Dr. D.Y.PATIL VIDYAPEETH, PUNE

(Deemed To Be University)

Syllabus for
Master of Physiotherapy
(MPT)

From 2021-2022 onwards

Revised upto Dec. 2021

REGULATION FOR THE POST GRADUATE DEGREE IN PHYSIOTHERAPY
MASTER OF PHYSIOTHERAPY (MPT)

PREAMBLE:

The Master of Physiotherapy course is a 2-year fulltime program with *4 Semesters* leading to the degree that equips the student with analytical, evidence based and Hands on learning skills. The program is generic in nature and has a component of additional learning of one area leading to an elective in that area. Psychosomatic aspects of training are a component through all the elective areas.

GRADUATE ATTRIBUTES:

No.	Attributes
1	Physiotherapy Expert
2	Communicator
3	Researcher
4	Facilitator of learning and Lifelong Learner
5	Leader and team member
6	Manager and Entrepreneur
7	Professionalism, Employability and Accountability
8	Social Responsibility

PROGRAM OUTCOMES:

No.	*Programme Outcomes for MPT programme*
PO 1	*Knowledge and Skills*
PO 2	*Planning and Problem-Solving Abilities*
PO 3	*Communication*
PO 4	*Research Aptitude*
PO 5	*Professionalism and Ethics*
PO 6	*Leadership*
PO 7	*Societal Responsibilities*
PO 8	*Environment and Sustainability*
PO 9	*Lifelong Learner*

NOMENCLATURE:

The course will be referred to as a Master of Physiotherapy (MPT) with their specialities as:

Sr. No.	*Course*
MPT- 1	*MPT: Musculoskeletal Sciences*
MPT- 2	*MPT: Neurosciences*
MPT- 3	*MPT: Cardio – Respiratory Sciences*
MPT- 4	*MPT: General & Community Based Rehabilitation*
MPT- 5	*MPT: Paediatrics*
MPT- 6	*MPT: Musculoskeletal Sciences & Sports*
MPT- 7	*MPT: Musculoskeletal Sciences & Manual Therapy*
MPT- 8	*MPT: Musculoskeletal Sciences & Hand Conditions*

ELIGIBILITY

Candidates admitted into the Master of Physiotherapy course should have passed the BPT degree examination of this University or an examination of any other University (on campus full time course) accepted by the authorities of this University as equivalent thereto. Candidates who have passed BPT Examination other than Dr. D. Y. Patil Vidyapeeth, Pune, shall obtain migration certificate from the parent university & an eligibility certificate from this University by remitting the prescribed fees along with the application form, before seeking admission.

REGISTRATION

A candidate admitted to the course in Dr. D. Y. Patil Vidyapeeth, Pune, should register with the University by remitting the prescribed fees along with the application form for registration duly filled in and forwarded to the Controller of Examination of this University through the Head of the Institution within the stipulated date.

DURATION OF THE COURSE

The period of certified study for the Master of Physiotherapy is a full-time course extending over a period of two academic years with 4 semesters for the award of the degree.

MEDIUM OF INSTRUCTION

Medium of instruction for the subject of study and for the examination of the MPT course will be English.

COURSE STRUCTURE:

Duration:

The duration of Master of Physiotherapy programme shall be of two academic years (4 semesters). It shall have 4 semesters each having a span of 20 weeks of working, of which the teaching and learning program shall not be less than 16 weeks of course duration (672 clock hours) excluding the time scheduled for examination and evaluation process of the university and college, leading to degree that equips the student with analytical and hands-on skills. Each academic year shall comprise of two semester viz. Odd and Even semesters. Odd semesters shall be from July/August to December and Even Semesters shall be from January to June.

****University examination will be conducted at the end of every semester.***

MPT - SEMESTER I																			
Course. Code	Course	Teaching Learning Hrs				Teaching LearningHrs/Week				Credit				Exam Marks					
		Theory	Pract	Clinic	Total	Theory	Pract	Clinic	Total	Theory	Pract	Clinic	Total	Theory			Practical		
														Int	Ext	Tot	Int	Ext	Tot
MPT101	Physiotherapy Practice and Education Technology	32	64	-	96	2	4	-	6	2	2	-	**4**	10	40	50	-	-	-
MPT102	Research Methodology and Biostatistics	48	0	-	48	3	0	-	3	3	0	-	3	10	40	50	-	-	-
MPT103	Advanced Electro Therapy & Electro Diagnosis	48	96	-	144	3	6	-	9	3	3	-	6	20	80	100	-	-	-
MPT 104	Physiotherapeutics-I	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
Total		**128**	**160**	**192**	**480**	**8**	**10**	**12**	**30**	**8**	**5**	**4**	**17**	**40**	**160**	**200**	**20**	**80**	**100**
Research Dissertation		-	-	192	192	-	-	12	12	-	-	4 Credit accumulated in Semester 4							
Total Hours		-	-	-	**672**	-	-	-	42	-	-								

MPT - SEMESTER II																			
Course. Code	Course	Teaching Learning Hrs				Teaching LearningHrs/Week				Credit				Exam Marks					
		Theory	Pract	Clinic	Total	Theory	Pract	Clinic	Total	Theory	Pract	Clinic	Total	Theory			Practical		
														Int	Ext	Tot	Int	Ext	Tot
MPT 201	Advanced Functional Diagnosis & Manipulative skills	48	96	-	144	3	6	-	9	3	3	-	6	20	80	100	-	-	-
MPT 202	Applied Biomechanics & Kinesiology	64	-	-	64	4	-	-	4	4	-	-	4	20	80	100	-	-	-
MPT 203	Exercise Physiology , Health & Fitness	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 204	Physiotherapeutics-II	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
Total		**176**	**160**	**192**	**528**	**11**	**10**	**12**	**33**	**11**	**5**	**4**	**20**	**60**	**240**	**300**	**20**	**80**	**100**
Research Dissertation		-	-	144	144			9	9	-	-	3 Credit accumulated in Semester 4							
Total Hours		-	-	-	**672**	-	-	-	42	-	-								

MPT - SEMESTER III																			
Course. Code	Course	Teaching Learning Hrs				Teaching Learning Hrs/ Week				Credit				Exam Marks					
		Th	Pr	Cl	Tot	Th	Pr	Cl	Tot	Th	Pr	Cl	Tot	Theory			Practical		
														Int	Ext	Tot	Int	Ext	Tot
MPT 1 301	Musculoskeletal Sciences: Clinical Sciences-I	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 1 302	Musculoskeletal Sciences: Physiotherapeutics-I	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 1 303	Musculoskeletal Sciences: Recent advances - I	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 1 304	Musculoskeletal Sciences: Advanced Physiotherapeutics-I	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
	Total	**176**	**160**	**192**	**528**	**11**	**10**	**12**	**33**	**11**	**5**	**4**	**20**	50	200	250	20	80	100
	Research Dissertation			144	144			9	9			3 Credit Assessed & accumulated in Semester 4							
	Total Hours				672				42										

MPT - SEMESTER IV																			
Course. Code	Course	Teaching Learning Hrs				Teaching Learning Hrs/ Week				Credit				Exam Marks					
		Th	Pr	Cl	Tot	Th	Pr	Cl	Tot	Th	Pr	Cl	Tot	Theory			Practical		
														Int	Ext	Tot	Int	Ext	Tot
MPT 1 401	Musculoskeletal Sciences : Clinical Sciences II	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 1 402	Musculoskeletal Sciences : Physiotherapeutics II	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 1 403	Musculoskeletal Sciences : Recent advances II	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 1 404	Musculoskeletal Sciences : Advanced Physiotherapeutics II	-	-	288	288	-	-	18	18	-	-	6	6	-	-	-	20	80	100
	Total	**176**	**160**	**288**	**624**	**11**	**10**	**18**	**39**	**11**	**5**	**6**	**22**	50	200	250	20	80	100
	Research Dissertation	-	-	48	48	-	-	3	3	-	-	1 Credit Assessed & accumulated in Semester 4							
	Total Hours				**672**				42										
MPT 1 405	Research Dissertation-Semester I-IV (11 Credit accumulated in Semester 4)				**528**								**11**				**50**	**50**	**100**

MODE OF TRAINING

The training for M P T degree will be on a full-time pattern with graded responsibilities in the management and treatment of patients entrusted to his/her care. Training includes involvement in academic learning, practical learning, clinical patient handling, administrative and planning of department works, experimental work and research studies. The participation of students in all facets of educational process is essential. Every candidate should take part in seminars, group discussions, clinical rounds, case demonstrations, clinics, journal review meeting and other continuing education activities. Every candidate should be required to participate in the teaching and training programs of undergraduate students.

BIOETHICS IN THE CURRICULUM.

It is the study of the typically controversial ethical issues emerging from new situations and possibilities brought about by advances in biology and medicine. It is also moral discernment as it relates to medical policy and practice. Bioethicists are concerned with the ethical questions that arise in the relationships among life-sciences, biotechnology, medicine, politics, law, and philosophy. It also includes the study of the more commonplace questions of values ("the ethics of the ordinary") which arise in primary care and other branches of medicine. The curriculum does not have complete course but is a source of inspiration. The course content should not be treated as a comprehensive curriculum in bioethics. It is recognized that the content of the core curriculum does not necessarily cover all aspects of bioethics. Traditional issues that have not been included could be incorporated as examples that are pertinent to one or several of the Declaration's principles within the curriculum's framework.

INTERNAL MONITORING OF STUDENTS PROGRESS

The learning progress of each candidate will be monitored continuously to help teachers to evaluate students & also for students to evaluate themselves. The monitoring will be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured, and assessment be done using checklists that assess various aspects and will be projected for discussion every six months.

Work diary: Candidates should record his /her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. in the work diary given. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any, conducted by the candidate. The work diary shall be scrutinized and certified by the Head of the Department and Head of the institution from time to time and shall be presented in the university examinations for calculation of university internal marks.

Periodic tests: The College will conduct one Internal Assessment (Preliminary Examination) in every semester at the end 4 months of every semester (Preliminary examination) (ie) four weeks before the University examination. Continuous clinical assessment shall be carried out though out the Semester/Year.

The test may include written theory papers, practical, viva voce and clinical in the pattern of university examination. Records and marks obtained in such tests will be maintained by the Department and sent to the university by the Principal for documentation proof of internal marks.

CONTINUOUS APPRAISAL FOR TEACHING & LEARNING EXPERIENCE:

Every candidate admitted shall attend a minimum of and record these learning procedures in the work diary for their progressive evaluation, every semester

a)	*Journal Review meetings*	*: Minimum 2*
b)	*Seminars Presented*	*: Minimum 2*
c)	*Clinical presentation*	*: Minimum 10*
d)	*Special clinics*	*: Minimum 5*
e)	*Dept/Inter department meetings*	*: Minimum 2*
f)	*Community work, camps/field visits*	*: Minimum 1*
g)	*Conference /workshops/CME/ Seminar/symposia attended*	*: Minimum 2*
h)	*Problem Based Learning*	*: Minimum 2*
i)	*Special Clinical rounds*	*: Minimum 50 Hrs.*
j)	*Dissertation work*	*: Minimum 140 Hrs.*
k)	*Participation in conferences/ Presentation of papers*	*: Minimum 2 in 4 semesters*
l)	*Teaching Activities – UG Teaching*	*: Minimum 10 in two years*
m)	*Micro Teaching*	*: Minimum 2 in first semester*
n)	*Learning Activities*	*: Self Learning, Use of computers & library*
o)	*Any other – Specify (eg: CME)*	

Rotation and posting in other department if any – minimum 2 months in 1 speciality

CLIENT CENTERED LEARNING-GRADED RESPONSIBILITY

Structured Training Schedule for clinical & elective subjects will be as follows. The candidate will learn 40 cases through observation, 50 cases by Assisting & Handling senior Physiotherapist, 160 procedures performed with supervision, 80 procedures to perform individually.

DISSERTATION

Every candidate shall submit to the Registrar of the university in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within 4 months from the date of commencement of the course on or before the dates notified by the university. The synopsis shall be sent through the proper channel (Duly approved by the guide, HOD, Principal and Ethical committee with in the first semester) such synopsis will be reviewed, and the university will register the dissertation topic (in the second semester). The dissertation is aimed to train a postgraduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions. Every candidate pursuing MPT degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The result of such a work shall be submitted in the form of dissertation (in the fourth semester). Any change in the dissertation topic or guide should be informed to the authorities of this university for its approval. No change in the dissertation topic or guide shall be made after the approval of the Research & Recognition Committee of the university.

The dissertation should be written under the following headings.

1. *Introduction*
2. *Aims or objectives of study*
3. *Review of literature*
4. *Material and methods*
5. *Results*
6. *Discussion*
7. *Conclusion*
8. *Summary*
9. *References*
10. *Tables*
11. *Annexure.*

The printed text of dissertation should not be less than 50 pages/2500 words and shall not exceed 75 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing (Font 12, Times New Roman) on one side of paper (A4 Size, 8.27" X 11.69") and Hard bound properly (No Spiral binding). Four copies of dissertation thus prepared shall be submitted to the Registrar (Evaluation), three months before final examination on or before the dates notified by the university duly certified by the guide, head of the department and head of the institution. In the Dissertation the Candidate should not disclose his Identity or of the Guide or Institution in anyway.

The examiners appointed by the university shall value the dissertation. Approval of dissertation work is an essential precondition for a candidate to appear in the university examination. Three evaluators (examiners) apart from the guide shall value the dissertation from outside Dr. D. Y. Patil Vidyapeeth. Acceptance from any two evaluators is necessary for a candidate to be eligible to take up the examination.

A candidate who has submitted his/her dissertation once is not required to submit a fresh dissertation if he/she reappears for the examination in the same branch on the subsequent occasion, provided the dissertation has been accepted by the examiners.

If the student has submitted his/her examination form & also his/her dissertation previously, he/she will be permitted to give the examination within a period of 4 years anytime in future provided the dissertation has been accepted. The terms satisfactorily kept by him will be valid for a period of 4 years subsequent to submission of the dissertation after which he/she will have to undergo Post-graduate training again for terms to be eligible for appearing for theory & Practical examination.

POST-GRADUATE GUIDE:*

A PG guide must have a Post-Graduate Degree in Physiotherapy with at-least 5 years of full time teaching in the core subject area after post-graduation. To withstanding the above clause, in a case of acute shortage of qualified Post-Graduate guides, A PG teacher with 3 years full time teaching experience after Master's Degree can be considered. The age of teacher/guide shall not exceed 63 years and the guide student ratio shall be 1: 3.

Co- guide: *may be included provided the work requires substantial contribution from a sister department or from another medical institution recognized for teaching /training by Dr. D. Y. Patil Vidyapeeth, Pune. The co- guide shall be a recognized postgraduate teacher of Dr. D. Y. Patil Vidyapeeth, Pune.*

Change of Guide:

In the event of a recognized guide leaving the college for any reason or in the event of death of guide, another recognized guide may take over the duties of the guide with prior permission from the university subject to withstanding to the Guide Student ratio.

PRACTICAL EXAMINATION

1. **Panel of Examiners**

   A PG guide as defined above is eligible to be appointed as an examiner*. There should be three examiners in each practical examination out of which, two of them shall be external examiners (one from the same state & one from other state) & the other shall be an internal from the same institution. The external examiners who fulfill the conditions should ordinarily be invited from another recognized University, preferably. Internal examiner shall be the Co-ordinator of the examination. All the examiners shall jointly plan the overall conduct of examination prior to its commencement & conduct the ENTIRE examination together.

* **Note:** These above qualifications are applicable to all future recruitments. In the case of teachers who are already recognized as PG guides/examiners status quo will be maintained.

2. **Selection criteria of examiners.**

   For any Practical examination, Appointment of the Internal Examiner shall be done by the Controller of examination.

   - Qualification of the examiner shall be same as the paper setter.
   - In case of substitute examiner, refer procedures for appointment of substitute practical examiners enclosed.

3. ***Number of candidates to be evaluated per day –***
   - ***First Year Examination.***
     - *There shall be **NOT MORE THAN EIGHTEEN** candidates evaluated per day in the first-year exam for any practical evaluation. In persisting circumstances, the maximum candidate evaluated per day shall not exceed **TWENTY**.*

   - ***Second Year Examination***
     - *There shall be **NOT MORE THAN SIX** candidates evaluated per day per speciality for any practical evaluation. In persisting circumstances, the maximum candidate evaluated per day shall not exceed **EIGHT**.*

4. **Pattern of Examination –**
   The pattern shall be according to the need of the particular subject. The Coordinator shall take care that maximum syllabus shall be covered in the Practical Examination. It is recommended to include Viva & O.S.P.E., / O.S C. E. methods in the exam.

5. ***Scheme of Examination for MPT***
   - *The University Examination will be at the end of every semester. **The candidate must obtain 50% marks in internal assessment and continuous appraisals separately, to be eligible for appearing the University examinations.***

   - *Marks obtained in internal examination, attendance and continues appraisal will be simplified for 20 as internal marks. In case of marks simplified are in decimals, will be rounded to the nearest round figure, (e.g.) 12.01 to 12.49 will be considered to the round sum as 12 and 12.50 to 12.99 as 13.*

CONDUCT OF PRACTICAL EXAMINATION –
Before the assessment of the candidate, all the examiners shall jointly prepare arbitrary questions & marks for each such question as per the total marks granted to each experiment & accordingly evaluate the candidate as per the regulations.

ATTENDANCE REQUIREMENTS FOR ADMISSION TO EXAMINATION.
No candidate shall be permitted to appear for the Examination (internal & university) unless he/she puts 80% of attendance during his/her period of study & training.
If a candidate is not permitted for examination due to lack of attendance, he/she has to fulfill the required attendance by compensation in the extension period to be eligible for the University examination.

CONDONATION OF ATTENDANCE
There shall be no condonation of attendance in postgraduate studies. (However 5% compensation shall be permitted with the discrete permission of the authorities in case of Epidemic illness only.)

DISTRIBUTION OF MARKS FOR THEORY EXAMINATION.
All the semesters shall have similar evaluation process of internal / final examination. The written exam pattern shall be the same for all semesters for the subjects. An 80 mark paper shall have Part A & B with 40 marks each and the 40 mark paper shall have only the Part A pattern of examination for written examination.

Internal examination: - 20 marks (based on internal examination & continuous appraisal)
External (University) examination:- 80 marks

Each paper shall have

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*

DISTRIBUTION OF MARKS FOR PRACTICAL EXAMINATION.

Internal examination *: - 20 marks*
(based on internal examination & continuous appraisal)
External (University) examination *: - 80 marks*

Semester – I (Practical)

- *Micro teaching* *:- 20 Marks*
- *Clinical case* *:- 60 marks*

Semester – II (Practical)

- *Spots* *:- 20 Marks*
- *Clinical case* *:- 60 marks*

Semester – III (Practical)

- *Clinical case (1) elective Long Case* *:- 60 marks*
- *Clinical case (2) elective Short Case* *:- 20 marks*

Semester – IV (Practical)

- *Clinical case (1) elective Long Case* *:- 60 marks*
- *Clinical case (2) elective Short Case* *:- 20 marks*

Dissertation at the IV semester:

Internal evaluation as per the process & execution *: - 50 marks*
Dissertation evaluation & Presentation *: - 50 marks (University Examination)*

ELIGIBILITY CRITERIA FOR APPEARING IN THE UNIVERSITY EXAMINATION

A candidate shall be permitted for appearing the university examination only if he/she fulfils all the following criteria:

1. *A candidate shall be permitted to appear for the University Examination only if he/she puts 80% of attendance during his/her period of study & training.*
2. *The candidate must obtain 50% marks in internal assessment & continuous appraisals separately, to be eligible for appearing the University examinations.*
   a. *If the candidate is not getting 50% marks in internal assessment, then he/she should reappear for college examinations in the extension period after the university examination scheduled for the batch.*
3. *Approval of dissertation work is essential for a candidate to appear for the university examination in the eighth semester.*

EXAMINATIONS AND ASSESSMENT

1. *The examination for the MPT degree will consist of both formative and summative pattern: Written assignment as required or stipulated by the teacher, Clinical, oral, and practical examinations as the case maybe.*
2. *For the course subjects, internal assessment shall be conducted by the faculty at specified intervals during the course of the semester will be carried out as a continuous assessment for 20% of the university marks.*
3. *There shall be one internal examination (prelims) before the final university examination, following the pattern of the final examination, including theory & practical evaluation. The marks obtained by the candidate along with the continuous appraisal and attendance % marks shall be calculated for the internal examination marks*
4. *For the Physiotherapeutics - I, Physiotherapeutics - II, Elective Based Advance Physiotherapeutics - I & II of the respective semester, practical examinations will be conducted based on the subjects included in the respective semester and will be scored accordingly.*
5. *Student should pass in the Internal Assessment exams with 50 % in the allotted marks to appear for the University examinations. Continuous clinical assessment will be carried out though out the semester.*

CRITERIA FOR PASSING

To pass the Examination,

1. *To pass the Theory Examination the Candidate must obtain 50% of the total Marks in the respective paper.*
2. *To pass in practical exam, candidate must obtain 50% of total marks in the respective paper.*
3. *A candidate must pass in two heads of passing i.e. Theory and Practical separately.*
4. *If a candidate is unable to pass in the theory Paper, then he/she has to reappear for the theory paper only.*
5. *If a candidate is unable to pass in the practical, then he/she has to reappear for the practical examination only.*

GRACE MARKS

The grace marks up to a maximum of five may be awarded to a student who has failed only in one subject but has passed in all other subjects. These five marks shall be distributed in different heads of passing of that subject. Provided that these grace marks shall be awarded only if the student passes after awarding these marks. (Refer clause 59, Bye - laws of Dr. D. Y. Patil Vidyapeeth).

