and Ian Bone 5th Edition (Churchill Livingston, 2004)
20. Pediatric Physical Examination, Karen G. Dunderstadt, 2nd Edition 2006, MOSBY Elsevier.
21. Clinics in Physical Therapy Assessment in Early Infancy, Edited by Irma. Wilhelm, 1993, Churchill Livingstone.
22. Motor Assessment of the Developing Infant ,1st edition Martha Piper, 1994, Saunders
23. Orthotics and Prosthetics in Rehabilitation, By Michelle M. Lusardi, PhD, PT and Caroline C Nielsen, PhD - Butterworth-Heinemann. 3 nd edition
24. Neuro developmental treatment approach : theoretical foundations and principles of clinical practice by Janet M. Howle (NDTA 2016)

Journals:

1. Pediatric Physical Therapy
2. Journal of Neurological Sciences
3. Indian Journal of Cerebral Palsy.
5. Developmental Medicine & Neurology
6. Journal of Neurosciences
7. Journal of Neurological Physical Therapy
8. Journal of Paediatric Neurosciences
9. Archives of Physical Medicine & Rehabilitation
10. Neurology & Neurorehabilitation

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

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks/ question	Question X marks	Total marks
Short answers	4	5	4x5	20
Long answers	2	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	Pediatric Case (Emphasis on functional diagnosis and principles of management)	40
Q No 2	OSCE stations (4)	40
		Total = 80

Internal Examination Pattern Practical: 40 Marks

Pediatric Case (Emphasis on functional diagnosis and principles of management)	20
OSCE stations (2)	20
	Total = 40 M

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

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Movement Analysis & Assistive Technology in Paediatric Neurorehabilitation- Theory**
Course Code	**MPT035**
Credit per Semester	**3**
Hours per Semester	**60**
Name of the Course	**Movement Analysis & Assistive Technology in Paediatric Neurorehabilitation- Practical**
Course Code	**MPT036**
Credit per Semester	**1**
Hours per Semester	**40**

Course Outcomes Students will be able to	
CO 1	Focus on understanding of movement analysis and application of assistive technology
Expected Competencies	
EC1	Have detailed knowledge about task analysis
EC2	Knowledge and application of assistive technology applicable to various neurological conditions as a mean of prevention and management.

Sr. No.	Topics	No. of Hrs. (Lecture/ Seminar)	No. of Hrs. Practical
1.	Analysis of movement for reach, grasp, manipulation, sit to stand, squatting etc. in pediatric population	**60**	**40**
2.	Assistive technology: Principles & practice in Neuro rehabilitation		
	Total	**100**	

Recommended Books:

1. The development of the infant young child: Normal and Abnormal by R.S. Illingworth, 10th edition (Churchill Livingstone 2013)
2. Components of typical and atypical motor development, Lois Bly; 2011.3 rd Edition
3. Neuro developmental treatment approach : theoretical foundations and principles of clinical practice by Janet M. Howle (NDTA 2016) 4th edition
4. Sensory Integration : theory and practice; Anne G. Fisher, Elizabeth A. Murray, Anita Bundy.(2002) 2nd edition
5. Orthotics and Prosthetics in Rehabilitation, By Michelle M. Lusardi, PhD, PT and Caroline C Nielsen, PhD - Butterworth-Heinemann. 2nd edition

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

Internal examination pattern (Theory): 40marks

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

Internal Assessment marks will be weighted out of 20 marks.

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

Mid Semester Examination Pattern Practical: 40 Marks

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

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Early Intervention in neonates & infants -Theory**
Course Code	**MPT037**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**
Name of the Course	**Early Intervention in neonates & infants -Practical**
Course Code	**MPT038**
Credit per Semester	**1 credits**
Hours per Semester	**40 hours**

Course Outcomes Students will be able to	
CO 1	Focus on understanding of assessment and management of high risk infants
Expected Competencies	
EC1	Have detailed knowledge regarding high risk profiles, evaluation in NICU and management strategies

Unit	**Topics**	**No. of Hrs. (Lecture/ Seminar)**	**No. of Hrs. Practical**
1.	Environment of NICU, High risk Infant profiles	40	40
2.	Neuro Assessment and standardized outcome measures in neonates and infant		
3.	Management of High risk Infant		
	Total	80	

Recommended Books:

1. Neurological Rehabilitation, Darcy A. Umphred, 6th edition, 2013 MOSBY Elsevier.
2. Pediatric Physical Therapy, Jan Stephen Tecklin, 4th (2008) editions, Lippincott Williams & Wilkins.

EXAMINATION SCHEME

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 X marks	Total marks
Short answers	8	5	8 x 5	40
Total				**Total= 40**

Mid Semester Examination Pattern Practical: 40 Marks

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

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro 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

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 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

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.