RULES FOR ATKT

The candidate shall be promoted to subsequent semester (from I semester to II semester, II semester to III semester, III semester to IV semester) even if he/she fails in one or two subjects in the current semester of study. However, he/she must pass in these subjects within six months. To appear for subsequent examinations, he/she must pass in all subjects of the previous semester. (ie, a candidate shall be promoted from I semester to II semester even if he/she has failed in two subjects or less, the candidate shall be permitted to appear for both I & II semester during his/her term of second semester. However, he / she shall not be permitted to appear for the III semester unless he/she completely clears the first semester, this continues for rest of the semester). It is mandatory for the candidate to pass in all subjects of the previous odd semester to be eligible for the next odd semester, and to pass in all subjects of the previous even semester to be eligible for the next even semester. The candidate shall be eligible for obtaining the degree only after successful completion of the all the IV semesters.

SCORING – THE CBCS SYSTEM

All Programmes mention shall run on Choice Based Credit System (CBCS). It is an instructional package developed to suit the needs of students to keep pace with the developments in higher education and the quality assurance expected of it in the light of liberalization and globalization in higher education.

COURSE :

Each Course shall be designed variously under lectures / tutorials / laboratory or field work / seminar / practical training / Assignments / Term paper or Report writing etc., to meet effective teaching and learning needs.

RATIONALE FOR INTRODUCTION OF CBCS

The UGC while outlining the several unique features of the Choice-Based Credit System (CBCS) has, in fact, given in a nutshell, the rationale for its introduction. Among the features highlighted by the UGC are:

- *Enhanced learning opportunities, ability to match learners' scholastic needs and aspirations, inter-institution transferability of learners (following the completion of a semester),*
- *improvement in educational quality and excellence,*
- *flexibility for working learners to complete the programme over an extended period of time,*
- *Standardization and comparability of educational programmes across the country, etc.*
- *Some of the specific advantages of using the Credit system as outlined in the available literature on the topic are as listed below:*

ADVANTAGES OF THE CREDIT SYSTEM

- *Represents a much-required shift in focus from teacher-centric to learner-centric education since the workload estimated is based on the investment of time in learning, not in teaching.*
- *Helps to record course work and to document learner workload realistically since all activities are taken into account - not only the time learners spend in lectures or seminars but also the time they need for individual learning and the preparation of examinations etc.*
- *Segments learning experience into calibrated units, which can be accumulated in order to gain an academic award.*
- *Helps self-paced learning. Learners may undertake as many credits as they can cope with without having to repeat all the courses in a given semester if they fail in one or more courses.*
- *Alternatively, they can choose other courses and continue their studies.*
- *Affords more flexibility to the learners allowing them to choose inter-disciplinary courses, change majors, programmes, etc. Respects 'Learner Autonomy'.*
- *Allows learners to choose according to their own learning, needs, interests and aptitudes.*
- *Makes education more broad-based. One can take credits by combining unique combinations.*
- *Credits earned at one institution can be transferred to another.*
- *Helps in working out twinning programmes.*
- *Is beneficial for achieving more transparency and compatibility between different educational structures.*
- *A credit system can facilitate recognition procedures as well as access to higher education for non-traditional learners*

GRADING:

The total of the internal evaluation marks and final University examination marks in each course will be converted to a letter grade on a ten-point scale as per the following scheme as recommended by UGC:

LETTER GRADES AND GRADE POINTS:

Letter Grades	***Grade Points***	***% of marks***
O (Outstanding)	*10*	*80 and above*
A+(Excellent)	*9*	*75-79*
A(Very Good)	*8*	*70-74*
B+(Good)	*7*	*65-69*
B(Above Average)	*6*	*60-64*
C(Average)	*5*	*55-59*
P(Pass)	*4*	*50-54*
F(Fail)	*0*	*<50*
Ab (Absent)	*0*	*0*

A student obtaining Grade F shall be considered failed and will be required to reappear in the examination.

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):

- *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 by a student, i.e*
  SGPA *(Si) = Σ(Ci x Gi) / ΣCi*
  where Ci is the number of credits of the ith *course and Gi is the grade point scored by the student in the* i^{th} *course.*

- *The **CGPA** is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.*
  ***CGPA** = Σ(Ci x Si) / Σ Ci*
  Where Si is the SGPA of the ith semester and Ci is the total number of credits in that Semester.

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

Illustration of Computation of SGPA and CGPA and Format for Transcripts
i. Computation of SGPA and CGPA

Illustration** for **SGPA

Subject	Credit	Grade letter	% Marks	Grade Point	Credit Point (Credit x Grade
Course 1	4	A	74	8	4x8=32
Course 2	3	B+	69	7	3x7=21
Course 3	6	B	62	6	6x6=36
Course 4	4	O	88	10	4x10=40
	17				129

*Thus, **SGPA =129/17 = 7.58***

Illustration for CGPA

Semester 1	Semester 2	Semester 3	Semester 4
Credit: 17	Credit:20	Credit:20	Credit:26
SGPA: 7.58	SGPA:7.8	SGPA:5.6	SGPA:6.0

*Thus, **CGPA** =* $\frac{17 \times 7.8 + 20 \times 7.8 + 20 \times 5.6 + 26 \times 6.0}{83}$ *= **553/83= 6.66***

TRANSFER OF CANDIDATES:-
Request for transfer from one specialty to another during the course of study will not be entertained under any circumstances.

AWARD OF DEGREE
Every student of the programme who fulfils the following criteria will be eligible for the award of the degree provided
- *He / She should have earned at least minimum required credits as prescribed in course structure,*
- *He / She should have cleared all internal and external evaluation components in every course,*
- *He / She should have secured a minimum CGPA of 4.00 at the end of the programme.*
- *The student who fails to satisfy minimum requirement of CGPA will be allowed to improve the grades so as to secure a minimum CGPA for award of degree. Only latest grade will be considered.*

AWARD OF CLASS:
The class awarded to a student in the programme is decided by the final CGPA as per the following scheme:
Distinction: CGPA ≥ 7.50
First class: CGPA of 6.50 to 7.49
Second Class: CGPA of 5.00 to 6.49

ATTENDANCE % AND INTERNAL MARKS
The attendance % of the candidate will be converted to marks and will be included in the concerned semester continuous appraisal internal marks.

% of Attendance	IA marks for Continuous appraisals
100	10
95-99	9
90-94	8
85-89	7
80-84	6
75-79	5

SEMESTER – I

MPT - SEMESTER I																			
Course. Code	Course	Teaching Learning Hrs				Teaching Learning Hrs/ Week				Credit				Exam Marks					
														Theory			Practical		
		Th	Pr	Cl	Tot.	Th	Pr	Cl	Tot.	Th	Pr	Cl	Tot.	Int	Ext	Tot	Int	Ext	Tot
MPT 101	Physiotherapy Practice and Education Technology	32	64	-	96	2	4	-	6	2	2	-	**4**	10	40	50	-	-	-
MPT 102	Research Methodology and Biostatistics	48	0	-	48	3	0	-	3	3	0	-	3	10	40	50	-	-	-
MPT 103	Advanced Electro Therapy & Electro Diagnosis	48	96	-	144	3	6	-	9	3	3	-	6	20	80	100	-	-	-
MPT 104	Physiotherapeutics-I	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
	Total	**128**	**160**	**192**	**480**	**8**	**10**	**12**	**30**	**8**	**5**	**4**	**17**	**40**	**160**	**200**	**20**	**80**	**100**
Research Dissertation		-	-	192	192	-	-	12	12	-	-	4	4 Credit accumulated in Semester 4						
Total Hours		-	-	-	**672**	-	-	-	42	-	-								

Th: Theory, Pr: Practical, Tot: Total, Lec: Lecture Demonstration / Tutorial / Discussion, IA: Internal Assessment

COURSE TITLE :- PHYSIOTHERAPY PRACTICE AND EDUCATION TECHNOLOGY														
COURSE CODE : - MPT 101														
COURSE CREDIT FOR PHYSIOTHERAPY PRACTICE AND EDUCATION TECHNOLOGY														
Hours			***Hrs/ Wk***			***Credits***			***Evaluation Pattern***					
Th	*Pr*	*Tot*	*Lec*	*Pr*	*Tot*	*Lec*	*Pr*	*Tot*	*Written*		*Total*	*Practical*		*Total*
									IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
32	*64*	*96*	*2*	*4*	*6*	*2*	*2*	*4*	*10*	*40*	*50*	--	--	

COURSES OUTCOMES:

Co. No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
101.1	*Be an ethical Physiotherapist, aware of legal rights and duties as per Indian Association of Physiotherapy, World Confederation of Physical Therapists and World Health Organization. Describe environment protection act.*	*PO1, PO5, PO7, PO8,PO9*
101.2	*Understand and apply principles of learning and use different teaching - learning methods appropriately.*	*PO2, PO6, PO7, PO9*
101.3	*Describe the concepts of learning, evaluation and curriculum development.*	*PO1, PO9*
101.4	*Describe advantages and challenges of different assessment methods.*	*PO1, PO9*
101.5	*Apply management skills in planning, implementation & administration of clinical and academic activities*	*PO2, PO5, PO6, PO9*
101.6	*Document comprehensive and accurate health records*	*PO3, PO6*
101.7	*Be a Critical Thinker*	*PO1, PO4, PO4, PO5, PO6, PO7, PO9*

Course Content			
Topic Serial No.	**Title of content**	**Hours of Teaching/learning**	
		Theory	**Practical**
PHYSIOTHERAPY PRACTICE			
1	Concept of morality, Ethics & Legality, confidentiality and responsibility.	1	4
2	***Introduction to ethics & bioethics (2hrs)*** • *Meaning, nature of ethics, ethical statements* • *Meaning of bioethics* • *Health & disease as values and facts*	*2*	-

	• *Principles of bioethics* • *Medical ethics- goals, committees*		
3	Laws – Constitution of India, & Rights of a citizen, responsibilities of the Therapist, & status in health care – Persons with Disability Act – Councils for regulation of professional practice – self-regulatory role of Professional Association – Consumer protection act.	2	4
4	***Human dignity and human rights (2hrs)*** • *Human dignity as an intrinsic value* • *Respect , care and Equality in dignity of all human beings* • *human dignity in different cultural and moral traditions* • *Ethical aspects of physiotherapists in patients relation in regard to human dignity in handling children, women, elderly, mental & physically challenged.*	*2*	-
5	***Benefit and harm of patient's right & dignity in Health care settings by physiotherapy (2hrs)*** • *The WHO definition of health as a possible solution of health problems* • *What is the health benefit by physiotherapy* • *Possible harm for a patient during physiotherapy* • *Dimensions of comparing harms and benefits in individual patients*	*2*	-
6	Role of the Professional in Socio – economical context. Constitution & Functions of I.A.P. Role of World Physiotherapy and W.H.O. Professional Indemnity	2	4
7	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.	2	4
8	Administration & marketing – Personal policies – Communication & Contact- Administration principles based on Goal & Functions at large hospital / domiciliary set up / private clinical / academic institution. • Methods of maintaining records – Budget planning • Leadership and Teamwork. • Communication Skills	2	4
9	Quality control related to treatment procedure, audit and Programme evaluation	*1*	*6*
EDUCATION TECHNOLOGY			
1	Aims, Philosophy and Trend and Issues in education including – Aims, agencies, formal and in-formal education, philosophies of education (past, present & future).	2	4
2	Role of education philosophy	*1*	4
3	Current issues and trends in education.	2	4
4	Concepts of teaching and learning – theories of teaching, relation between teaching and learning, dynamics of behavior, learning perception, individual differences.	2	4
5	Curriculum formation – committee framing, development & types of curriculum, formation of philosophy & course objectives, master plans of courses, co-relation of theory & practice.	2	4
6	Principles and methods of teaching – strategies and planning, organization and teaching methods - micro teaching.	2	4
7	Measurement and evaluation – nature of measurement, steps of constructing a test measurement, standard tools, program evaluation.	2	4
8	Guidance and counseling – Philosophy, principles and concepts, guidance and counseling services (mode of framing and execution).	2	4
9	Faculty development services.	1	6

Textbooks

Sr. No.	Title
1	Pedagogy Physiotherapy Education –C S Ram
2	Physical Therapy Ethics: Gabard Donald L.
3	Ethics,Injuries &The Law in Sports Medicine: Grayson Edward
4	*Bioethics core curriculum-section-1., Ethics education program, Version 1.0*

Reference Books

Sr. No.	Title
1	Ethical Issues: Raja Kavitha; davis Fiddy; sivakumar T
2	Professional Adjustments and Ethics for Nurses in India:Zwemer Annj

SCHEME OF EXAMINATION

Evaluation Pattern					
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
10	*40*	*50*	-	-	-

Preliminary Examination / University (Final) Examination

- ***Written Examination (40 marks)***

Q.1 LAQ (1 X 15 Marks)	=	*15 Marks*
Q.2 SAQ (any 1 out of 2 X 10 Marks)	=	*10 Marks*
Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks	=	*15 Marks*

COURSE TITLE :- RESEARCH METHODOLOGY AND BIOSTATISTICS COURSE CODE:- MPT- 102														
COURSE CREDIT FOR RESEARCH METHODOLOGY AND BIOSTATISTICS														
Hours			**Hrs/Wk**			**Credits**			**Evaluation Pattern**					
Th	Pr	Tot	Lec	Pr	Tot	Lec	Pr	Tot	Written		Total	Practical		Total
									IA	Final exam	Final exam	IA	Final exam	Final exam
48	-	48	3	0	3	3	0	3	10	40	50	--	--	--

COURSES OUTCOMES:

CO No.	At the end of the course, the learner should be able to:	Mapped Programme Outcomes
102.1	Describe how research is undertaken, and its benefits.	PO1, PO4, PO7, PO9
102.2	Differentiate between quantitative research and qualitative research.	PO1, PO4
102.3	Select an appropriate study design based on research question.	PO1, PO2, PO4
102.4	Identify ethical issues in research.	PO2, PO4, PO5, PO6, PO7
102.5	Design a research proposal	PO1, PO2, PO4, PO5, PO7

Course Content			
Topic Serial No.	Title of content	Hours of Teaching / learning	
		Theory	Practical
RESEARCH METHODOLOGY			
1	**Introduction** Terminology in research, Ethical issues in research, Research process and ICMR Guidelines	2	-
2	**Review of literature.** Importance, sources & steps in reviewing the literature.	2	-
3	**Research design** • Type of research – qualitative & quantitative. • Experimental & non-experimental, survey – advantages & disadvantages	3	-
4	**Research process** • Research question, Aim & objectives, Assumptions, Limitations & Delimitations, Variables • Hypothesis – formation & testing.	3	-
5	**Sampling** • Sampling technique • Population, sample, • Sample size & determination • Sampling methods • Sampling error	2	-
6	**Data collection and analysis** • Data sources, technique of data collection, tools • Reliability & validity • Process of data collection • Pilot study-method, need	2	-
7	**Interpretation & presentation of data** • Quantitative & qualitative analysis • Graphical representation of data • Conclusion & discussion	2	-
8	Writing a dissertation, research paper	2	-
9	Critical appraisal of research	2	-

10	Presentation and Publication of research – Steps and process.	*3*	-
11	***Autonomy and individual responsibility, Consent, (5 hrs)*** • *Autonomy and individual responsibility (2 hrs)* o *Different levels and notions of autonomy* o *Responsibility: its different aspects and dual nature* o *Autonomy and patient's right to self-determination in treatment* o *The patient's right to refuse a health care provider's recommendation* o *Special measures for protecting the rights and interests of socially and mentally disabled patients* o *patient responsibilities* • *Consent (2 hrs)* *Purpose of the principle of consent Prior, free and informed consent in patient treatment and handling* o *What is express consent?* o *Withdrawal of consent* o *The patient's right to refuse* o *Consent of subjects of scientific research.* o *Compare the provisions for consent in scientific research with those for medical interventions* o *Consent by individual, group and community* o *Exceptional circumstances for the application of the principle of consent* • *Persons without the capacity to consent (1hr)* o *Criteria for capacity to consent* o *Categories of persons without the capacity to consent* *How to obtain consent in health care practice for these special categories?*	*5*	-
BIOSTATISTICS			
1	**Introduction** • Frequency distribution • Tabulation & graphical presentation of data	4	-
2	Measures of central tendency (Mean, median, mode)	*2*	-
3	Measures of variability (range, percentage, SD)	*2*	-
4	Sample distribution & error	2	-
5	**Correlation** • Meaning • Rank order • Product Moment correlation (Pearson's product moment, Spearman's Regression analysis)	2	-
6	**Statistical significance** • Parametric tests-'t' tests, Tukeys following Oneway ANOVA • ANOVA (One way, two way – for parametric & nonparametric), ANCOVA, Multistage ANOVA • Nonparametric tests-Chi-square test, Mann Witney U test, 'Z' test Wilcoxon's matched pairs test	4	-
7	Vital health statistics	2	-
8	Computer application for statistical analysis	2	-

Textbooks

Sr. No.	Title
1	Jyotikumar Biostatistics
2	Research Methodology- Kothari
3	Biostatistics -with Latest Mcqs - Negi, K.s
4	Methods of Biostatistics- Rao T Bhaskara

Reference Books

Sr. No.	Title
1	Principles and Practice Of Biostatistics- Dixit J V

SCHEME OF EXAMINATION

Evaluation Pattern					
Written		*Total*	*Practical*		*Total*
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination

- ***Written Examination (40 marks)***

Q.1 LAQ (1 X 15 Marks) = 15 Marks
Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks
Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks

COURSE TITLE :- ADVANCED ELECTRO THERAPY AND ELECTRO DIAGNOSIS														
COURSE CODE:- MPT- 103														
COURSE CREDIT FOR ADVANCED ELECTRO THERAPY AND ELECTRO DIAGNOSIS														
Hours			***Hrs/Wk***			***Credits***			***Evaluation Pattern***					
Th	*Pr*	*Tot*	*Lec*	*Pr*	*Tot*	*Lec*	*Pr*	*Tot*	*Written*		*Total*	*Practical*		*Total*
									IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
48	*96*	*144*	*3*	*6*	*9*	*3*	*3*	*6*	*20*	*80*	*100*	--	--	--

COURSES OUTCOMES:

Co No.	*At the end of the course, the learner should be able to:*	*Mapped Programme Outcomes*
103.1	*Understand theoretical concepts and physiological effects of various electrical currents at cellular level.*	*PO1*
103.2	*Select appropriate modality for various conditions along with clinical reasoning.*	*PO1, PO2*
103.3	*Apply conceptual theories & principles to interpret EMG and NCV investigations.*	*PO1, PO2*
103.4	*Select appropriate therapeutic modality / combinations for electro-diagnostic and therapeutic purpose.*	*PO1, PO2, PO5*

Course Content			
Topic Serial No.	**Title of content**	**Hours of Teaching/learning**	
		Theory	**Practical**
ELECTROTHERAPY			
1	Medical Physics of various therapeutic currents, ultrasound & Electro – magnetic energy, SWD.	2	4
2	Cellular response & tissue response to environment & man-made Electro–magnetic field– risk factor of prolonged exposure–safety measures.	2	4
3	Appropriate dose for the treatment of various disorders / disease conditions with various therapeutic modalities.	2	4
4	Advanced Electro therapeutic in the management of Pain, and various other conditions.	2	4
5	Principles of combination of Therapeutic currents and / ultrasound. with Pharmaco – Therapeutics with special reference to Musculo-skeletal, / neuropathic & psychosomatic pain and various other conditions.	2	4
6	Advanced Electro, Therapeutics in Tissue healing, Wound Care, management of Scars, Keloids & De-pigmentation – skin conditions.	2	4
7	Acupressure and Acupuncture Points	2	4
8	***Respect for human vulnerability & personal integrity (I hr)*** • *Different aspects of vulnerability - biological , social , cultural* • *Success and failures in physiotherapy treatments* • *Problems with the basic assumption that vulnerability should be eliminated* • *Care ethics- New approaches in bioethics, Solidarity, The duty to care* • *Relation between vulnerability and personal integrity*	*1*	-
ELECTRO DIAGNOSIS			
1	Bio electricity – (R.M.P. – action potential)	2	4
2	Neuro –transmitters	*3*	8
3	Classification – 1) Muscle fiber 2)Nerve fiber 3) Motor Unit Synapse & synaptic transmission	2	4
4	Physiology of muscle contraction	2	4
5	Propagation of nerve impulses & Physiology of muscle contraction	4	8
6	Reflex-classification and properties	2	4

7	Sensations – pathways and classification	2	4
8	Type of Nerve injury, Wallerian degeneration and regeneration.	2	4
9	Electro diagnosis with therapeutic currents, – S.D. curves for motor, sensory and Pain assessment	2	4
10	Applied Electrotherapy –1) instruments 2)electrodes used in EMG -3) E.M.G. normal (at rest & Activity), abnormal and EMG Biofeedback	2	4
11	Application of nerve conduction studies 1) Sensory /Motor 2) "F" Wave, 3)"H" reflex, 4) Blink reflex, 5) SSEP	2	4
12	Application in Neuro-muscular junction disorders, repetitive nerve stimulation.	2	4
13	Motor unit potential diseases (Dystrophies, myopathy, myotonia)	2	4
14	Entrapment syndromes, Peripheral neuropathies, Nerve trauma and compression syndromes.	2	4
15	Evoked potentials SSEP	2	4

Textbooks

Sr. No.	Title
1	Clinical Electrophysiology - Robinson
2	Electrotherapy Explain – Low & Read
3	Electrotherapy – Sheila Kitchen

Reference Books

Sr. No.	Title
1	Clinical Neurophysiology – U K Mishra
2	Electro Diagnosis in Diseases of Nerve and Muscle – Jun Kimura
3	Fundamental of Neurophysiology – R F Schmidt

SCHEME OF EXAMINATION

Evaluation Pattern- Theory					
Written		***Total***	***Practical***		***Total***
IA	***Final exam***	***Final exam***	***IA***	***Final exam***	***Final exam***
20	*80*	*100*	-	-	-

Preliminary Examination / University (Final) Examination

❖ ***Written Examination (80 marks)***

Part A	*Q.1 LAQ (1 X 15 Marks)*	*= 15 Marks*
	Q.2 SAQ (any 1 out of 2 X 10 Marks)	*= 10 Marks*
	Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks	*= 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks)*	*= 15 Marks*
	Q.2 SAQ (any 1 out of 2 X 10 Marks)	*= 10 Marks*
	Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks	*= 15 Marks*

COURSE TITLE :- PHYSIOTHERAPEUTICS-I COURSE CODE:- MPT 104								
COURSE CREDIT FOR PHYSIOTHERAPEUTICS-I								
Hours	**Hrs/Wk**	**Credits**	**Evaluation Pattern**					
Clinical	Clinical	Clinical Credit	Theory			Practical – Physiotherapeutics-I		
			IA	Final	Total	IA	Final	Total
192	12	4	--	--	--	20	80	100

CO No.	**At the end of the course, the learner should be able to:**	**Mapped Programme Outcomes**
104.1	Take appropriate patient history in the prescribed format.	PO1, PO2, PO3
104.2	Select an appropriate outcome measure and correlate patient examination findings.	PO1, PO2, PO3, PO4
104.3	Use appropriate Physiotherapeutic Technique / approaches to treat patients.	PO1, PO2, PO3, PO5
104.4	Discuss the recent management approaches for common conditions and deliberate on best practice model for patient centered care	PO1, PO2, PO4, PO9

SCHEME OF EXAMINATION FOR PHYSIOTHERAPEUTICS-I

Evaluation Pattern					
Written		Total	Practical		Total
IA	Final exam		IA	Final Exam	
-	-	-	20	80	100

IA= 20 marks shall include completion of the logbook/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – I

Practical

- *Micro teaching : - 20 Marks*
- *Clinical case : - 60 marks*

SEMESTER – II

MPT - SEMESTER II																			
Course. Code	Course	Teaching Learning Hrs				Teaching Learning Hrs/ Week				Credit				Exam Marks					
														Theory			Practical		
		Th	Pr	Cl	Tot.	Th	Pr	Cl	Tot.	Th	Pr	Cl	Tot.	Int	Ext	Tot	Int	Ext	Tot
MPT 201	Advanced Functional Diagnosis & Manipulative Skills	48	96	-	144	3	6	-	9	3	3	-	6	20	80	100	-	-	-
MPT 202	Applied Biomechanics & Kinesiology	64	-	-	64	4	-	-	4	4	-	-	4	20	80	100	-	-	-
MPT 203	Exercise Physiology , Health & Fitness	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 204	Physiotherapeutics-II	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
	Total	**176**	**160**	**192**	**528**	**11**	**10**	**12**	**33**	**11**	**5**	**4**	**20**	**60**	**240**	**300**	**20**	**80**	**100**
Research Dissertation		-	-	144	144	-	-	9	9	-	-	3	3 Credit accumulated in Semester 4						
Total Hours		-	-	-	**672**	-	-	-	42	-	-								

Th: Theory, Pr: Practical, Tot: Total, Lec: Lecture Demonstration/Tutorial/Discussion, IA: Internal Assessment.

COURSE TITLE :- ADVANCED FUNCTIONAL DIAGNOSIS & MANIPULATIVE SKILLS COURSE CODE:- MPT 201														
COURSE CREDIT FOR FUNCTIONAL DIAGNOSIS & MANIPULATIVE SKILLS														
Hours			***Hrs/Wk***			***Credits***			***Evaluation Pattern***					
Th	*Pr*	*Tot*	*Lec*	*Pr*	*Tot*	*Lec*	*Pr*	*Tot*	*Written*		*Total*	*Practical*		*Total*
									IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
48	*96*	*144*	*3*	*6*	*9*	*3*	*3*	*6*	*20*	*80*	*100*	-	-	-

Co No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
201.1	*Describe various Manual therapy approaches for all joints of upper limbs, lower limbs and spine and soft tissues.*	*PO1*
201.2	*Integrate different manual therapy techniques for treatment of common neuro-musculoskeletal conditions.*	*PO1, PO2, PO3, PO9*

Course Content

Topic Serial No.	**Title of content**	**Hours of Teaching/learning**	
		Theory	**Practical**
1	Physiological movements	2	2
2	Articular Neurophysiology and principles of applications. Motor Learning -Motor control assessment	4	2
3	History of manual therapy, overview of manual therapy approaches for all the joints.	4	
4	Terminology, Principles, indications, contraindications, assessment & methods of application of – Maitland, Karltenborn, Cyriax, Mulligan Mackenzie, Butler's Neural Mobilisation, Shacklok neural tissue mobilization.	16	48
5	Terminology, Principles, indications, contraindications, assessment & methods of application of Soft tissue approaches – Myofascial techniques, Neural tissue Mobilization, Muscle Energy Techniques,	16	44

	High velocity thrust techniques, Positional Release Techniques, Trigger point release, Lymphatic Manipulation.		

4	***Solidarity and cooperation (2hrs)***
	• *Solidarity in health care & Physiotherapy*
	• *Ethical perspective*
	  o *Solidarity as instrumental value*
	  o *Solidarity as moral value*
	• *Threats to solidarity in present-day societies*
	Social responsibility and health, Sharing of benefits (4 hrs)
	• *Highest attainable standard of health as a fundamental human right*
	  o *Universal Declaration of Human Rights*
	  o *WHO Constitution*
	  o *Duty, obligation and responsibility physiotherapists for highest attainable standard of health as a fundamental human right*
	  o *Responsibilities for governments and various sectors of society*
	  o *Health and contemporary challenges to global justice*
	  ▪ *Access to essential health services*
	  ▪ *The protection of vulnerable populations*
	  ▪ *Providing health care services across national boundaries*
	• *Sharing of benefits*
	  o *Models of benefit-sharing agreements*
	  ▪ *Fair and equitable options for research subjects*
	  ▪ *Biopiracy and fair sharing of benefits of genetic resources*
	  ▪ *Patents and intellectual property*
	  ▪ *Valid options for promoting fair and equitable access to new diagnostic and therapeutic modalities or to products stemming from them. Integration of capacity-building components to externally funded research and other initiative*
		2
		
		4
			--

Textbooks

Sr. No.	Title
1	Manusl Therapy Masterclass – Karem S Beeton
2	Clinical Manual Therapy & Practice – Leon Chaitow
3	Maitlands Peripheral Manipulation – Elly Hengeveled

Reference Books

Sr. No.	Title
1	Manual of Combined Movement - Edwards
2	Manual Therapy in Children - Heiner

SCHEME OF EXAMINATION

Evaluation Pattern					
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
20	*80*	*100*	--	--	--

Preliminary Examination / University (Final) Examination

❖ ***Written Examination (80 marks)***

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*

COURSE TITLE :- APPLIED BIOMECHANICS & KINESIOLOGY														
COURSE CODE:- MPT 202														
COURSE CREDIT FOR APPLIED BIOMECHANICS & KINESIOLOGY														
Hours			***Hrs/Wk***			***Credits***			***Evaluation Pattern***					
Th	*Pr*	*Tot*	*Lec*	*Pr*	*Tot*	*Lec*	*Pr*	*Tot*	*Written*		*Total*	*Practical*		*Total*
									IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
64	*--*	*64*	*4*	*--*	*4*	*4*	*--*	*4*	*20*	*80*	*100*	*--*	*--*	*--*

LEARNING OBJECTIVES:

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
202.1	*Identify, discuss & analyze the musculoskeletal dysfunction in terms of Biomechanics*	*PO1, PO2, PO9*
202.2	*Apply the knowledge of Biomechanics in exercise prescription with clinical reasoning*	*PO1, PO2, PO4, PO9*
202.3	*Analyze kinetics and kinematics of all joints & its application in body movements*	*PO1, PO2*
202.4	*Apply the principles of Biomechanics in prosthetics, orthotics & mobility aids.*	*PO1, PO2, PO3*
202.5	*Prescribe ergonomic alterations at workplace using biomechanical principles.*	*PO1, PO2, PO5*

Course Content

Topic Serial No	**Title of content**	**Hours of Teaching/learning**	
		Theory	**Practical**
1	Forces, Equilibrium, levers – laws – mechanical advantage, Material properties of bones and soft tissues.	4	--
2	Applied mechanics in the evaluation procedures – movement & functional analysis. Gravity, balance & equilibrium.	6	--
3	Kinetics / Kinematics of extremity and spinal joints, (including T. m. joint) Posture gait jogging, running, climbing up/down, A.D.L and exercises.	6	--
4	Biophysics of connective tissue – ligament, Cartilage, tendon, muscle, neural tissues & vessels, – Response to mechanical loading.	6	--
5	Applied mechanics in physiological & pathological deviations (pathomechanics / Patho kinetics) of spinal & extremity disorders (functional & static)	6	--
6	Applied mechanics in exercise prescription with clinical reasoning.	8	--
7	Analysis of functional hazards related to Environment /Industry - & clinical reasoning for the appropriate Ergonomic advice.	6	--
8	Applied mechanics in the application of Prostheses, Orthoses, & mobility aids – materials, designs & biomechanical compatibility.	6	--
9	Biomechanics of respiration & circulation.	4	--
10	Biomechanics of the nervous system	6	--

11	***Privacy and confidentiality, equality & Non-discrimination. (6 hrs)***
	• *Privacy and confidentiality (2 hrs)*
	  o *Definitions of 'privacy' and 'confidentiality' with reason in physiotherapy*
	  o *Justified breaches of confidentiality-*
	  ▪ *Sharing information for patient care*
	  ▪ *Using interpreters*
	  ▪ *Teaching medical students*
	  ▪ *Mandatory reporting Serious danger to others*
	  ▪ *Patient or guardian consent*
	• *Equality, justice and equity (2 hrs)*
	  o *Definitions of 'equality', 'justice' and 'equity'*
	  o *The right to health care & Physiotherapy*
		2
		
		2	

	○ *Disparities in health status* ▪ *Local disparities* ▪ *National disparities* ▪ *Global disparities* ○ *Roles of Physiotherapists in establishing health care priorities and allocating scarce health care resources as direct health care providers* • *Non-discrimination and non-stigmatization, (1hr)* ○ *What is discrimination and stigmatization?* • *Respect for cultural diversity and pluralism (1hrs)* ○ *Definition of culture and cultural diversity* ○ *Definition and value of pluralism* *Limits to the consideration for cultural specificities Human dignity, human rights and fundamental freedoms*	*1* *1*	

Textbooks

Sr. No.	Title
1	Measurement of Joint motion - A guide to Goniometry - Cynthia C. Norkin
2	Joint Structure and Function- Levangie Pamela K
3	Fundamentals of Biomechanics- Knudson Duane

Reference Books

Sr. No.	Title
1	Basic Biomechanics of The Musculosketeletal System- Nordin Margareta

SCHEME OF EXAMINATION

Evaluation Pattern					
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
20	*80*	*100*	--	--	--

Preliminary Examination / University (Final) Examination

❖ ***Written Examination (80 marks)***

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*

COURSE TITLE :- EXERCISE PHYSIOLOGY , HEALTH & FITNESS COURSE CODE:- MPT 203														
COURSE CREDIT FOR EXERCISE PHYSIOLOGY , HEALTH & FITNESS														
Hours		**Hrs. /Week**			**Credits**				**Evaluation Pattern**					
Th	Pr	Tot	Lec	Pr	Tot	Lec	Pr	Tot	Written		Total	Practical		Total
									IA	Final exam	Final exam	IA	Final exam	Final exam
64	64	128	4	4	8	4	2	6	20	80	100	--	--	--

Learning Objectives:

CO No.	At the end of the course, the learner should be able to:	Mapped Programme Outcomes
203.1	Describe various physiological/systemic changes that occur during exercise.	PO1, PO2
203.2	Describe various types, principles and application of different types of exercise training methods.	PO1, PO2
203.3	Apply the principles of diet and nutrition in exercise prescription.	PO1, PO2, PO3
203.4	Assess and prescribe exercise protocol in special populations like Geriatrics, atheletes, obese, pregnancy and in various systemic conditions like hypertension and respiratory conditions.	PO1, PO2, PO3, PO4
203.5	Describe the process of body's acclimatization to various environmental conditions.	PO1, PO2

Course Content – (section A/B as applicable)

Topic Serial No.	Title of content	Hours of Teaching/learning	
		Theory	Practical
EXERCISE PHYSIOLOGY			
1	**ENERGY PRODUCTION, EXPENDITURE, AND TRANSFER** • Energy transfer in cells during exercise. • Oxygen metabolism and transfer during metabolism. • Oxygen transport in blood • Oxygen deficit, Oxygen debt. • Oxygen measurement, Oxygen during exercise, Oxygen during recovery. • Energy release from carbohydrate, lipids and proteins. • BMR – during rest, at activity. • Energy expenditure during activity. • Short Term and Long term energy systems.	6	6
2	**EXERCISE PERFORMANCE** • Lung function and its role in exercise performance • Regulation of ventilation & blood pressure during exercise. • Cardiovascular adjustment during exercise. • Muscle fiber, types and its role in exercise performance. • Ventilation during steady and non-steady rate exercise. • Energy cost and breathing. • Blood pressure (BP) response to exercise. • Cardiac output during exercise in – trained / untrained. • Cardiovascular drift.	6	6
3	**AEROBIC AND ANAEROBIC EXECISES** • Principles of Training • Anaerobic system changes with training • Aerobic system changes with training • Factors affecting aerobic and anaerobic training response. • System adaptation to aerobic and anaerobic training	6	6

	• Overtraining • Strength training –physiology in various age groups • Methods of training, Circuit training & De-training • DOMS. • Aid in enhancing training and performance.		
4	**EXERCISE AND ENVIRONMENT** • Acclimatization • Exercising at high and low altitude and hypoxia. • Exercise at hot climate, thermoregulations, dehydration and rehydration. • Exercise at cold climate.	6	6
5	**FATIGUE** • Classification, physiology • Assessment and management.	6	6
HEALTH & FITNESS			
1	**NUTRITION:** • Carbohydrates:- Nature, Source, Classification, Recommended intake, and role in exercise. • Lipids: - Nature, Source, Classification, Recommended intake, and role in exercise. • Proteins: - Nature, Source, Recommended intake, and role in body. • Vitamins: - Kind, Source, Role of vitamins. • Minerals :- Kind, Source, Role of minerals: Calcium, Phosphorus, magnesium, Iron, sodium, potassium, Chlorine. • Nutritional deficiencies and management.	6	6
2	**DIET** • Recommended dietary intake, Pre-competition meal, • Diet for endurance and strength training.	6	6
3	**FITNESS TESTING** • Predicting/ measurement of aerobic fitness ➢ Field tests ➢ Lab tests ➢ Sub-maximal test (cycle ergometer, treadmill tests) ➢ Maximal testing • Predicting / measurement of anaerobic fitness, strength and power • Predicting / measurement of flexibility. • Predicting / measurement of agility • Fitness testing for special population-Paediatrics, women, geriatrics	6	6
4	**BODY COMPOSITION** • Obesity and weight control. • Measurement of body composition – BMI, WHR, indirect methods of measurement	5	6
5	**EXERCISE TESTING AND PRESCRIPTION FOR SPECIAL CONDITION** • Diabetes mellitus • Hypertension • Cardio- vascular system • Respiratory impairment	*5*	6
6	**PAEDIATRIC EXERCISE SCIENCE-** Exercise in testing in Paediatric- 1)Flexibility 2)Endurance 3) Fitness 4)Strength 5) Functional Testing	*4*	*4*

7	***Protecting future generations, Protection of the environment (2hr)*** • *Why care about the future? Contexts of concern* • *The scope and limits of future related responsibilities Intergenerational; distant generations, all unborn generations?* • *Obligations over health care providers to the possible people of the future?* • *Health care and future generations* • *The relation of bioethics and environmental issues* • *Basic principles of environmental ethics* *i. environmental justice* *ii. intergenerational justice* *iii. respect for nature*	*2*	-

Textbooks

Sr. No	Title
1	Exercise for health fitness & performance - Smith
2	Energy , nutrition & Human Performance – William Macardel

Reference Books

Sr. No.	Title
1	Physiology of Sports & Exercise - Wilmore
2	Clinical Exercise Physiology – Ehrman Gordhan

SCHEME OF EXAMINATION

Evaluation Pattern					
Written		*Total*	*Practical*		*Total*
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
20	*80*	*100*	--	--	--

Preliminary Examination / University (Final) Examination

❖ ***Written Examination (80 marks)***

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*

COURSE TITLE :- PHYSIOTHERAPEUTICS-II COURSE CODE:- MPT 204								
COURSE CREDIT FOR PHYSIOTHERAPEUTICS-II								
Hours	**Hrs/Wk**	**Credits**	**Evaluation Pattern**					
Clinical	Clinical	Clinical Credit	Theory			Practical (Physio therapeutics-II)		
			IA	Final	Total	IA	Final	Total
192	12	4	--	--	--	20	80	100

Co No.	At the end of the course, the learner should be able to:	Mapped Programme Outcomes
204.1	Take appropriate patient history in the prescribed format.	PO1, PO2, PO3
204.2	Select an appropriate outcome measure and correlate patient examination findings.	PO1, PO2, PO3, PO4
204.3	Use appropriate Physiotherapeutic Technique / approaches to treat patients.	PO1, PO2, PO3, PO5
204.4	Discuss the recent management approaches for common conditions and deliberate on best practice model for patient centered care	PO1, PO2, PO4, PO9

SCHEME OF EXAMINATION FOR PHYSIOTHERAPEUTICS-II

Evaluation Pattern					
Written		**Total**	**Practical**		**Total**
IA	**Final exam**		**IA**	**Final exam**	
--	--	--	20	80	100

IA= 20 marks shall include completion of the log book/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – II

Practical

Spots - 20 Marks

(based on electro physiology, electro diagnosis, x-ray-chest, limb, CT, MRI, Manual therapy, Exercise Physiology, Nutrition)

Clinical case - 60 marks

Bed side evaluation & Therapeutic skills and Scenario based

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER - III
MPT 1: Musculoskeletal Sciences

MPT - SEMESTER III																				
Course. Code	**Course**	**Teaching Learning Hrs**				**Teaching Learning Hrs/ Week**				**Credit**				**Exam Marks**					
														Theory			**Practical**		
		Th	**Pr**	**Cl**	**Tot**	**Th**	**Pr**	**Cl**	**Tot**	**Th**	**Pr**	**Cl**	**Tot**	**Int**	**Ext**	**Tot**	**Int**	**Ext**	**Tot**
MPT 1 301	Musculoskeletal Sciences: Clinical Sciences-I	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 1 302	Musculoskeletal Sciences: Physiotherapeutics-I	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 1 303	Musculoskeletal Sciences: Recent advances - I	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 1 304	Musculoskeletal Sciences: Advanced Physiotherapeutics-I	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
	Total	**176**	**160**	**192**	**528**	**11**	**10**	**12**	**33**	**11**	**5**	**4**	**20**	50	200	250	20	80	100
	Research Dissertation			144	144			9	9			3 Credit Assessed & accumulated in Semester 4							
	Total Hours				672				42										

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective based advance Physiotherapeutics-I:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -192 hours, Laboratory work (includes project / review of literature/seminars/case Presentation, journal clubs etc.) – 160 hrs, Scientific enquiry/Research dissertation – 144 hours

Note: *The subjects of III – Semester MPT shall include the following contents as classified for examination.*

- ***Elective Based Clinical Sciences –I*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical & Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics-I*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-I*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-I*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES :

Musculoskeletal Sciences: Clinical Sciences I (MPT 1-301)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
301.1	*Be able to identify, discuss & analyse musculo skeletal dysfunction in terms of biomechanical, kinesiological and biophysical basis and co-relate the same with the provisional diagnosis, routine radiological and Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy.*	*PO1, PO2, PO9*
301.2	*Be able to correlate neuro-musculoskeletal system with clinical decision making*	*PO1, PO2, PO6, PO9*
301.3	*Document patients with scale, out come measures and asses the progression*	*PO1, PO2*
301.4	*Use Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students.*	*PO1, PO2*

Musculoskeletal Sciences: Physiotherapeutics I(MPT 1-302)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
302.1	*Be able to identify, discuss & analyse, the Musculoskeletal dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy*	*PO1, PO2, PO9*
302.2	*Be able to correlate neuromusculo skeletal system with clinical decision making*	*PO1, PO2, PO6, PO9*
302.3	*Document patients with scale, out come measures and asses the progression*	*PO1, PO2*
302.4	*Use Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students*	*PO1, PO2*

Musculoskeletal Sciences: Recent Advances I (MPT 1-303)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
303.1	*Be able to identify, discuss and co-relate the same with the Provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy.*	*PO1, PO2, PO9*
303.2	*Be able to correlate neuromuscular skeletal system with clinical decision making with Physiotherapy Management.*	*PO1, PO2*
303.3	*Document patients with scale, out come measures and asses the progression and Follow ups*	*PO1, PO2*

Musculoskeletal Sciences: Advanced Physiotherapeutics-I (MPT 1-304)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
304.1	*Identify and discuss, the Musculo skeletal dysfunction in terms of Recent Advances in the field of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy.*	*PO1, PO2*
304.2	*Correlate neuromusculoskeletal system with updated clinical decision making*	*PO1, PO2*
304.3	*Document patients with latest and new version of scale, out come measures and asses the progression*	*PO5, PO6*
304.4	*Use Recent Physiotherapeutic Technique/ approaches to treat patients with musculoskeletal disorders in different age groups.*	*PO1,PO2, PO5, PO6*

COURSE CONTENTS:

- Introduction to Orthopaedics – Assessment & Evaluation in detail related to orthopaedic patient history taking, clinical features, clinical examination and investigation.

- Musculoskeletal system:
  - Embryology of musculoskeletal system
    a) Long bone.
    b) Short & Flat bone.
    c) Skull & Thumb.
  - Architecture of bone.
  - Gross anatomy of bone, joints, muscles and nerves.
  - Dermatomes & Myotomes.
  - Joint play movements.
  - Skeletal growth and development (normal & Pathological)
  - Types of muscle contraction, nerve – muscle pathology.
  - Calcium – phosphorus metabolism (normal & Pathological states).

- Fractures
  - General principles
  - Fracture treatment – Past, Present & Future.
  - Stress shearing / shielding devices.
  - Fracture healing (normal & Pathological)
  - Upper Quarter Fractures-Clavicle. Scapula. Humerus. Forearm bones. Hand. Rib fracture. Vertebral fracture.
  - Lower Quarter Fractures-Fracture Neck of femur. Fracture Acetabulum. Fracture Pelvis. Fracture trochanter. Shaft of femur. Patellar fracture. Intercondylar fracture of shaft of tibia. Pott's fracture. Calcaneal fracture. Metatarsal fracture. Phalanges fracture.

- Dislocation
  - Acromioclavicular joint., sternoclavicular joint.
  - Recurrent dislocation of shoulder., elbow, wrist & phalanx.
  - Recurrent dislocation of patella.
  - Hip, ankle, dislocation.

- Soft Tissue Injuries
  [injury & repair, clinical presentation, evaluation & general principles of rehabilitation management]
  - Upper limb.- Sprains of shoulder. Bursitis. Tendonitis. Snapping & winged scapula. Tennis elbow. Tenosynovitis. Carpel tunnel syndrome.Dupuytren's contracture. VIC. Reflex Sympathetic Dystrophy. Periarthritis of shoulder. Thoracic outlet syndrome. Shoulder hand syndrome.
  - Lower Limb.- Fat pad inflammation. Baker's cyst. ACL, PCL. Meniscal injury. Chondromalacia patella.
  - Deltoid Fibrosis, Trigger Finger & Thumb, Quadriceps Fibrosis, Bursitis around the knee, Plantar Fascitis, Calcaneal Spur, IT Syndrome, TMJ dysfunction, Gait.
- Home program and counselling for care givers
- Ergonomics in musculoskeletal dysfunction
- Pilates
- PNF techniques
- Swiss ball therapy

REFERENCE BOOKS

1. Black d and Dummbleton J. H. clinical Biomechanics 2nd edn. Churchill Livingstone 1987.
2. Sullivan P.D. and Minor M.A. An Integrated Approach to Therapeutic Exercises Resten 1982.
3. Donatelli R. ed. Physical Therapy of the Shoulder, 2nd edn Churchill, Livingston 1991.
4. Donatelli R. and wooden M.J. Ed Orthopaedic Physical Therapy Churchill, Livingston 1989.
5. Grant, R. (ed) Physical Therapy of the Cervical and Thoracic Spine, Churchill, Livingstone, 1987.
6. Grieve G.P.(ed) Modern Manual Therapy of the Vertebral Column, Churchill, Livingstone, 1986.
7. Grieve G. P. Common Vertebral Joint Problems, 2nd edn Churchill, Livingstone, 1988.
8. Jayson M.I.V. (ed) The Lumber Spine and Back Pain, 3rd edn Churchill, Livingstone, 1987.
9. Kirkaldy- Willis W. H. (ed) Managing low back pain, 2nd edn Churchill, Livingstone, 1988.
10. Mangine, R.E. Physical Therapy of the Knee, Churchill, Livingstone, 1988.
11. Traveil J. G. and Simons, D.G. Myofascial pain and Dysfuntion. The Trigger Point manual, Williams and Willkins, 1983.
12. Cruess, R.L. ed. The Musculoskeletal System: Embryology, Bio- Chemistry and Physiology, Churchill, Livingstone, 1982.
13. Vander, A. J. Human Physiology: The mechanisms of body Function, 5th edn. Mc. Graw-Hill, 1990.
14. Vidik, A. and Vuust, J. Biology of Collagen, Academic press 1980.
15. Chaffin, D.B. and Anderson, G. Occupational Biomechanics, 2nd edn. Wiley, 1984.
16. Myofascial pain and dysfunction – Travell, Williams & Wilkins, Baltimore 1983.
17. Physical therapy of the low back- Twomwy, Churchill Livingstone, London 1995.
18. Sport injuries of the shoulder- Souza Thomas A. Churchill Livingstone, London 1994.
19. Orthopaedic physical therapy – Donatelli, London Churchill Livingstone 1994.
20. Scientific basis of human movement- Gowitzke, Williams and Wilkins, Baltimore, 1988 3rd edition.
21. Clinical biomechanics of spine – White A.A and Panjabi- J.B. Lippincot, Philadelphia 1978.
22. Kinesiology – Burnstrom Singe, F.A. Davis – Philadelphia- 1966.
23. Vertebral manipulation- Matiland G.D. Boston, Butterworth & Co. Boston, 1997.
24. Peripheral manipulation - Matiland G.D. Boston, Butterworth & Co. Boston, 1997.
25. Benson, Fixsen and Macnicol (Ed) Children's orthopaedics and fractures. Churchill Livingstone.
26. Bleck E (1987) Orthopaedic management in cerebral palsy. Mackeith Press.
27. Gage J (1991) Gait Analysis in Cerebral Palsy. Mackeith Press, Oxford. ISBN 0-9012-6090-8
28. Whittle M W (2002) 3 rd Edition Gait Analysis an Introduction. Butterworth and Heinemann.

Scheme of Examination for MPT III Semester

Evaluation Pattern					
MPT 1- 301			***Musculoskeletal Sciences**: Clinical Sciences I*		
MPT 1- 302			***Musculoskeletal Sciences**: Physiotherapeutics I*		
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 1-303		*Orthopaedics : Recent Advances I*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination (For 80 marks Part A & Part B, for 40 Marks only Part A)

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*

Evaluation Pattern					
Course code : MPT 1- 304			*Orthopaedics: Advanced Physiotherapeutic-I*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the logbook / work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – III
Practical

- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER III
MPT 2 : NEUROSCIENCES

MPT- Semester III																			
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 2 - 301	Neurosciences: Clinical Sciences I	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 2 - 302	Neurosciences: Physiotherapeutics I	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 2 - 303	Neurosciences: Recent Advances I	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 2 - 304	Neurosciences :Advanced Physiotherapeutics I	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
	Total	176	160	192	528	11	10	12	33	11	5	4	20	50	200	250	20	80	100
	Research Dissertation	-	-	144	144	-	-	9	9	-	-	-	3 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective based advance Physiotherapeutics-I:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -192 hours, Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 160 hrs, Scientific enquiry/Research dissertation – 144 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences –I*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical & Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics-I*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-I*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-I*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES:

Neurosciences: Clinical Sciences I (MPT 2-301)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
301.1	*To gain knowledge about basic and applied neuro-anatomy, motor development, neurophysiology and embryology of the nervous system. Be acquainted in detail with major conditions that are covered in the field Neurosciences along with their epidemiology and etiological factors.*	*PO1, PO4, PO5, PO7, PO8, PO9*
301.2	*Be able to identify, discuss and analyze the neurological and developmental deficit in terms of pathophysiological, Anatomical, neural basis and come to a functional diagnosis by co-relating the same with routine radiological and electrophysiological investigations.*	*PO1, PO2, PO4, PO5, PO7, PO8, PO9*
301.3	*Recognize the implications of dysfunction of the neurological system and its correlation with students-clinical decision making.*	*PO1, PO2, PO4, PO5, PO6, PO7, PO8, PO9*
301.4	*Give rationale for clinical tests used for differential diagnosis in neurological assessments*	*PO1, PO3, PO4, PO5, PO9*

Neurosciences: Physiotherapeutics I (MPT 2-302)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
302.1	*Incorporate analytical skills with good hands-on to perform appropriate subjective and physical examinations and provide suitable treatment for the same.*	*PO1, PO2, PO4, PO5, PO7, PO9*
302.2	*Expertise the evaluation of patients, level of affection,pertaining to specific neurological conditions with clinical reasoning. Example: Stroke*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*
302.3	*Use of Neuro-physiotherapy techniques to treat and train patients with neurological disorders through all age groups.(Paediatrics, Adults and Geriatrics) and execute professional practice through ethical code*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*
302.4	*Develop good interpersonal relationship, expertise in soft skills with Patient and their care taker.*	*PO1, PO3, PO5, PO7, PO8, PO9*

Neurosciences: Recent Advances I (MPT 2-303)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
303.1	*Familiar with research methodology and its ethical use in studies and clinical setups*	*PO1, PO2, PO3, PO4, PO5, PO7, PO9*
303.2	*Follow evidence based practice with efficient clinical expertise giving reference to the line of treatment being followed along with patient's informed consent.*	*PO1, PO2, PO3, PO4, PO5, PO7, PO9*
303.3	*Increase awareness about recent trends in research and their use for assessment and management in clinical setups with reference to neurological rehabilitation.*	*PO1, PO2, PO4, PO5, PO7, PO8, PO9*

Neurosciences: Advanced Physiotherapeutics I (MPT 2-304)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
304.1	*Identify and discuss, the neurological dysfunction in terms of Recent Advances in the field of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological and Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of Neuro-physiotherapy.*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*
304.2	*Correlate Neuromusculoskeletal system with updated clinical decision making*	*PO1, PO2, PO4, PO7, PO8, PO9,*
304.3	*Documentation of cases with latest and appropriate outcome measures and asses the progression*	*PO1, PO4, PO5, PO7, PO8, PO9*
304.4	*Use Physiotherapeutic Technique/ approaches to treat patients with Neurological disorders in different age groups incorporate with Recent advances*	*PO1, PO2, PO3, PO4, PO6, PO7, PO8, PO9*

COURSE CONTENTS: NEUROSCIENCES

a) Embryology.
b) Neuro muscular Conditions.
c) Electro Diagnosis

All topics shall be discussed and learnt with clinical manifestations, pathology & pathophysiology, assessment & investigations, management procedures and recent advances.

- Growth & Development of central Nervous system.
- Reflex
- Aging of Nervous system
- Physiology & anatomy of Nervous system- Review
- Physiology of Motor Control
- Infections Conditions.
  - Pyogenic infections of CNS (Bacterial & Tuberculosis meningitis, Brain Abscess)
  - Viral infections of CNS (Poliomyelitis encephalitis) Neuro syphilis, HIV, rabies.
- Metabolic Disorders of Brain - Hypokalemic encephalopathy, hypoglycemic encephalopathy, Hepatic encephalopathy.
- Degeneration Diseases of Nervous system - Parkinson Diseases, Motor Neuron disease Amyotrophic lateral sclerosis, Progressive bulbar palsy, progressive muscular atrophy.
- Poly Neuropathy - Peripheral Neuropathy, Post infective polyradiculoneuropathy, Diabetic poly Neuropathy, Hereditary sensory motor Neuropathy, Infective polyneuropathy.
- Disorders of muscle & Neuro muscular function - Myasthenia gravis, myotonic disorders, progressing muscular dystrophy, Duchenne muscular dystrophy Becker muscular dystrophy, Limb-girdle muscular dystrophy, LEMS, Spinal muscular atrophy.
- Stroke- Focal, multiple focal, lacunar infects, gross infect, degradation of Brain,
- Movement dysfunction (Cerebellar lesions, basal ganglionic lesions).
- Bladder & Bowel dysfunction.
- Convulsive disorders.
- Vestibular Disorder.
- Pain pathway & management.
- Fatigue.
- Pharmaco-therapeutics in neurological conditions and its relevance in physiotherapy
- Approaches – PNF, Roods, Brunnstrom, NDT, SI, Vojta, Temple-Fay
- Motor learning theories, Motor control theories
- Cerebral palsy

- Basic elements of Neuro diagnostic tests – CT, MRI, Myelography, NCV, EMG & Angiography in Neuro Diagnostic Tests
- Electro – physiological studies - Somato sensory evoked potentials, Motor evoked potentials, Brainstem & auditory evoked potentials, Visual evoked potentials, Differential diagnosis of E.M.G, Differential diagnosis of N.C.V with clinical reasoning, Diagnosis of the above-mentioned topics

REFERENCE BOOKS : MPT (NEUROSCIENCES)

1. Bloom B.G. Health Psychology: a psychosocial perspective Prentics Hall, 1988.
2. Brooks, V.B. The Neural Basis of Motor Control, Oxford University press 1986.Clinics in Physical Therapy series.
3. Knott M. and Voss D.E. Proprioceptive Neuromuscular Facilitation 3rd edn Harper and Row 1984.
4. Magill R.A. Motor Learning – Concepts and Applications, 3rd edn Brown 1989.
5. Bio- feedback – A practitioners guide- Kerb D, Guilford press.
6. The neural basis of motor control- Black I. Churchill Livingstone, London 1987.
7. Physical Therapy management of Parkinson's disease- Tumbull Gerode I. Churchill Livingstone, London – 1994.
8. Abnormal postural reflex activity caused by Brain lesions – Bobath b. Aspen publications, Rockville. 1897.
9. Disorders of voluntary muscle – Eagel. Churchill Livingstone, Edinburgh 1988.
10. A Clinician's view of neuro muscle disorder – Brook M.H. Williams and Wilkins, Baltimore .1986.
11. Proprioception, neuro muscular facilitation techniques Knot M. and Voss, Harper and Row, New York 1972 2nd edition.
12. Stroke rehabilitation – Laidler, Capman and Hakk, Lodon 1994.
13. Motor relearning programme for stroke – Carr Aspen publication, Rock ville, 1987.
14. Adult hemiplegia: evaluation and treatment- Bobath B. Heinmann, Lodon 1983.
15. Paraplegia and tetraplegia- Brcmbley, Churchill Livingstone, Edinburgh 1991.
16. Skinnerm A and Thomsan, A. (ed.) Duffield's Exercise in water, Balliere Tindall, 1983.
17. Human neuroanatomy - Carpenter M.B. Williams & Wilkins, Baltimore, 1983.
18. Orthotics in neurological rehabilitation – Aisen, Demos Publication, New York 1992
19. Neuro- rehabilitation – Farber, W.B. Saunders, Philadelphia 1982.
20. Campion, M.R. ed. Adult Hydrotherapy. A practical Approach, butterworth Heinemann, 1990.
21. Aicardi J (1998) Disease of the nervous system in childhood 2 nd Edition Mackeith Press, distributed by Cambridge University Press
22. Bobath K (1984) A neurological basis for the treatment of cerebral palsy Clinics in Developmental Medicine. SIMP, Suffolk ISBN 0-4330-3335-5
23. Bobath B Development in the different types of cerebral palsy.
24. Bobath B (1985) 3 rd edition. Abnormal postural reflex activity. Heinemann
25. Campbell S (Ed) (1991) Paediatric neurological physical therapy. Churchill Livingstone, London.
26. Campbell S (2000) Physical Therapy for Children. W B Saunders Co.
27. Crombie S Home programmes for children with motor delay. Winslow Press.
28. Dubowitz V (1980) 2 nd edition. The Floppy Infant. Clinics in Developmental Medicine No. 76. Heinemann, London ISBN 0433-07902-9
29. Edwards S (Ed) (1997) "Neurological Physiotherapy" Churchill Livingstone
30. Finnie N (1997) 3 rd edition. Handling the young child with cerebral palsy at home. Butterworth and Heinemann, Oxford. ISBN 0-7506-0579-0
31. Griffiths M and Clegg M (Eds.) (1997) 2nd edition. Cerebral Palsy problems and practice. Human Horizon Series/Souvenir Press.
32. Illingworth R (1991) 10 th edition. The normal child. Livingstone.
33. Levitt S (1984) Paediatric developmental therapy. Blackwell Scientific Publications.