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Exercise Psychology**
Course Code	**MPTAEEC-002**
Credit per Semester	**2 credits**
Hours per Semester	**40 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 well being, discuss how psychological factors that influence exercise behavior.
CO 2	discribe 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 adherance to positive health behavior : social factors, cultural factors	**5**
4	Group dynamics	**5**
5	Psychological skills training – relaxation, yoga, positive reinforcement, mental imagery	**20**
	Total	**40**

EXAMINATION SCHEME

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 X marks	Total marks
Short answer questions	8 out of 9	5	8 x 5	40
				Total= 40

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 - Neuro Physiotherapy**
Name of the Course	**Palliative Care in Neurological Conditions**
Course Code	**MPTAEEC-007**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**

Course Outcomes **At the end of the course , the candidate will be able to**	
CO 1	Describe the philosophy and principles of hospice and palliative care that can be integrated across settings to affect quality care at the end of life.
CO 2	Apply the Palliative Care approach to all patients with Neurological terminal illnesses
CO 3	Accurately and clearly convey needed information and explanations to patients, families, and colleagues
CO 4	Demonstrate a team-based approach, by involving and working together with other members of the palliative care team, other related disciplines, and community agencies, depending on patient needs
CO5	Demonstrates ability to develop rapport and trust with patients and families

Unit	**Topics**	**No. of Hrs.**
1.	Introduction to Palliative Care	**5**
2.	Professionalism and Multidisciplinary team approach	**5**
3.	Palliative care in life limiting neurological conditions: End of life care in progressive adult and pediatric neurological conditions aspects in palliative care	**5**
4.	Communication regarding end of life care	**5**
5.	Holistic Care : Psychological, Physical, Spiritual	**10**
6.	Management of Pain and other Symptoms	**10**
	Total	**40**

EXAMINATION SCHEME

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

Recommended books-

1. Taylor, J., Simader, R., & Nieland, P. (Eds.). (2013). *Potential and Possibility: Rehabilitation at End of Life: Physiotherapy in Palliative Care*. Elsevier, Urban & Fischer. 2nd Edition

Master of Physiotherapy MPT Neuro Physiotherapy Semester-IV (19-24 months)

Course Code	Course Title	Course Description	Theory/ Seminar Hours	Practical	Research Hours	Clinical Hours
MPT039	Recent advances in management of Adult Neurological Conditions - Theory	Core Theory	40			
MPT040	Recent advances in management of Adult Neurological Conditions - Practical	Core Practical		80		
MPT041	Recent advances in management of Paediatric Neurological Conditions - Theory	Core Theory	60			
MPT042	Recent advances in management of Paediatric Neurological Conditions - Practical	Core Practical		40		
MPTAECC007	ICU Management in Neurorehabilitation	Ability Enhancement Compulsory Course	20	40		
MPTAEEC003/ MPTAEEC004	Radiological Diagnosis / Clinical Nutrition	Ability Enhancement Elective Course	40			
MPTAECC006	Intellectual Property Rights and Publication Ethics	Ability Enhancement Compulsory Course	40			
MPTRP004	Research Dissertation submission and manuscript preparation				80	
MPTCLT004	Clinical Training IV					360

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Recent Advances in management of adult Neurological conditions- Theory**
Course Code	**MPT039**
Credit per Semester	**2 credits**
Hours per Semester	**40 hours**
Name of the Course	**Recent Advances in management of adult Neurological conditions- Practical**
Course Code	**MPT040**
Credit per Semester	**2 credits**
Hours per Semester	**80 hours**

Course Learning Outcomes	
Student will be able to	
CO 1	Review literature for recent advances in assessment and management of adult neurological disorders
CO 2	demonstrate clinical skills relevant to recent advances in Physiotherapy treatment techniques pertinent to adult neurological disorders
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	institute relevant techniques for management adult neurological disorders to improve functional impairments
CO 5	Plan short and long term goals for Physiotherapy treatment and institute Physiotherapy based on the recent advances to enhance functional abilities, improve mobility, posture ,strengthen muscles, enhance wound/operative scar healing , relieve pain, musculoskeletal facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skillful use of various therapeutic exercise techniques
CO 6	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. (Lecture/ Seminar)	No. of Hrs. (Practical/ Clinical)
1.	Recent advances in management of Cerebrovascular Accidents	5	10
2.	Recent advances in management of Traumatic Brain Injury	5	10
3.	Recent advances in management of Neurodegnerative disorders	5	10
4.	Recent advances in management of Cerebellar disorders	5	10
5.	Recent advances in management of Traumatic / Non Traumatic Spinal Cord Injury	5	10
6.	Recent advances in management of Motor Neuron Diseases	5	10
7.	Recent advances in management of patients with Disorders of Peripheral and Cranial Nerves	5	10
8.	Recent advances in management of disorders of Neuromuscular Junction	5	10
Total		**40**	**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