34. Levitt S (1995) 3 rd edition. Treatment of cerebral palsy and motor delay. Blackwell Scientific Publications.
35. Scrutton D (Ed) (1990) Management of motor disorders with cerebral palsy. Clinics in Developmental Medicine. Cambridge University Press.
36. Shumway-Cook A & Woollacott M (1995) "Motor Control: Theory and Practical applications" Williams and Wilkins
37. Stokes M (Ed) (1998) Neurological Physiotherapy. Mosby.

SCHEME OF EXAMINATION FOR MPT III SEMESTER

Evaluation Pattern					
MPT 2-301			*Neurosciences: Clinical Sciences I*		
MPT 2-302			*Neurosciences: Physiotherapeutics I*		
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 2-303		*Neurosciences: Recent Advances I*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination (For 80 marks Part A & Part B, for 40 Marks only Part A)

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks = 15 Marks*

Evaluation Pattern					
Course code : MPT 2- 304			*Neurosciences: Advanced Physiotherapeutics-I*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the log book/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – III
Practical

- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER III
MPT 3 : CARDIO-RESPIRATORY SCIENCES

MPT- Semester III																				
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 3 - 301	Cardio-Respiratory Sciences: Clinical Sciences I	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 3 - 302	Cardio-Respiratory Sciences: Physiotherapeutics I	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 3 - 303	Cardio-Respiratory Sciences: Recent Advances I	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 3 - 304	Cardio-Respiratory Sciences : Advanced Physiotherapeutics I	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
	Total	176	160	192	528	11	10	12	33	11	5	4	20	50	200	250	20	80	100
	Research Dissertation	-	-	144	144	-	-	9	9	-	-	-	3 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective based advance Physiotherapeutics-I:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -192 hours, Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 160 hrs, Scientific enquiry/Research dissertation – 144 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences –I*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical & Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics-I*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-I*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-I*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES:

Cardio-Respiratory Sciences: Clinical Sciences I (MPT 3-301)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
301.1	*Recall Anatomy & Physiology of Cardio-Pulmonary system*	*PO1*
301.2	*Describe the pathophysiology, etiology, clinical features and impairments of respiratory conditions.*	*PO1, PO2*
301.3	*Interpret the investigations like ABG, PFT, Chest X-ray etc.*	*PO1, PO2*
301.4	*Describe medical and surgical management for common respiratory conditions.*	*PO1, PO2, PO3*
301.5	*Formulate differential diagnosis with the help of the acquired knowledge.*	*PO1, PO2, PO4, PO9*

Cardio-Respiratory Sciences: Physiotherapeutics I (MPT 3-302)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
302.1	*Describe the biomechanics of lung, Respiratory tract, pulmonary circulation, Thoracic cage.*	*PO1*
302.2	*Describe about the patho-mechanics of respiratory conditions.*	*PO1*
302.3	*Interpret of investigations and to form ICF.*	*PO1, PO2*
302.4	*Perform physiotherapy assessment using reliable and valid outcome measures.*	*PO1,PO2, PO3,PO4,PO5*
302.5	*Plan and implement a management protocol.*	*PO1, PO2, PO3, PO4, PO5, PO6*

Cardio-Respiratory Sciences: Recent Advances I (MPT 3-303)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
303.1	*Perform detailed assessment for various respiratory conditions.*	*PO1*
303.2	*Search reliable and valid sources for recent advances.*	*PO2,PO4,PO9*
303.3	*Critically appraise scientific literature related to the respiratory conditions.*	*PO1,PO2,PO3, PO4, PO9*
303.4	*Create a physiotherapy management protocol based on recent advances*	*PO1,PO2,PO3, PO4, PO5, PO6, PO9*

Cardio-Respiratory Sciences: Advanced Physiotherapeutics-I (MPT 3-304)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
304.1	*Take appropriate patient history in the prescribed format.*	*PO1, PO2, PO3*
304.2	*Select an appropriate outcome measure and correlate patient examination findings.*	*PO1, PO2, PO3, PO4*
304.3	*Use appropriate Physiotherapeutic Technique / approaches to treat patients.*	*PO1, PO2, PO3, PO5*
304.4	*Discuss the recent management approaches for common conditions and deliberate on best practice model for patient centered care*	*PO1, PO2, PO4, PO9*

COURSE CONTENTS : (RESPIRATORY DISORDERS)

- Development of Pulmonary system.
- Review of Anatomy & Physiology of lung, Respiratory tract, pulmonary circulation, Thoracic cage.
- Biomechanics of Thoracic cage, normal & diseased.
- Mechanics of breathing & lung compliance, Body positioning techniques.
- Assessment and Management of Respiratory muscles, respiratory muscle fatigue, respiratory muscle fatigue in disease.
- Cough reflex, Paediatric lung, Breathing techniques, IPPB, ACBT, PD, AD.
- Bronchial Hygiene – Humidification, nebulization, aerosol therapy, suctioning.
- Artificial Ventilation – Mechanical Ventilation, tracheostomy, manual hyperinflation.
- Neonatal Respiratory diseases.
  - Pulmonary disease in immature babies, neonates.
  - Asthma, Birth asphyxia, Bronchopulmonary dysplasia, Nickity Wilson Syndrome, Bronchial stenosis.
- Children with respiratory dysfunction.
- COPD, Asthma, Cystic Fibrosis, Immunological deficits, Pertusis.
- Adult COPD- Causes, pathomechanics, presentation, evaluation, investigation, management, rehabilitation.
- Restrictive lung disorders- Causes, pathomechanics, presentation, evaluation, investigation, management, rehabilitation.
- Infective lung diseases- Causes, pathomechanics, presentation, evaluation, investigation, management, rehabilitation.
- COVID-19: Causes, pathomechanics, presentation, evaluation, investigation, management, rehabilitation.
- Tumors of lung.
- Trauma of Chest.
- Pulmonary embolism, Interstitial lung diseases, Disorders of Pleura.
- Industrial lung disorders.
- Surgical conditions.
  - Thoracoplasty, Empyema, Thrombosis, Rib-resection, Decortications, Window operation, Pneumonectomy, Lobectomy, Pleurodesis, Thoracotomy, Tracheostomy.
- ICU- Management for respiratory disorder, Drainage indication, Mechanical Ventilation- (setting & weaning), Humidification, O_2 Therapy, Nebulization, Suctioning, Endotracheal Tube, Tracheostomy Tube, Neonate ICU.
- PFT- Evaluation and Interpretation.
- **P**harmacotherapeutics in respiratory conditions and its relevance with physiotherapy
- Pulmonary fitness testing- Adults/Paeds/Geriatric.
- Geriatric Lung.
- Evaluation and assessment procedures, Chest wall configuration, Deformities, Unmoving chest, Breathing pattern, Speedy breathing, Cough, Sputum, Cyanosis, Clubbing,
- Respiratory care in Neurological conditions.
- Evaluation of mediastinum, tracheal deviation, chest wall expansion, fremitus, percussion techniques.
- ABG. Pulse oxymetry.
- Chest radiography- Principles, guidelines, interpretation of normal & abnormal chest radiographs.
- Exercise testing in Pulmonary conditions- Low level/Sub-maximal/Maximal.
  - Physiological changes & adaptation of pulmonary system to exercise testing.
- Recent advances in Diagnosis, Differential diagnosis & physiotherapy management in pulmonary conditioning.
- Management of Dyspnea. Management of patients with acute exacerbations.

- Thoracic Manipulation – Rib cage and Spine,Thoracic Mobilization Techniques
- PNF for Thoracic Cage

REFERENCE BOOKS

1. Textbook of work physiology – Guyton, pain Books Bangalore- 1991 8th edition.
2. Chest physiotherapy in Intensive care unit – Makezie, Williams & Wilkins, Baltimore.
3. Cardiopulmonary symptoms in physiotherapy – Cohen M. Churchill, Livingstone, London 1988.
4. Cardiopulmonary symptoms in PTpractice- Cohen M. Churchill Livingstone, London 1988.
5. Clinical application of ventilatory support – Kinby , Churchill Livingstone, New York 1990.
6. Cardiopulmonary Physiotherapy – Irwin, C.V. Mosby, St. Louis 1990.
7. Pulmonary rehabilitation: guidelines to success- Hoidkins, Butterworth, Boston, 1984.
8. Cardiac rehabilitation – Amundsen L.R. Churchill Livingstone, London 1988.
9. Dinwiddie R, (1990) The diagnosis and management of respiratory disease. Churchill Livingstone.
10. Greenough A, Robertson C and Milner A (Ed) (1996) Neonatal respiratory disorders. Arnold.
11. Prassad S A and Hussey J M (Ed) (1994) Paediatric respiratory care – a guide for physiotherapists and other health professionals. Chapman and Hall.
12. Webber B and Pryor J (1993) Physiotherapy for respiratory and cardiac problems. Churchill Livingstone, London. ISBN 0-443-04471-6.

SCHEME OF EXAMINATION FOR MPT III SEMESTER

Evaluation Pattern					
MPT 3- 301		*Cardio-Respiratory Sciences: Clinical Sciences I*			
MPT 3- 302		*Cardio-Respiratory Sciences: Physiotherapeutics I*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 3-303		*Cardio-Respiratory Sciences: Recent Advances I*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination

Written Examination ***(For 80 marks Part A & Part B, for 40 Marks only Part A)***

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks = 15 Marks*

Evaluation Pattern					
Course code : MPT 3- 304			*Cardio-Respiratory Sciences:Advanced Physiotherapeutics-I*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the log book/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

Practical Examination (80 marks) Semester – III (Practical)

- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER III
MPT 4 : GENERAL & COMMUNITY BASED REHABILITATION

MPT- Semester III																			
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 4 - 301	General & Community Based Rehabilitation: Clinical Sciences I	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 4 - 302	General & Community Based Rehabilitation:Physiotherapeutics I	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 4 - 303	General & Community Based Rehabilitation: Recent Advances I	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 4 - 304	General & Community Based Rehabilitation:Advanced Physiotherapeutics I	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
	Total	176	160	192	528	11	10	12	33	11	5	4	20	50	200	250	20	80	100
	Research Dissertation	-	-	144	144	-	-	9	9	-	-	-	3 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective based advance Physiotherapeutics-I:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -192 hours, Laboratory work (includes project / review of literature/seminars/case Presentation, journal clubs etc.) –160 hrs, Scientific enquiry/Research dissertation – 144 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences –I*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical & Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics-I*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-I*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-I*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES:

General & Community Based Rehabilitation: Clinical Sciences I (MPT4-301)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
301.1	*Diagnose and analyze the clinical reasoning of changes during pre and post pregnancy.*	*PO1,PO2,PO9*
301.2	*Formulate the objective for the management in women's health during and after menopause.*	*PO1,PO2,PO9*
301.3	*Evaluate various gynaecological conditions like urogenital dysfunctions, pelvic organ prolapse, pelvic inflammatory disease, incontinence etc.*	*PO1,PO2, PO9*
301.4	*Assess the physiological changes during aerobic and anaerobic exercise in fitness.*	*PO1,PO2,PO4,PO9*
301.5	*Formulate prevention program at a community level for health and fitness.*	*PO1,PO4, PO3, PO5, PO6,PO7, PO8, PO9*

General & Community Based Rehabilitation: Physiotherapeutics I(MPT 4-302)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
302.1	*Formulate and deliver the effective management for the complications during pre and post natal period.*	*PO1, PO2, PO3, PO5, PO7, PO9*
302.2	*Design and depart exercise prescription in gynecological conditions like UV prolapse ,urinary incontinence in patients.*	*PO1,PO2,PO3,PO5, PO7,PO9*
302.3	*Design and execute fitness programs for different age group.*	*PO1,PO2, PO7, PO8,PO9*
302.4	*Analyze the sensitive areas and organize awareness/ screening camp at community level*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*

General & Community Based Rehabilitation: Recent Advances I (MPT 4-303)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
303.1	*Review recent advances related to various obstetric and gynaecological conditions in women's health for clinical practices.*	*PO1, PO4, PO9*
303.2	*Review recent advances related to various conditions like diabetes, hypothyroidism affecting fitness in clinical practices*	*PO1, PO4, PO9*
303.3	*Design health camps ,awareness programs based on current health statistics for the rural and urban community*	*PO1, PO2, PO3, PO4, PO5, PO7, PO8, PO9*

General & Community Based Rehabilitation: Advanced Physiotherapeutics-I (MPT 4-304)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
304.1	*Identify and discuss, the Urogenital Dysfunction, Pre and Post Natal complications in terms of Recent Advances in the field of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with theprovisional diagnosis, routine investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of physiotherapy.*	*PO 1, PO2, PO7, PO4,PO9*
304.2	*Design and execute fitness programs for different age group and various Conditions with Recent Advances in the field of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with theprovisional diagnosis, routine investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of physiotherapy.*	*PO 1, PO2, PO7, PO4, PO9*
304.3	*Document patients with latest and new version of scale, out come measures and asses the progression*	*PO1, PO4, PO6, PO7, PO9*
304.4	*Use Recent Physiotherapeutic Technique/ approaches to treat patients with in Women's Health and Fitness*	*PO1, PO4, PO6, PO7, PO9*

COURSE CONTENTS :
The syllabus shall focus on General Community Physiotherapy, women's health and Fitness & health promotion.

GENERAL COMMUNITY PHYSIOTHERAPY :

- Scope for Community Physiotherapy
- Institution based rehabilitation and community-based rehabilitation:– its principles and differences, multi-disciplinary approach, role of national institutes, District rehabilitation centre and primary health centre.
- W.H.O.`s policies about rural health care, concept of primary, Secondary, tertiary health centers, District hospitals etc, Principles and Functions of a Rehabilitation team like Medical person, Physiotherapist, Occupational therapist, audiologist, speech therapist, Prosthetic and Orthotics, etc…, Vocational guide in C.B.R. of physically handicapped person.
- Population studies and epidemiological implications of impairment, handicap and disability.
- Evidence based practice in Community health.
- Natural calamity or disaster management – Role of Physiotherapist in disaster management team.
- Public health education methods and appropriate media:– Public awareness to the various disabilities, communications, message generation and dissipation.
- Health care - National and International health delivery systems.
- Role of Government in Community based rehabilitation, inter-sectoral programs and co-ordination, Implementation of the Act.
- Role of Non-Government organizations in Community based rehabilitation.
- Disability evaluation, National policies for rehabilitation of disabled.
- Assistive Devices and appropriate technology in rehabilitation

FITNESS AND HEALTH PROMOTION

- Principles of fitness for health promotion in community, Nutrition and Diet. Physical fitness definition and evaluation.
- Physiological effects of aerobic exercise – clinical reasoning for advocating aerobic exercise as preventive measure in obesity & its related conditions / in cardio-respiratory conditions / Aging / deconditioning effect after prolonged bed rest / Diabetes.

WOMEN'S HEALTH AND MOTHER & CHILD CARE

- Applied anatomy, physiology and biomechanics related to Women's health, mother and childcare.
- Health Promotion in Women's Health. Social issue having impact on
- physical Function, Legal rights and benefits for women.
- Anatomy of Pelvic floor, Physiological changes occurring in female during pregnancy, Clinical reasoning for Physical exercises during pregnancy. Clinical reasoning for care to be taken while performing exercises during pregnancy,
- Prenatal /antenatal programme, Clinical reasoning for specific breathing exercises/ relaxation/ postural training/ Pelvic floor stretching & strengthening exercises, musculoskeletal pain during pregnancy, Maintenance of posture during pregnancy
- Physiology of Labour, Pain during delivery and its management, Physiotherapy during labor
- Post-natal care after normal labour and labour with invasive procedures and Physiotherapy management
- Fitness programmes and breast-feeding techniques. Mother and childcare.
- Psychological and emotional changes and coping up with demands of newborn.

- Uro-genital dysfunctions like organ Prolapse, PID, Incontinence, etc. and its management
- Physiological changes occurring with Menopause, Problems faced by women after menopause and role of physiotherapy
- Common Gynaecological surgeries and its Physiotherapy management
- Radical Mastectomy and Its Management
- Malignancies of reproductive system in women
- Female sexual dysfunctions
- Application of Electro- therapeutic measures in Obstetrics and Gynecology with Clinical reasoning

REFERENCE BOOKS

1. Hogg K. Worksite health Development, Health Development Foundation 1987.
2. Rurrell J. J. Murphy L. R. Sauter, S.L. and Cooper, C.L. Occupational Stress: Issues and Development in Research Taylor and Francis, 1988.
3. C.B. back Schools and Ergonomics in Twomey L.R. and Taylor J.R. (eds) physical Therapy of the Low Back Churchill, Livingstone, 1987.
4. Mophee B and Worth, D.R. neck and upper extremity pain in the workplace in Grant R. Ed Physical Therapy of the cervical and Thoracic Spine Churchill, Livingstone, 1988.
5. Bidmeade, I, Health law in South Australia, 2nd edn. South Australian Health Commission, 1989.
6. Gardner, H. Ed. The Politics of Health the Australian Experience Churchill, Livingstone, 1989.
7. Handy, C. B. Understanding Organisations. 3rd edn Penguin, 1985.
8. Palmer, G.E. and Short S.D. Health Care and Public Policy an Australian Analysis, Macmillan, 1989.
9. Peters, T.J. and Waterman, R. H. in Search of Excellence Harper amd Row, 1984.
10. Pugh, D.S. Hichsen D.J. and Hinings, C.R. Writers on Organisation, 4th edn, Penguin.
11. South Australian Health Commission, Primary Health Care in South Australia : A Discussion Paper SAHC, 1998.
12. Wilenski, P Public Power and Public Administration Hale and iremonger, 1986.
13. Masoro, E.J. ed. CRC handbook of physiology in Agening, CRC press, 1981.
14. Clark, T.S. The Ergonomic of workspace and Machine: a design manual Taylor and Francis, 1984.
15. Corlett, N. and Wilson, J., The Ergonomic of working Postures, Taylor and Francis, 1986.
16. Grandjean, E, Fitting the Task to the Man, 4th edn., Taylor and Francis, 1988.
17. Manjchrzak, A Chang, TLC Banfield W. Ebert's, R. and Salvendy G. Human Aspects of Computer-Aided Design Taylor and Francis, 1987.
18. McCormick. E. J. and Sanders, M.S. Human Factors in Enfineering and Design 6th edn. Graw Hill 1987.
19. Oborne, D. J. Contemporary Ergonomics, Taylor and Francis, 1986 Pheasant, S. Bodysoace, Taylor and Francis, 1986.
20. Handbook of physiology in Aging – Masoro, C.R.C. Press, 1981.
21. Physiotherapy in obstetrics and gynecology- Polden & Mantle, Jayee Brothers, New Delhi 1994.
22. Physical therapy of the cancer patient- McGartex, charles Churchill Livingstone, New York , 1989.
23. Industrial therapy – Key G.L. Mosby, St. Louis 1987.
24. Hall D M B, Hill P D (1996) The Child with a Disability 2 nd Edition Blackwell Science
25. McCarthy G T (Ed) (1992) Physical Disability in Childhood An interdisciplinary approach to management. Churchill Livingstone, London. ISBN0-443-04288-8
26. Morris J (1998) Don't leave us out: Involving disabled children and young people with communication impairments. York Publishing Services, York. ISBN 1 899987 80 0

27. Robinson C and Stalker K (1998) Growing up with disability. Jessica Kingsley Publishers, London. ISBN 1 85302 568 2
28. Russell J (1988) Graded activities for children with motor difficulties. Cambridge University Press.