Internal examination pattern (Theory): 40marks

Question type	No. of questions	Marks	Question X marks	Total marks
Short answers	4	5	4x5	20
Long answers	2	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	Adult Case (Emphasis on recent advances on assessment, outcome measures and management)	40
Q No 2	OSCE Stations (4)	40
		Total = 80

Internal Examination Pattern Practical: 40 Marks

Adult Case (Emphasis on recent advances on assessment, outcome measures and management)	20
OSCE Stations (2)	20
	Total = 40 M

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

Name of the Programme	**Master of Physiotherapy (MPT) Specialty – Neuro Physiotherapy**
Name of the Course	**Recent advances in management of Paediatric Neurological Conditions- Theory**
Course Code	**MPT-041**
Credit per Semester	**3 credits**
Hours per Semester	**60 hours**
Name of the Course	**Recent advances in management of Paediatric Neurological Conditions- Practical**
Course Code	**MPT-042**
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 Pediatric neurological disorders
CO 2	demonstrate clinical skills relevant to recent advances in Physiotherapy treatment techniques pertinent to pediatric neurological disorders
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	institute relevant techniques for management pediatric neurological disorders to improve functional impairments
CO 5	Plan short and long term goals for Physiotherapy treatment and institute Physiotherapy based on the recent advances to enhance functional abilities, improve mobility, posture ,strengthen muscles, enhance wound/operative scar healing , relieve pain, musculoskeletal facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skillful use of various therapeutic exercise techniques
CO 6	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 Cerebral Palsy	10
2	Recent advances in management of Spina Bifida	5
3	Recent advances in management of Genetic Disorders	10

4	Recent advances in management of Motor Neuron Diseases	10
6	Recent advances in management of infectious disorders of CNS	5
7	Recent advances in management of extrapyramidal disorders of Pediatric onset	10
8	Practical/Clinical Application of recent advances in management of Pediatric Neurological Conditions	**50**
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

Internal examination pattern (Theory): 40marks

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

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

Exercise	Description	Marks
Q No 1	Paediatric Case (Emphasis on recent advances on assessment, outcome measures and management)	40
Q No 2	OSCE Stations (4)	40
		Total = 80

Internal Examination Pattern (Practical/Clinical): 40 Marks

Adult/Paediatric Case (Emphasis on recent advances on assessment, outcome measures and management)	20
OSCE Stations (2)	20
	Total = 40 M

Internal Assessment marks will be weighted out of 20 marks for theory and Practical/Clinical, respectively

Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**ICU Management in Neurorehabilitation**
Course Code	**MPTAECC007**
Credit per Semester	**2**
Hours per Semester	**60**

Course Outcomes	
Student will be able to	
CO 1	understand structural, functional impairment, evaluation of physical and neurological function of patients in the Intensive care unit
CO 2	describe the subjective and objective assessment of neurological function in ICU patients
CO 3	describe the different outcome measures and apply knowledge of basic investigative approaches in the medical system & surgical intervention regimes related to neurological impairment.
CO 4	form goals for management, prevent deleterious effects of immobilization /prolonged bed rest, select strategies for cure, care and prevention; adopt restorative & rehabilitative measures for maximum possible functional independence of a patient in the ICU following conservative or surgical management of neurological disease.
	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, subjective and objective in spontaneously breathing patients and ventilator settings in patients being artificially ventilated
EC7	Formulate 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 through skilful use of various therapeutic exercise techniques

Unit	**Topics**	**No. of Hrs. (Lecture/ Seminar)**	**No. of Hrs. (Practical/ Clinical)**
1.	Acute care of adult: Physical Therapy Examination, Physiologic	20	
2.	Monitors and patient-support Equipments: 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.		40
3.	Deleterious effects of prolonged bed rest in musculoskeletal, neurologic, cardiovascular, respiratory, metabolic, urinary and integumentary system		
4.	Bronchial Hygiene, lung re-expansion therapy, respiratory muscle strengthening, positioning, relaxation, postural retraining, wound management, nutritional aspects		
5.	Optimizing physical activity in ICU		
Total		**60**	

Recommended Books:

1. Irwin, S., & Tecklin, J. S. (Eds.). (2004). *Cardiopulmonary physical therapy: A guide to practice*. Mosby Incorporated. 3rd Edition
2. Dean, E., & Frownfelter, D. L. (2006). *Cardiovascular and pulmonary physical therapy: Evidence and practice*. Mosby.2nd edition
3. Burton, G. G., Hodgkin, J. E., & Ward, J. J. (Eds.). (1991). *Respiratory care: a guide to clinical practice*. Lippincott Williams & Wilkins. 3rd Edition
4. Luther T. Clark, Cardiovascular Disease and Diabetes. McGraw Hill Professional, 2007
5. Chang, D. W. (2013). *Clinical application of mechanical ventilation*. Cengage Learning.
6. Pierce, L. N. (Ed.). (2007). *Management of the mechanically ventilated patient*. Saunders.

EXAMINATION SCHEME

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 X marks	Total marks
Short answers	8	5	8 x 5	40
Total				**Total= 40**

Internal Examination Pattern (Practical/Clinical): 40 Marks

Adult/Paediatric Case (Emphasis on recent advances on assessment, outcome measures and management)	20
OSCE Stations (2)	20
	Total = 40 M

Internal Assessment marks will be weighted out of 20 marks for theory and Practical/Clinical, respectively

Ability Enhancement Elective Course	
Name of the Programme	**Master of Physiotherapy (MPT) Specialty – Neuro Physiotherapy**
Name of the Course	**Radiological Diagnosis**
Course Code	**MPTAEEC003**
Credits per semester	**2 credit**
Hours per semester	**40 hours**

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 radiographs
CO 4	Outline findings of MRI, CT scans and correlate the findings to functional impairments

Sr. No.	Topics	No. of Hrs.
1	Radiology as an adjunct to clinical examination and diagnosis.	**3**
2	Introduction to basic radiology and its principles	**3**
3	Radiograph – Reading and interpretation, Reporting of chest radiograph	**8**
4	High resolution Computed tomography (HRCT) of chest - Reading and interpretation, Reporting of chest radiograph	**6**
5	Magnetic resonance imaging	**8**
6	Difference between adult and pediatric radiography.	**6**
7	Pediatric Radiographs	**6**
Total		**40**

EXAMINATION SCHEME

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 10	5	8x5	40
				Total= 40

Reference Books:

1. Debnath, J. (2016). Textbook of radiology for residents and technicians. *Astrocyte*, *2*(4), 221-221. 5th Edition

Ability Enhance Elective Course	
Name of the Programme	**Master Of Physiotherapy (MPT) Specialty - Neuro Physiotherapy**
Name of the Course	**Clinical Nutrition**
Course Code	**MPTAEEC004**
Credits per semester	**2 credit**
Hours per semester	**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 Hrs.
1	Role and importance of nutrition and diet – • Nutritional problems confronting our country, • Concept of Community Nutrition, • Methods of assessment of nutritional status	4
2	Diet Therapy:	4

	• Routine hospital diet, • Types of diet - Regular diet, Light diet, Soft Diet, Full liquid diet.	
3	Malnutrition & Infection : • Strategies to combat Nutritional problems – Fortification, supplementation, - Immunization Programme	4
4	Diet in fevers and infections – Typhoid, Malaria and Tuberculosis.	4
5	Diet in gastro intestinal disorders: Diarrhea, Constipation, Peptic ulcer	4
6	Diet in Diabetes mellitus – Classification, predisposing factors, Diagnosis, Dietary management.	4
7	Diet in Cardiovascular diseases – Dietary management in Atherosclerosis and hypertension.	4
8	Diet in diseases of liver and gall bladder.	4
9	Diet in Renal diseases	4
10	Nutritional Education - Importance of nutrition education. Nutrition education methods: - Posters, Charts, Audio visual aids, lectures	4
Total		**40**

EXAMINATION SCHEME

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 10	5	8x5	40
				Total= 40

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 Compulsory Course	
Name of the Programme	**Master Of Physiotherapy (MPT) Specialty –Neurophysiotherapy**
Name of the Course	**Intellectual property rights and publication ethics**
Course Code	**MPTAEEC005**
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 Hrs.
1	Introduction to Intellectual property rights	**5**
2	Patents and Trademarks	**5**
3	Copyright and related laws	**5**
4	Introduction to Publication ethics – Aim and Scope	**5**
5	Categories of publication / scientific misconduct – Falsification, Fabrication of data, Plagiarism, Unjustified authorship, Duplicate publication, Redundant publication.(Salami publication), Sanctions	**5**
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	**5**
8	Appeals and corrections	**3**
9	Data protection legislation	**3**
Total		**40**

EXAMINATION SCHEME

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 10	5	8x5	40
				Total= 40

Reference Books:

1. Campbell, R., Pentz, E., & Borthwick, I. (Eds.). (2012). *Academic and professional publishing*. Elsevier 2nd edition

2. Mayer, T., & Steneck, N. (2012). *Promoting research integrity in a global environment*. World Scientific. 2nd edition