SCHEME OF EXAMINATION FOR MPT III SEMESTER

Evaluation Pattern					
MPT 4-301		*General & Community Based Rehabilitation: Clinical Sciences I*			
MPT 4-302		*General & Community Based Rehabilitation: Physiotherapeutics I*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 4-303		*General & Community Based Rehabilitation: Recent Advances I*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination (For 80 marks Part A & Part B, for 40 Marks only Part A)

Part A	*Q.1 LAQ (1 X 15 Marks)*	*= 15 Marks*
	Q.2 SAQ (any 1 out of 2 X 10 Marks)	*= 10 Marks*
	Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks	*= 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks)*	*= 15 Marks*
	Q.2 SAQ (any 1 out of 2 X 10 Marks)	*= 10 Marks*
	Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks	*= 15 Marks*

Evaluation Pattern					
Course code : MPT 4 - 304			*General & Community Based Rehabilitation: Advanced Physiotherapeutics-I*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the log book/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – III
Practical

- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER III
MPT 5 : PAEDIATRICS

MPT- Semester III																				
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 5 - 301	Paediatrics: Clinical Sciences I	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 5 - 302	Paediatrics: Physiotherapeutics I	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 5 - 303	Paediatrics: Recent Advances I	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 5 - 304	Paediatrics: Advanced Physiotherapeutics I	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
	Total	176	160	192	528	11	10	12	33	11	5	4	20	50	200	250	20	80	100
	Research Dissertation	-	-	144	144	-	-	9	9	-	-	-	3 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective based advance Physiotherapeutics - I: - The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -192 hours, Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 160 hrs, Scientific enquiry/Research dissertation – 144 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences –I*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical & Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics-I*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-I*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-I*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES:

Paediatrics: Clinical Sciences I (MPT5-301)

CO No.	At the end of the course, the learner should be able to:	Mapped Programme Outcomes
301.1	To gain knowledge related to embryology of nervous system, basic and applied neuroanatomy and neurophysiology.	PO1,PO2, PO3, PO4, PO9
301.2	To acquire the knowledge related to reflex and reactions , motor development , motor control, and motor learning techniques.	PO3, PO4, PO5, PO9
301.3	To document outcome measures ,electrodiagnostic procedures	PO1, PO2, PO4, PO5
301.4	Able To learn different approaches like temple fay, Roods , Voijta, Sensory integration, NDT	PO1, PO2, PO7
301.5	Learn techniques and instruments in Neonatal ICU, Pediatric ICU	PO1, PO2, PO4, PO8, PO9

Paediatrics: Physiotherapeutics I(MPT 5-302)

CO No.	At the end of the course, the learner should be able to:	Mapped Programme Outcomes
302.1	To acquire the skill; related to assessment and diagnose of all possible findings in pediatric congenital and acquired neurological conditions.	PO1, PO2, PO4, PO9
302.2	To plan ICU and rehabilitation program by applying recent technique / approaches to treat and train.	PO1, PO2, PO3, PO4, PO7
302.3	To get well acquainted with planning and implementation of conservative programs appropriately for various conditions.	PO1, PO2, PO3, PO4, PO7
302.4	To Develop clinical reasoning that incorporate theoretical concepts with evidence based practice in the field of paediatrics	PO1, PO2, PO4, PO5, PO8

Paediatrics: Recent Advances I (MPT 5-303)

CO No.	At the end of the course, the learner should be able to:	Mapped Programme Outcomes
303.1	To acquire the competence related to assessment and management of all possible finding with reference to recent trends in pediatric neurological research.	PO1, PO2, PO3, PO4, PO6,PO7,PO9
303.2	To be familiar with various types of research and methodology and its ethical use In own study.	PO1, PO2, PO3, PO6, PO7, PO9
303.3	To create awareness about recent researchers and their use in clinical setups with reference to paediatric rehabilitation.	PO1, PO2 PO3, PO5, PO6, PO9
303.4	To be familiar with analysis of different article along with their criticism	PO2, PO4, PO5
303.5	To be able to identify merits and demerits of research articles	PO4, PO5, PO9

Paediatrics: Advanced Physiotherapeutics-I (MPT 5-304)

CO No.	At the end of the course, the learner should be able to:	Mapped Programme Outcomes
304.1	Identify and discuss, the paediatric congenital and acquired neurological conditions in terms of recent advances with the provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of Paediatric physiotherapy.	PO1, PO2, PO3, PO4 PO5, PO6, PO7, PO9
304.2	Develop skill in Paediatric ICU and NICU rehabilitation program by applying recent technique / approaches to treat and train system with updated clinical decision making	PO1, PO2, PO3, PO4, PO6, PO7, PO8, PO9
304.3	Document patients with latest and new version of scale, out come measures and asses the progression	PO2, PO4, PO5
304.4	Use Recent Physiotherapeutic Technique/ approaches to treat patients with disorders in different age groups.	PO1, PO2, PO3, PO4, PO5, PO9

COURSE CONTENTS:

Paediatrics

a) Embryology of nervous system
b) Paediatric neurology
c) ICU in neurological condition
d) Electro diagnosis
e) Mother and child care

TOPICS:

- Embryology of nervous system
- Neurophysiology of nervous system.
- Basic and Applied NeuroAnatomy.
- Reflex & reactions
- Motor development - theories, developmental sequence, movement in infants, **Developmental screening test**
- Motor control
- Motor learning – principles, factors affecting motor learning, theories
- Cerebral palsy -assessment & management with approaches, roods, vojta, sensory integration, N.D.T, Temple Fay
- Cognitive and perceptual dysfunction – learning disabilities, attention deficit, hyperactive disorder, autism
- Gravitational insecurity, Mental retardation, Epilepsy
- Genetic disorder – Down's syndrome, Marfan's syndrome, Trisomy 21 and single gene disorder.
- Movement disorder – Chorea, Athetosis, Dystonia, Choreoathetosis
- Oromotor disorder
- Bowel/bladder dysfunction
- Infection condition – pyogenic infection (Bacterial, brain abscess, tuberculosis, Meningitis), viral infections of CNS (polio., encephalitis, neurosyphillis, rabies, HIV)
- Metabolic disorder – hepatic encephalopathy, hypoglycemic encephalopathy,
    - Hypocalcemic encephalopathy, Hypokalemic encephalopathy
- Polyneuropathy – post infective polyneuropathy, acute infective polyneuropathy
- Disorder of muscle – muscular dystrophy (Duchenne's, Becker's, Limb girdle, Facio-scapulohumeral, Spinal muscular atrophy)
- Developmental anomalies – spina bifida, hydrocephalus, cranio-vertebral junction anomalies
- Traumatic head injury
- Birth injuries – brachial plexus injuries
- Neonatal ICU, Paediatric ICU, Complications of low birth weight
- Early intervention strategies in paediatric conditions
- Developmental coordination Disorders
- Mother and child care

- Immunization Schedule
- Endocrine Disorders – Diabetes Mallitus, Hypothyrodism, Hyperthyrodism, Overgrowth syndrome, Cushing Syndrome
- Electro physiological studies – somatosensory evoked potentials, brainstem, auditory evoked potentials, visual evoked potentials, EMG, single fiber EMG, nerve conduction studies.

REFERENCE BOOKS

1. Connelly B.H. and Montgomery, P.C. Therapeutic exercise in developmental disabilities, Chattanooga 1987.
2. Tecklin J.S. Pediatric Physical Therapy Lippincott, 1989.
3. Campion, Mr. Ed hydrotherapy in paediatric, Heinemann 1985.
4. Physical therapy Assessment in Early Infancy - Wilhelm Churchill Livingstone, New York, 1993.
5. Physical therapy for children – Campbell Suzann K. W.B. Saunders, Philadelphia, 1994.
6. Physical management of multiple handicapped – Fraser, William & Wilkins, Baltimore.
7. Elements of paediatric physiotherapy – Eckerley P. Churchill Livingstone, Edingburgh, 1993.
8. Physiotherapy in Peadiatrics – Shepherd R. Heinemann. London, 1980 2nd edition.
9. The growth chart – WHO, Geneva, 1986.
10. Child with spina Bifida – Anderson E.M. and Spina B Methun, Lodon 1977.
11. A manual of neonatal intensive care- Robert N.R.C. Edwaed Arnold, London 1986.
12. Burns Physiotherapy in the growing child. McDonald.
13. Campbell S (Ed) (2000) Physical therapy for children. WB Saunders Co.
14. Eckersley P (Ed.) (1993) Elements of paediatric physiotherapy. Churchill Livingstone, Edinburgh. ISBN 0-44-03894-S
15. O'Hagan M and Smith M (1998) Special issues in childcare. Balliere Tindall, London ISBN 0-7020-1604-7
16. Shepherd R (1997) 2 nd edition. Physiotherapy in paediatrics. Butterworth and Heinemann.
17. Tecklin J S (1999) 3 rd edition Paediatric physical therapy. Lippincott Philadelphia.

Development:

1. Sheridan M (1997) From birth to five years – children's developmental progress Nfer Nelson
2. Haywood K M (1993) "Lifespan Motor Development" 2 nd edition. Human Kinetics.

   Lee H (2000) The Developing Child 9 th Edition Allyn and Bacon

SCHEME OF EXAMINATION FOR MPT III SEMESTER

Evaluation Pattern					
MPT 5-301		*Paediatrics: Clinical Sciences I*			
MPT 5-302		*Paediatrics: Physiotherapeutics I*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 5-303		*Paediatrics: Recent Advances I*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination (For 80 marks Part A & Part B, for 40 Marks only Part A)

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*

Evaluation Pattern					
Course code : MPT 5- 304			*Paediatrics: Advanced Physiotherapeutics-I*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the log book/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – III
Practical

- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER III
MPT 6 : MUSCULOSKELETAL SCIENCES AND SPORTS

MPT- Semester III																				
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 6 - 301	Musculoskeletal Sciences & Sports: Clinical Sciences I	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 6 - 302	Musculoskeletal Sciences & Sports: Physiotherapeutics I	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 6 - 303	Musculoskeletal Sciences & Sports: Recent Advances I	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 6 - 304	Musculoskeletal Sciences & Sports: Advanced Physiotherapeutics I	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
	Total	176	160	192	528	11	10	12	33	11	5	4	20	50	200	250	20	80	100
	Research Dissertation	-	-	144	144	-	-	9	9	-	-	-	3 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective based advance Physiotherapeutics-I:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -192 hours, Laboratory work (includes project / review of literature/ seminars / case Presentation, journal clubs etc.) – 160hrs, Scientific enquiry/Research dissertation – 144 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences –I*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical & Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics-I*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-I*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-I*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES: Musculoskeletal Sciences & Sports: Clinical Sciences I (MPT 6-301)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
301.1	*Be able to identify, discuss & analyse, the Musculoskeletal dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy.*	*PO 1, PO 2, PO 9*
301.2	*Be able to correlate neuromusculoskeletal system with clinical decision making*	*PO 1, PO 2, PO 6, PO 9*
301.3	*Document patients with scale, out come measures and asses the progression*	*PO 1, PO 2*
301.4	*Use Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students.*	*PO 1, PO 2*
301.5	*Be able to correlate neuromusculoskeletal system with clinical sign and symptoms along with Medical and Surgical Management*	*PO 2, PO 3*

Musculoskeletal Sciences & Sports: Physiotherapeutics I (MPT 6-302)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
302.1	*Be able to provisional diagnose, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy.*	*PO 1, PO2, PO 9*
302.2	*Be able to correlate neuromusculoskeletal system with clinical decision making*	*PO 1, PO 2*
302.3	*Document patients with scale, out come measures and asses the progression*	*PO 1, PO 2*
302.4	*Use Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students*	*PO 1, PO 2*

Musculoskeletal Sciences & Sports: Recent Advances I (MPT 6-303)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
303.1	*Be able to, discuss and analyse, the Musculoskeletal dysfunction in terms of updated Recent Developments in Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the Recent Trends in provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy.*	*PO1, PO3, PO 4*
303.2	*Be able to correlate neuromusculoskeletal system with Updated methods of clinical decision making*	*PO1*
303.3	*Document patients with current version of scale, outcome measures and asses the progression*	*PO1, PO5, PO4*

Musculoskeletal Sciences & Sports: Advanced Physiotherapeutics-I (MPT 6-304)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
304.1	*Assess, diagnose and manage musculoskeletal dysfunction for common musculoskeletal conditions*	*PO 1, PO 2*
304.2	*Document case histories in the prescribed format*	*PO 1, PO 2*
304.3	*Critically analyze different treatment and assessment procedures based on strong rationale and evidence for delivery of best patient care*	*PO 5, PO 6*
304.4	*Discuss the recent management approaches for different musculoskeletal conditions and deliberate on best practice model for patient cantered care*	*PO 1, PO 2, PO 5, PO 6*

COURSE CONTENTS :

- Introduction to Orthopaedics – Assessment and Evaluation in detail related to orthopedic patient history taking, clinical features, clinical examination and investigation.
- Musculoskeletal system:
  - Embryology of musculoskeletal system - Long bone, Short and Flat bone, Skull and Thumb - Skeletal growth and development (normal and Pathological)
  - Architecture of bone.
  - Gross anatomy of bone, joints, muscles and nerves.
  - Dermatomes and Myotomes.
  - Joint play movements.
  - Types of muscle contraction, nerve – muscle pathology.
  - Fractures
  - General principles of Fracture treatment
  - Stress shearing / shielding devices.
  - Fracture healing (normal and Pathological)
  - Upper Quarter Fractures-Clavicle. Scapula. Humerus. Forearm bones. Hand. Rib fracture. Vertebral fracture.
  - Lower Quarter Fractures-Fracture Neck of femur. Fracture Acetabulum. Fracture Pelvis. Fracture Trochanter. Shaft of femur. Patellar fracture. Intercondylar fracture of shaft of tibia. Pott's fracture. Calcaneal fracture. Metatarsal fracture. Phalanges fracture.
  - Dislocation – Complication & management
  - Soft Tissue Injuries [injury and repair, clinical presentation, evaluation and general principles of rehabilitation management]
  - Upper limb. - Bursitis. Tendonitis. Snapping and winged scapula. Tennis elbow. Trapezitis, Tenosynovitis. Carpel tunnel syndrome. Dupuytren's contracture. VIC. Reflex Sympathetic Dystrophy. Periarthritis of shoulder. Thoracic outlet syndrome. Shoulder hand syndrome.
  - Lower Limb.- Fat pad inflammation. Baker's cyst. ACL, PCL. Meniscal injury. Chondromalacia patella.
  - Deltoid Fibrosis, Trigger Finger & Thumb, Quadriceps Fibrosis, Bursitis around the knee, Plantar Fascitis, Calcaneal Spur, IT Syndrome, TMJ dysfunction.
  - Sprains and strains of spine and extrimities.
  - Fibromyalgia, trigger points.
  - TMJ dysfunction.
  - Osteokinematics and Arthrokinematics of Musculoskeletal system
  - Gait Analysis - Walking.
  - Activity Analysis – Lifting, Throwing, Jogging. Running, Ascending and descending stairs
  - Spinal Deformities - Scoliosis. Kyphosis. Traumatic deformities. Flat back.
  - Arthritis and Rheumatic Diseases - Rheumatoid arthritis. Osteoarthritis. Ankylosing spondylitis.
  - Spine – Low Back Pain (mechanical), LBP (Pathological) Disc prolapse. Cord compression. Spondylosis. Ankylosing spondylitis. Spinal injuries., Cranio Vertebral dysfunation, Sacralisation, Lumbarisation, Lumbar Canal Stenosis, Sciatica, Failed Back syndrome, SI joint dysfunction, Zygoapophysel Joint arthropathy, Thoraco-lumbar junction Dysfunction, Coxydynia.
  - Neuro-musculoskeletal conditions – Spasticity, Neural compression, Compartment syndromes.
  - Ergonomics in Musculoskeletal Dysfunction

REFERENCE BOOKS

1. Black d and Dummbleton J. H. clinical Biomechanics 2nd edn. Churchill Livingstone 1987.
2. Sullivan P.D. and Minor M.A. An Integrated Approach to Therapeutic Exercises Resten 1982.
3. Donatelli R. ed. Physical Therapy of the Shoulder, 2nd edn Churchill, Livingston 1991.
4. Donatelli R. and wooden M.J. Ed Orthopaedic Physical Therapy Churchill, Livingston 1989.
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6. Grieve G. P. Common Vertebral Joint Problems, 2nd edn Churchill, Livingstone, 1988.
7. Jayson M.I.V. (ed) The Lumber Spine and Back Pain, 3rd edn Churchill, Livingstone, 1987.
8. Kirkaldy- Willis W. H. (ed) Managing low back pain, 2nd edn Churchill, Livingstone, 1988.
9. Traveil J. G. and Simons, D.G. Myofascial pain and Dysfuntion. The Trigger Point manual, Williams and Willkins, 1983.
10. Cruess, R.L. ed. The Musculoskeletal System: Embryology, Bio- Chemistry and Physiology, Churchill, Livingstone, 1982.
11. Vander, A. J. Human Physiology: The mechanisms of body Function, 5th edn. Mc. Graw-Hill, 1990.
12. Chaffin, D.B. and Anderson, G. Occupational Biomechanics, 2nd edn. Wiley, 1984.
13. Orthopaedic physical therapy – Donatelli, London Churchill Livingstone 1994.
14. Clinical biomechanics of spine – White A.A and Panjabi- J.B. Lippincot, Philadelphia 1978.
15. Vertebral manipulation- Maitland G.D. Boston, Butterworth & Co. Boston, 1997.
16. Peripheral manipulation - Maitland G.D. Boston, Butterworth & Co. Boston, 1997.
17. Benson, Fixsen and Macnicol (Ed) Children's orthopaedics and fractures. Churchill Livingstone.
18. Cyriax James. Textbook of Orthopaedic Medicine , diagnosis of soft Tissue Lesions 8th edn. Bailliere Tindall1982.
19. Mobilization of the extremity joint – Kaltenbore, Harper and Row, Philadelphia, 1980.
20. Kisner C. & Colby L.A. (2002). Therapeutic Exercise: Foundations and Techniques, 4th ed. Philadelphia, PA: F. A. Davis.
21. Lederman E. (1997) : Fundamentals of Manual Therapy–Physiology, Neurology and Psychology. New York: Churchill-Livingstone.
22. Kaltenborn F.M., Evjenth O., Volowitz E., Kaltenborn T.B., and Morgan D. (2002) Manual Mobilization of the Extremity Joints, 6th ed. Oslo, Norway: Orthopedic Physical Therapy Products (OPTP).
23. Rich G.J. (2002, ed) Massage Therapy: The Evidence for Practice. New York, U.S.A.: Mosby.
24. Mulligan B. (2003) Manual Therapy: NAGS, SNAGS, MWMS etc., 4th ed. Wellington, New Zealand: Plane View Services
25. Chaitow L., Liebenson L., Murphy D.R. (2001) Muscle Energy Techniques. New York, U.S.A.: Elsevier Science.
26. Orthopaedics – A Post Graduate Manual, Dr.(col)S.K.Biswas, Jaypee Publication,New Delhi 1st edition, 2012.

Scheme of Examination for MPT III Semester

Evaluation Pattern					
MPT 6-301		*Musculoskeletal Sciences & Sports Clinical Sciences I*			
MPT 6-302		*Musculoskeletal Sciences & Sports Physiotherapeutics I*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 6-303		*Musculoskeletal Sciences & Sports: Recent Advances I*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination (For 80 marks Part A and Part B, for 40 Marks only Part A)

Part A	*Q.1 LAQ (1 X 15 Marks)* *Q.2 SAQ (any 1 out of 2 X 10 Marks)* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks*	*= 15 Marks* *= 10 Marks* *= 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks)* *Q.2 SAQ (any 1 out of 2 X 10 Marks)* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks*	*= 15 Marks* *= 10 Marks* *= 15 Marks*

Evaluation Pattern					
Course code : MPT 6- 304			*Musculoskeletal Sciences & Sports: Advanced Physiotherapeutics-I*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
-	-	-	*20*	*80*	*100*

IA= 20 marks shall include completion of the logbook/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – III
Practical

- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER III
MPT 7 : MUSCULOSKELETAL SCIENCES AND MANUAL THERAPY

MPT- Semester III																			
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 7 - 301	Musculoskeletal Sciences & Manual Therapy: Clinical Sciences I	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 7 - 302	Musculoskeletal Sciences & Manual Therapy: Physiotherapeutics I	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 7 - 303	Musculoskeletal Sciences & Manual Therapy: Recent Advances I	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 7 - 304	Musculoskeletal Sciences & Manual Therapy: Advanced Physiotherapeutics I	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
	Total	176	160	192	528	11	10	12	33	11	5	4	20	50	200	250	20	80	100
	Research Dissertation	-	-	144	144	-	-	9	9	-	-	-	3 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective based advance Physiotherapeutics-I:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic–176 hours, Clinical training -192 hours,Laboratory work
(includes project / review of literature / seminars / case Presentation, journal clubs etc.) – 160hrs, Scientific enquiry/Research dissertation – 144 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences – I*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical & Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics - I*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-I*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-I*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOME: Musculoskeletal Sciences & Manual Therapy: Clinical Sciences I (MPT 7-301)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
301.1	*Be able to identify, discuss and analyse, the Musculo skeletal dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis and co-relate the same with the provisional diagnosis, routine radiological and Electro – physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal and manual physiotherapy.*	*PO1, PO2, PO9*
301.2	*Be able to correlate neuromuscular skeletal system with clinical decision making and the techniques accordingly.*	*PO1, PO2, PO6,PO9*
301.3	*Document patients with scales, out come measures and asses the progression*	*PO1, PO2*
301.4	*Use Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students.*	*PO1, PO2*
301.5	*Be able to correlate neuromusculoskeletal system with clinical sign and symptoms along with Medical and Surgical Management*	*PO1,PO2*

Musculoskeletal Sciences & Manual Therapy: Physiotherapeutics I(MPT 7-302)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
302.1	*Be able to provisional diagnose, routine radiological and Electro-physiological investigations with appropriate functional diagnosis & clinical reasoning based on evidence - based practice in the field of musculoskeletal & manual physiotherapy.*	*PO1, PO2, PO9*
302.2	*Be able to correlate neuromusculo skeletal system with clinical decision making*	*PO1, PO2, PO6, PO9*
302.3	*Document patients with scale, out come measures and asses the progression*	*PO1, PO2*
302.4	*Use Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students*	*PO1, PO2*

Musculoskeletal Sciences & Manual Therapy: Recent Advances I (MPT 7-303)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
303.1	*Be able to, discuss &analyse, the Musculo skeletal dysfunction in terms of updated Recent Developments in Biomechanical, Kinesiological and Biophysical basis and co-relate the same with the Recent Trends in provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of manual therapy physiotherapy.*	*PO1, PO2, PO9*
303.2	*Critically analyze different treatment and assessment procedures based on evidence for delivery of best patient care*	*PO1, PO2, PO6*
303.3	*Document patients with current version of scale, out come measures and asses the progression*	*PO1, PO2, PO9*

Musculoskeletal Sciences & Manual Therapy: Advanced Physiotherapeutics-I (MPT 7-304)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
304.1	*Assess, diagnose and manage musculoskeletal dysfunction for common musculoskeletal conditions*	*PO1, PO2*
304.2	*Document case histories in the prescribed format and analyse.*	*PO1, PO3*
304.3	*Critically analyze different treatment and assessment procedures based on strong rationale and evidence for delivery of best patient care*	*PO5*
304.4	*Discuss recent management approaches for different musculoskeletal conditions in manual therapy and deliberate on best practice model for patient cantered care*	*PO1, PO2, PO5, PO6*

COURSE CONTENTS

- Introduction to Orthopaedics – Assessment & Evaluation in detail related to orthopedic patient history taking, clinical features, clinical examination and investigation.
- Musculoskeletal system:
  - Embryology of musculoskeletal system - Long bone, Short & Flat bone, Skull & Thumb - Skeletal growth and development (normal & Pathological)
  - Architecture of bone.
  - Gross anatomy of bone, joints, muscles and nerves.
  - Dermatomes & Myotomes.
  - Joint play movements.
  - Types of muscle contraction, nerve – muscle pathology.
- Fractures
  - General principles of Fracture treatment
  - Stress shearing / shielding devices.
  - Fracture healing (normal & Pathological)
  - Upper Quarter Fractures-Clavicle. Scapula. Humerus. Forearm bones. Hand. Rib fracture. Vertebral fracture.
  - Lower Quarter fractures - Fracture Neck of femur. Fracture Acetabulum. Fracture Pelvis. Fracture Trochanter. Shaft of femur. Patellar fracture. Intercondylar fracture of shaft of tibia. Pott's fracture. Calcaneal fracture. Metatarsal fracture. Phalanges fracture.
- Dislocation – Complication & management
- Soft Tissue Injuries [injury & repair, clinical presentation, evaluation & general principles of rehabilitation management]
  - Upper limb. - Bursitis. Tendonitis. Snapping and winged scapula. Tennis elbow. Trapezitis, Tenosynovitis. Carpel tunnel syndrome. Dupuytren's contracture. VIC. Reflex Sympathetic Dystrophy. Periarthritis of shoulder. Thoracic outlet syndrome. Shoulder hand syndrome.
  - Lower Limb.- Fat pad inflammation. Baker's cyst. ACL, PCL. Meniscal injury. Chondromalacia patella.
  - Deltoid Fibrosis, Trigger Finger & Thumb, Quadriceps Fibrosis, Bursitis around the knee, Plantar Fascitis, Calcaneal Spur, IT Syndrome, TMJ dysfunction.
  - Sprains & strains of spine & extrimities.
  - Fibromyalgia, trigger points.
  - TMJ dysfunction.
- Osteokinematics & Arthrokinematics of Musculoskeletal system
- Gait Analysis - Walking.
- Activity Analysis – Lifting, Throwing, Jogging. Running, Ascending & descending stairs
- Spinal Deformities - Scoliosis. Kyphosis. Traumatic deformities. Flat back.
- Arthritis & Rheumatic Diseases - Rheumatoid arthritis. Osteoarthritis. Ankylosing spondylitis.
- Spine – Low Back Pain (mechanical), LBP (Pathological) Disc prolapse. Cord compression. Spondylosis. Ankylosing spondylitis. Spinal injuries., Cranio Vertebral dysfunation, Sacralisation, Lumbarisation, Lumbar Canal Stenosis, Sciatica, Failed Back syndrome, SI joint dysfunction, Zygapophyseal Joint arthropathy, Thoraco-lumbar junction Dysfunction, Coxydynia.
- Neuro-musculo skeletal conditions – Spasticity, Neural compression, Compartment syndromes.
- Ergonomics in Musculoskeletal Dysfunction.

REFERENCE BOOKS

1. Black d and Dummbleton J. H. clinical Biomechanics 2nd edn. Churchill Livingstone 1987.
2. Sullivan P.D. and Minor M.A. An Integrated Approach to Therapeutic Exercises Resten 1982.
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10. Cruess, R.L. ed. The Musculoskeletal System: Embryology, Bio- Chemistry and Physiology, Churchill, Livingstone, 1982.
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21. Lederman E. (1997): Fundamentals of Manual Therapy–Physiology, Neurology and Psychology. New York: Churchill-Livingstone.
22. Kaltenborn F.M., Evjenth O., Volowitz E., Kaltenborn T.B., and Morgan D. (2002) Manual Mobilization of the Extremity Joints, 6th ed. Oslo, Norway: Orthopedic Physical Therapy Products (OPTP).
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24. Mulligan B. (2003) Manual Therapy: NAGS, SNAGS, MWMS etc., 4th ed. Wellington, New Zealand: Plane View Services
25. Chaitow L., Liebenson L., Murphy D.R. (2001) Muscle Energy Techniques. New York, U.S.A.: Elsevier Science.
26. Orthopaedics – A Post Graduate Manual, Dr. (col) S. K. Biswas, Jaypee Publication New Delhi 1st edition, 2012.

SCHEME OF EXAMINATION FOR MPT III SEMESTER

Evaluation Pattern					
MPT 7-301	*Musculoskeletal Sciences & Manual Therapy: Clinical Sciences I*				
MPT 7-302	*Musculoskeletal Sciences & Manual Therapy: Physiotherapeutics I*				
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 7-303	*Musculoskeletal Sciences & Manual Therapy: Recent Advances I*				
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination

Written Examination ***(For 80 marks Part A & Part B, for 40 Marks only Part A)***

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*

Evaluation Pattern					
Course code : MPT 7- 304			*Musculoskeletal Sciences & Manual Therapy: Advanced Physiotherapeutics-I*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the logbook/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – III

Practical

- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER III
MPT 8 : MUSCULOSKELETAL SCIENCES AND HAND CONDITIONS

MPT- Semester III																				
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 8 - 301	Musculoskeletal Sciences & Hand Conditions: Clinical Sciences I	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 8 - 302	Musculoskeletal Sciences & Hand Conditions: Physiotherapeutics I	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 8 - 303	Musculoskeletal Sciences & Hand Conditions: Recent Advances I	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 8 - 304	Musculoskeletal Sciences & Hand Conditions: Advanced Physiotherapeutics I	-	-	192	192	-	-	12	12	-	-	4	4	-	-	-	20	80	100
	Total	176	160	192	528	11	10	12	33	11	5	4	20	50	200	250	20	80	100
	Research Dissertation	-	-	144	144	-	-	9	9	-	-	-	3 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective based advance Physiotherapeutics - I: - The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -192 hours,Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 160 hrs, Scientific enquiry/Research dissertation – 144 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences – I*** *Consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical & Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics - I*** *Consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-I*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-I*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOME:

Musculoskeletal Sciences & Hand Conditions: Clinical Sciences I (MPT 8-301)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
301.1	*Be able to identify, discuss &analyse, the Hand dysfunctions in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of hand physiotherapy.*	*PO 1, PO2, PO 9*
301.2	*Be able to correlate neuro-musculoskeletal system with clinical decision making*	*PO1, PO2, PO9*
301.3	*Document patients with scale, out come measures and asses the progression*	*PO1, PO2, PO3*
301.4	*Use Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students.*	*PO 1, PO 2, PO 3, PO 5*

Musculoskeletal Sciences & Hand Conditions: Physiotherapeutics I(MPT 8-302)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
302.1	*Be able to identify, discuss &analyse, the Hand dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of hand physiotherapy*	*PO1, PO2, PO9*
302.2	*Be able to correlate neuromusculo skeletal system with clinical decision making*	*PO1, PO2, PO9*
302.3	*Document patients with scale, out come measures and asses the progression*	*PO1, PO2, PO3*
302.4	*Use Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students*	*PO 1, PO 2, PO3, PO 5*

Musculoskeletal Sciences & Hand Conditions: Recent Advances I (MPT 8-303)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
303.1	*Be able to identify, discuss and co-relate the same with theProvisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy.*	*PO 1, PO 2, PO 3*
303.2	*Be able to correlate neuromuscular skeletal system with clinical decision making with Physiotherapy Management.*	*PO 1, PO 2*
303.3	*Document patients with scale, out come measures and asses the progression and Follow ups*	*PO 2, PO 3*

Musculoskeletal Sciences & Hand Conditions: Advanced Physiotherapeutics I (MPT 8-304)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
304.1	*Be able to identify and discuss, the Hand dysfunction in terms of Recent Advances in the field of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy.*	*PO 1, PO 4, PO 7*
304.2	*Be able to correlate neuromusculoskeletal system with updated clinical decision making*	*PO1, PO2, PO9*
304.3	*Document patients with latest and new version of scale, out come measures and asses the progression*	*PO 1, PO 2, PO 9*
304.4	*Use Recent Physiotherapeutic Technique/ approaches to treat patients with hand disorders in different age groups.*	*PO 2, PO 4*

COURSE CONTENTS:

- Introduction to Orthopaedics – Assessment & Evaluation in detail related to orthopedic patient history taking, clinical features, clinical examination and investigation.
- Musculoskeletal system:
  - Embryology of musculoskeletal system - Long bone, Short & Flat bone, Skull & Thumb - Skeletal growth and development (normal & Pathological)
  - Architecture of bone.
  - Gross anatomy of bone, joints, muscles and nerves.
  - Dermatomes & Myotomes.
  - Joint play movements.
  - Types of muscle contraction, nerve – muscle pathology.
- Fractures
  - General principles of Fracture treatment
  - Stress shearing / shielding devices.
  - Fracture healing (normal & Pathological)
  - Upper Quarter Fractures-Clavicle. Scapula. Humerus. Forearm bones. Hand. Rib fracture. Vertebral fracture.
  - Lower Quarter fractures - Fracture Neck of femur. Fracture Acetabulum. Fracture Pelvis. Fracture Trochanter. Shaft of femur. Patellar fracture. Intercondylar fracture of shaft of tibia. Pott's fracture. Calcaneal fracture. Metatarsal fracture. Phalanges fracture.
- Dislocation – Complication & management
- Soft Tissue Injuries [injury and repair, clinical presentation, evaluation & general principles of rehabilitation management]
  - Upper limb. - Bursitis. Tendonitis. Snapping & winged scapula. Tennis elbow. Trapezitis, Tenosynovitis. Carpel tunnel syndrome. Dupuytren's contracture. VIC. Reflex Sympathetic Dystrophy. Periarthritis of shoulder. Thoracic outlet syndrome. Shoulder hand syndrome.
  - Lower Limb.- Fat pad inflammation. Baker's cyst. ACL, PCL. Meniscal injury. Chondromalacia patella.
  - Deltoid Fibrosis, Trigger Finger & Thumb, Quadriceps Fibrosis, Bursitis around the knee, Plantar Fascitis, Calcaneal Spur, IT Syndrome, TMJ dysfunction.
  - Sprains & strains of spine & extrimities.
  - Fibromyalgia, trigger points.
  - TMJ dysfunction.
- Osteokinematics & Arthrokinematics of Musculoskeletal system
- Gait Analysis - Walking.
- Activity Analysis – Lifting, Throwing, Jogging. Running, Ascending & descending stairs
- Spinal Deformities - Scoliosis. Kyphosis. Traumatic deformities. Flat back.
- Arthritis & Rheumatic Diseases - Rheumatoid arthritis. Osteoarthritis. Ankylosing spondylitis.
- Spine – Low Back Pain (mechanical), LBP (Pathological) Disc prolapse. Cord compression. Spondylosis. Ankylosing spondylitis. Spinal injuries., Cranio Vertebral dysfunation, Sacralisation, Lumbarisation, Lumbar Canal Stenosis, Sciatica, Failed Back syndrome, SI joint dysfunction, Zygoapophysel Joint arthropathy, Thoraco-lumbar junction Dysfunction, Coxydynia.
- Neuro-musculo skeletal conditions – Spasticity, Neural compression, Compartment syndromes.
- Ergonomics in Musculoskeletal Dysfunction

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5. Grant, R. (ed) Physical Therapy of the Cervical and Thoracic Spine, Churchill, Livingstone, 1987.
6. Grieve G. P. Common Vertebral Joint Problems, 2nd edn Churchill, Livingstone, 1988.
7. Jayson M.I.V. (ed) The Lumber Spine and Back Pain, 3rd edn Churchill, Livingstone, 1987.
8. Kirkaldy- Willis W. H. (ed) Managing low back pain, 2nd edn Churchill, Livingstone, 1988.
9. Traveil J. G. and Simons, D.G. Myofascial pain and Dysfuntion. The Trigger Point manual, Williams and Willkins, 1983.
10. Cruess, R.L. ed. The Musculoskeletal System: Embryology, Bio- Chemistry and Physiology, Churchill, Livingstone, 1982.
11. Vander, A. J. Human Physiology: The mechanisms of body Function, 5th edn. Mc. Graw-Hill, 1990.
12. Chaffin, D.B. and Anderson, G. Occupational Biomechanics, 2nd edn. Wiley, 1984.
13. Orthopaedic physical therapy – Donatelli, London Churchill Livingstone 1994.
14. Clinical biomechanics of spine – White A.A and Panjabi- J.B. Lippincot, Philadelphia 1978.
15. Vertebral manipulation- Maitland G.D. Boston, Butterworth & Co. Boston, 1997.
16. Peripheral manipulation - Maitland G.D. Boston, Butterworth & Co. Boston, 1997.
17. Benson, Fixsen and Macnicol (Ed) Children's orthopaedics and fractures. Churchill Livingstone.
18. Cyriax James. Text book of Orthopaedic Medicine , diagnosis of soft Tissue Lesions 8th edn. Bailliere Tindall1982.
19. Mobilization of the extremity joint – Kaltenbore, Harper and Row, Philadelphia, 1980.
20. Kisner C. and Colby L.A. (2002). Therapeutic Exercise: Foundations and Techniques, 4th ed. Philadelphia, PA: F. A. Davis.
21. Lederman E. (1997): Fundamentals of Manual Therapy–Physiology, Neurology and Psychology. New York: Churchill-Livingstone.
22. Kaltenborn F.M., Evjenth O., Volowitz E., Kaltenborn T.B., and Morgan D. (2002) Manual Mobilization of the Extremity Joints, 6th ed. Oslo, Norway: Orthopedic Physical Therapy Products (OPTP).
23. Rich G.J. (2002, ed) Massage Therapy: The Evidence for Practice. New York, U.S.A.: Mosby.
24. Mulligan B. (2003) Manual Therapy: NAGS, SNAGS, MWMS etc., 4th ed. Wellington, New Zealand: Plane View Services
25. Chaitow L., Liebenson L., Murphy D.R. (2001) Muscle Energy Techniques. New York, U.S.A.: Elsevier Science.
26. Orthopaedics – A Post Graduate Manual, Dr. (col) S. K. Biswas, Jaypee Publication New Delhi 1st edition, 2012.

SCHEME OF EXAMINATION FOR MPT III SEMESTER

Evaluation Pattern					
MPT 8-301	*Musculoskeletal Sciences & Hand Conditions: Clinical Sciences I*				
MPT 8-302	*Musculoskeletal Sciences & Hand Conditions: Physiotherapeutics I*				
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 8-303	*Musculoskeletal Sciences & Hand Conditions: Recent Advances I*				
Written		***Total***	***Practical***		***Total***
IA	*Final exam*	*Final exam*	*IA*	*Final exam*	*Final exam*
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination (For 80 marks Part A & Part B, for 40 Marks only Part A)

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*

Evaluation Pattern					
Course code : MPT 8- 304			*Musculoskeletal Sciences& Hand Conditions: Advanced Physiotherapeutics-I*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the logbook/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – III (Practical)

- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER IV
MPT 1: MUSCULOSKELETAL SCIENCES

MPT - SEMESTER IV																				
Course. Code	Course	Teaching Learning Hrs				Teaching Learning Hrs/ Week				Credit				Exam Marks					
														Theory			Practical		
		Th	Pr	Cl	Tot	Th	Pr	Cl	Tot	Th	Pr	Cl	Tot	Int	Ext	Tot	Int	Ext	Tot
MPT 1 401	Musculoskeletal Sciences : Clinical Sciences II	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 1 402	Musculoskeletal Sciences : Physiotherapeutics II	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 1 403	Musculoskeletal Sciences : Recent advances II	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 1 404	Musculoskeletal Sciences : Advanced Physiotherapeutics II	-	-	288	288	-	-	18	18	-	-	6	6	-	-	-	20	80	100
	Total	**176**	**160**	**288**	**624**	**11**	**10**	**18**	**39**	**11**	**5**	**6**	**22**	50	200	250	20	80	100
	Research Dissertation	-	-	48	48	-	-	3	3	-	-	1 Credit Assessed & accumulated in Semester 4							
	Total Hours				**672**				42										
MPT 1 405	Research Dissertation-Semester I-IV (11 Credit accumulated in Semester 4)				**528**								**11**				**50**	**50**	**100**

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective Based Advanced Physiotherapeutics - II:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic –176 hours, Clinical training -288 hours, Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) –160 hrs, Scientific enquiry/Research dissertation – 48 hours

Note : The subjects of III-Semester MPT shall include the following contents as classified for examination.

- *Elective Based Clinical Sciences –II consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical & Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- *Elective Based Physiotherapeutics-II consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- *Elective Based Recent Advances-II This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- *Elective Based Advanced Physiotherapeutics-II This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOME:

Musculoskeletal Sciences: Clinical Sciences II (MPT 1-401)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
401.1	*Be able to identify, discuss &analyse, the Musculo skeletal dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy.*	*PO 1*
401.2	*Be able to correlate neuromusculo skeletal system with clinical decision making*	*PO 1, PO4*
401.3	*Document patients with scale, outcome measures and asses the progression*	*PO 6, PO 7*
401.4	*Use Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students.*	*PO 1, PO 2, PO 4*
401.5	*Be able to correlate neuromusculo skeletal system with clinical sign and symptoms along with Medical and Surgical Management*	*PO 1*

Musculoskeletal Sciences: Physiotherapeutics II (MPT 1-402)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
402.1	*Be able to provisional diagnose, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy.*	*PO1*
402.2	*Be able to correlate neuromusculo skeletal system with clinical decision making*	*PO1*
402.3	*Document patients with scale, outcome measures and asses the progression*	*PO 1, PO 2, PO 4, PO 6*
402.4	*Use Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students*	*PO 1, PO 2, PO 4, PO 6*

Musculoskeletal Sciences: Recent Advances II (MPT 1-403)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
403.1	*Be able to, discuss &analyse, the Musculo skeletal dysfunction in terms of updated Recent Developments in Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the Recent Trends in provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of musculoskeletal physiotherapy.*	*PO 1, PO 2, PO 4*
403.2	*Be able to correlate neuromusculoskeletal system with Updated methods of clinical decision making*	*PO 1, PO 4*
403.3	*Document patients with current version of scale, out come measures and asses the progression*	*PO 1, PO 2, PO 4, PO 6*
403.4	*Use of Recent and Updated Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students.*	*PO 4, PO 5*

Musculoskeletal Sciences: Advanced Physiotherapeutics II (MPT6-404)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
404.1	*assess, diagnose and manage musculoskeletal dysfunction for common musculoskeletal conditions*	*PO 1, PO 4*
404.2	*document case histories in the prescribed format*	*PO 1, PO 2*
404.3	*critically analyze different treatment and assessment procedures based on strong rationale and evidence for delivery of best patient care*	*PO 1, PO 2*
404.4	*discuss the recent management approaches for different musculoskeletal conditions and deliberate on best practice model for patient centered care*	*PO 1, PO 2, PO 4*

Dissertation (MPT - 405)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
405.1	*Critically appraise the scientific literature and formulate a research question*	*PO3, PO 4*
405.2	*Search the relevant database and develop a rationale for research*	*PO3, PO 4*
405.3	*Effectively document and disseminate research findings*	*PO2, PO3, PO4*
405.4	*Facilitate collaborative relationships with other healthcare professionals*	*PO5, PO 6*
405.5	*Use ICT for research*	*PO3*
405.6	*Develop innovative ways to promote evidence based clinical practice*	*PO3, PO6*

COURSE CONTENTS:

- Osteokinematics & Arthrokinematics of Musculoskeletal system
- Podiometry.
- Gait Analysis - Walking. Jogging. Running. Climbing up & Down the stairs.
- Congenital Malformation.- Congenital hip displasia. Congenital Talipes Equinovarus. Calcaniovalgus. Arthrogryposis Multiplex Congenita. Congenital Torticolis. Acromelia. Phocomelia. Amelia. Spina bifida.
- Development Disease of Skeleton- Chondro-osteodystrophy. Osteogenesis. Imperfecta. Osteoporosis. Heterotopic ossification. Osteochondtritis desiccans. Perthes' disease. Tibial epiphysitis. Congenital coxa vara.
- Neuromuscular Diseases- Muscular dystrophies. Infantile hypotonia. Volkmann's Ischaemic contracture. Obstetrical paralysis. Peroneal muscle atrophy. Cerebral palsy. Poliomyelitis.
- Spinal Deformities - Scoliosis. Kyphosis. Traumatic deformities. Flat back.
- Infections of Musculoskeletal System - Bacterial infections of bones & joints. Tuberculosis infections of bones & joints. Leprosy. Pott's paraplegia.
- Arthritis & Rheumatic Diseases - Rheumatoid arthritis. Juvenile arthritis. Reiter's disease. Polymyalgia rheumatica. Gout. Osteoarthritis. Ankylosing spondylitis. Neuropathic joints. Haemophilic arthropathy. Avascular necrosis.
- Neurovascular Diseases - Nerve injuries (general & specific). Plexus injuries. Vascular ailments (Raynaud's. Thromboangitisoblitrans Frostbite Diabetic foot.)
- Spine - Disc prolapse. Cord compression. Spondylosis. Ankylosing spondylitis. Spinal injuries., Sacralisation, Lumbarisation, Lumbar Canal Stenosis.
- Amputation.
- Disability Evaluation.
- Role of Orthotics & Prosthetics in Orthopaedics.
  - Applied mechanics in application of prosthesis
  - Procedure in Prosthetic & Orthotic Fabrication of temporary splints
- Leprosy
- Paget's Disease
- Cervical Rib
- Bone Skin Graft
- Osteotomy
- Nerve suturing and grafting

- Pharmaco-therapeutics in Musculoskeletal conditions and its relevance in Physiotherapy

REFERENCE BOOKS
MPT: ***MUSCULOSKELETAL SCIENCES***

1. Black d and Dummbleton J. H. clinical Biomechanics 2nd edn. Churchill Livingstone 1987.
2. Sullivan P.D. and Minor M.A. An Integrated Approach to Therapeutic Exercises Resten 1982.
3. Donatelli R. ed. Physical Therapy of the Shoulder, 2nd edn Churchill, Livingston 1991.
4. Donatelli R. and wooden M.J. Ed Orthopaedic Physical Therapy Churchill, Livingston 1989.
5. Grant, R. (ed) Physical Therapy of the Cervical and Thoracic Spine, Churchill, Livingstone, 1987.
6. Grieve G.P.(ed) Modern Manual Therapy of the Vertebral Column, Churchill, Livingstone, 1986.
7. Grieve G. P. Common Vertebral Joint Problems, 2nd edn Churchill, Livingstone, 1988.
8. Jayson M.I.V. (ed) The Lumber Spine and Back Pain, 3rd edn Churchill, Livingstone, 1987.
9. Kirkaldy- Willis W. H. (ed) Managing low back pain, 2nd edn Churchill, Livingstone, 1988.
10. Mangine, R.E. Physical Therapy of the Knee, Churchill, Livingstone, 1988.
11. Traveil J. G. and Simons, D.G. Myofascial pain and Dysfuntion. The Trigger Point manual, Williams and Willkins, 1983.
12. Cruess, R.L. ed. The Musculoskeletal System: Embryology, Bio- Chemistry and Physiology, Churchill, Livingstone, 1982.
13. Vander, A. J. Human Physiology: The mechanisms of body Function, 5th edn. Mc. Graw-Hill, 1990.
14. Vidik, A. and Vuust, J. Biology of Collagen, Academic press 1980.
15. Chaffin, D.B. and Anderson, G. Occupational Biomechanics, 2nd edn. Wiley, 1984.
16. Myofascial pain and dysfunction – Travell, Williams & Wilkins, Baltimore 1983.
17. Physical therapy of the low back- Twomwy, Churchill Livingstone, London 1995.
18. Sport injuries of the shoulder- Souza Thomas A. Churchill Livingstone, London 1994.
19. Orthopaedic physical therapy – Donatelli, London Churchill Livingstone 1994.
20. Scientific basis of human movement- Gowitzke, Williams and Wilkins, Baltimore, 1988 3rd edition.
21. Clinical biomechanics of spine – White A.A and Panjabi- J.B. Lippincot, Philadelphia 1978.
22. Kinesiology – Burnstrom Singe, F.A. Davis – Philadelphia- 1966.
23. Vertebral manipulation- Matiland G.D. Boston, Butterworth & Co. Boston, 1997.
24. Peripheral manipulation - Matiland G.D. Boston, Butterworth & Co. Boston, 1997.
25. Benson, Fixsen and Macnicol (Ed) Children's orthopaedics and fractures. Churchill Livingstone.
26. Bleck E (1987) Orthopaedic management in cerebral palsy. Mackeith Press.
27. Gage J (1991) Gait Analysis in Cerebral Palsy. Mackeith Press, Oxford. ISBN 0-9012-6090-8
28. Whittle M W (2002) 3 rd Edition Gait Analysis an Introduction. Butterworth and Heinemann

SCHEME OF EXAMINATION FOR MPT IV SEMESTER

Evaluation Pattern					
MPT 1 - 401			***Musculoskeletal Sciences**: Clinical Sciences II*		
MPT 1 - 402			***Musculoskeletal Sciences**: Physiotherapeutics II*		
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 1- 403			*Orthopaedics: Recent Advances II*		
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination (For 80 marks Part A & Part B, for 40 Marks only Part A)

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*

Evaluation Pattern					
Course code : MPT 1- 404			***Musculoskeletal Sciences**: Advanced Physiotherapeutics-II*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the log book/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – IV
Practical

- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

Dissertation at the IV semester:

- *Internal evaluation as per the process & execution: 50 marks*
- *Dissertation evaluation & Presentation: 50 marks (external)*

Evaluation Pattern					
Course code : MPT- 405			*Dissertation*		
Written		***Total***	***Dissertation Presentation/ Viva***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*50*	*50*	*100*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER IV
MPT-2: NEUROSCIENCES

MPT- Semester IV																				
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 2 - 401	Neurosciences: Clinical Sciences II	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 2 - 402	Neurosciences: Physiotherapeutics II	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 2 - 403	Neurosciences: Recent Advances II	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 2 - 404	Neurosciences: Advanced Physiotherapeutics II	-	-	288	288	-	-	18	18	-	-	6	6	-	-	-	20	80	100
	Total	176	160	288	624	11	10	18	39	11	5	6	22	50	200	250	20	80	100
	Research Dissertation	-	-	48	48	-	-	3	3	-	-	-	1 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-
MPT 2 - 405	Research Dissertation-Semester -I to IV (11 Credit Accumulated in Semester 4)	-	-	-	528	-	-	-	-	-	-	-	11	-	-	-	50	50	100

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective Based Advanced Physiotherapeutics - II:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -288 hours, Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 160 hrs, Scientific enquiry/Research dissertation – 48 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences – II*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical & Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics - II*** *consist of Biomechanics, Patho - mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-II*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-II*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES:

Neurosciences: Clinical Sciences II (MPT 2-401)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
401.1	*Familiar with basic theoretical concepts, major conditions with its epidemiology, etiology, Clinical feature, & principles in adult & paediatric conditions*	*PO1, PO3, PO4, PO5, PO7, PO8, PO9*
401.2	*Familiar with basic instruments used in clinical setups and their effective use in neuro rehabilitation.*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*
401.3	*Arrive at a functional diagnosis with assessed data obtained and further develop clinical reasoning with evidence based concepts in the field of neuroscience.*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*
401.4	*Basic Knowledge, Assessment and handling of patients and equipments in ICU.*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*
401.5	*Documentation of cases with functional scales reliable outcome measures with assessment of follow ups*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*

Neurosciences: Physiotherapeutics II (MPT 2-402)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
402.1	*Expertise the evaluation of patients, level of affection, pertaining to signs and symptoms for specific neurological conditions. eg. Traumatic brain injury. Design an illustrative ICF according to the evaluated data*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*
402.2	*Plan a rehabilitation protocol ,implication of it effectively and understand the steps and duration of progression of the neuro rehabilitation protocols.*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*
402.3	*To develop professional relationship and provide emergency care in co-operation with multi-disciplinary team*	*PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9*
402.4	*To impart knowledge and awareness about neurological conditions in patients and public by conducting camps etc*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*

Neurosciences: Recent Advances II (MPT 2-403)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
403.1	*Implicate effective researches in clinical setups and generate awareness with evidence based practise*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*
403.2	*Discussion on Research, critical appraisal and its clinical implication for future excellence in patient care.*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*
403.3	*Well acquainted with research presentations & Publication related to the field of neurosciences.*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*

Neurosciences: Advanced Physiotherapeutics II (MPT 2-404)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
404.1	*Identify and discuss, the neurological dysfunction in terms of Recent Advances in the field of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of Neurophysiotherapy.*	*PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9*
404.2	*Correlate Neuromusculoskeletal system with updated clinical decision making*	*PO1,PO2, PO4,PO5, PO7, PO8, PO9,*
404.3	*Document patients with latest and appropriate outcome measures and asses the progression*	*PO1, PO4, PO5, PO7, PO8, PO9*
404.4	*Use Physiotherapeutic Technique/ approaches to treat patients with Neurological disorders in different age groups incorporate with Recent advances*	*PO1, PO2, PO3, PO4, PO6, PO7, PO8, PO9*

Dissertation (MPT -405)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
405.1	*Critically appraise the scientific literature and formulate a research question*	*PO1, PO4, PO9*
405.2	*Search the relevant database and develop a rationale for research*	*PO1, PO4, PO9*
405.3	*Effectively document and disseminate research findings*	*PO2, PO3, PO4, PO9*
405.4	*Facilitate collaborative relationships with other healthcare professionals*	*PO6*
405.5	*Use ICT for research*	*PO2, PO4*
405.6	*Develop innovative ways to promote evidence based clinical practice*	*PO2, PO4, PO6, PO9*

COURSE CONTENTS:

a) I.C.U. Management
b) Neurosurgery
c) Neuro Psychology

Objective:-

All the end of the course the student should be able to-

a) Asses & plan management programme for critical care patients in I.C.U.
b) Plan management programme with response to drop & its complication, monitoring lines.
c) Understanding, behave & counsel patients in ICU, surgery, following Neurological deficit, behavioural problem.
d) Provide emergency care with the multidisciplinary team.

Topics

- Outline of psychiatric Examination.
- Psychiatric illness – Anxiety, Neurosis, Depression, obsessive compulsive Neurosis psychosis, organic brain syndrome, dementia, post- traumatic stress disorder, dray dependence & alcoholism, Somato form & dissociate disorders.
- Child psychiatry – Mental retardation, attention deficit syndrome, Behavioral disorders.
- Geriatric psychiatry.
- Learning disability.

- Autistic behavior.
- Intra cranial tumours – Gliomas, meningioma, Neutrinos Angioma, Cranio Pharyngioma, Pituitary adenoma.
- Traumatic spinal card injury- complete, in-complete.
- Disorder of spinal cord- Compression of spinal card, spinal card tumors, neoplasm of vertebral column, IVDP, Extradural & Epidural Abcess, Syringomyelia, Syringobulbia, Transverse Myelitis.
- Cranio –vertebral function Anomalies – Soft tissue anomalies, Bony Anomalies.
- Head injury – Hemorrhage, Haematoma, Aneurismal rupture.
- Peripheral Nerve injuries.
- Coma stimulation.
- Cognitive & perceptual Disorders.
- Spina bifida.
- Hydrocephalus.
- Raised Intra-cranial pressure.
- Oro- motor Dysfunction.
- Central palsy.
- Stroke (Hemorrhagic).
- Adult ICU - evaluation & management.
- Paediatrics ICU - Evaluation & management.
- Disability Evaluation
- Role of Orthotics in Neurological conditions.
- Pharamco-therapeutics in Neurological conditions and its relevance in Physiotherapy
- Common Neurosurgical procedures: Prevention and physiotherapy management of post surgical complications

REFERENCE BOOKS
MPT: Neurosciences

1. Bloom B.G. Health Psychology: a psychosocial perspective Prentics Hall, 1988.
2. Brooks, V.B. The Neural Basis of Motor Control, Oxford University press 1986.Clinics in Physical Therapy series.
3. Knott M. and Voss D.E. Proprioceptive Neuromuscular Facilitation 3rd edn Harper and Row 1984.
4. Magill R.A. Motor Learning – Concepts and Applications, 3rd edn Brown 1989.
5. Bio- feedback – A practitioners guide- Kerb D, Guilford press.
6. The neural basis of motor control- Black I. Churchill Livingstone, London 1987.
7. Physical Therapy management of Parkinson’s disease- Tumbull Gerode I. Churchill Livingstone, London – 1994.

8. Abnormal postural reflex activity caused by Brain lesions – Bobath b. Aspen publications, Rockville. 1897.
9. Disorders of voluntary muscle – Eagel. Churchill Livingstone, Edinburgh 1988.
10. A Clinician's view of neuro muscle disorder – Brook M.H. Williams and Wilkins, Baltimore .1986.
11. Proprioception, neuro muscular facilitation techniques Knot M. and Voss, Harper and Row, New York 1972 2nd edition.
12. Stroke rehabilitation – Laidler, Capman and Hakk, Lodon 1994.
13. Motor relearning programme for stroke – Carr Aspen publication, Rock ville, 1987.
14. Adult hemiplegia: evaluation and treatment- Bobath B. Heinmann, Lodon 1983.
15. Paraplegia and tetraplegia- Brcmbley, Churchill Livingstone, Edinburgh 1991.
16. Skinnerm A and Thomsan, A. (ed.) Duffield's Exercise in water, Balliere Tindall, 1983.
17. Human neuroanatomy - Carpenter M.B. Williams & Wilkins, Baltimore, 1983.
18. Orthotics in neurological rehabilitation – Aisen, Demos Publication, New York 1992
19. Neuro- rehabilitation – Farber, W.B. Saunders, Philadelphia 1982.
20. Campion, M.R. ed. Adult Hydrotherapy. A practical Approach, butterworth Heinemann, 1990.
21. Aicardi J (1998) Disease of the nervous system in childhood 2 nd Edition Mackeith Press, distributed by Cambridge University Press
22. Bobath K (1984) A neurological basis for the treatment of cerebral palsy Clinics in Developmental Medicine. SIMP, Suffolk ISBN 0-4330-3335-5
23. Bobath B Development in the different types of cerebral palsy.
24. Bobath B (1985) 3 rd edition. Abnormal postural reflex activity. Heinemann
25. Campbell S (Ed) (1991) Paediatric neurological physical therapy. Churchill Livingstone, London.
26. Campbell S (2000) Physical Therapy for Children. W B Saunders Co.
27. Crombie S Home programmes for children with motor delay. Winslow Press.
28. Dubowitz V (1980) 2 nd edition. The Floppy Infant. Clinics in Developmental Medicine No. 76. Heinemann, London ISBN 0433-07902-9
29. Edwards S (Ed) (1997) "Neurological Physiotherapy" Churchill Livingstone
30. Finnie N (1997) 3 rd edition. Handling the young child with cerebral palsy at home. Butterworth and Heinemann, Oxford. ISBN 0-7506-0579-0
31. Griffiths M and Clegg M (Eds.) (1997) 2nd edition. Cerebral Palsy problems and practice. Human Horizon Series/Souvenir Press.
32. Illingworth R (1991) 10th edition. The normal child. Livingstone.
33. Levitt S (1984) Paediatric developmental therapy. Blackwell Scientific Publications.
34. Levitt S (1995) 3rd edition. Treatment of cerebral palsy and motor delay. Blackwell Scientific Publications.
35. Scrutton D (Ed) (1990) Management of motor disorders with cerebral palsy. Clinics in Developmental Medicine. Cambridge University Press.
36. Shumway-Cook A & Woollacott M (1995) "Motor Control: Theory and Practical applications" Williams and Wilkins
37. Stokes M (Ed) (1998) Neurological Physiotherapy. Mosby.

SCHEME OF EXAMINATION FOR MPT IV SEMESTER

Evaluation Pattern					
MPT 2- 401			*Neurosciences: Clinical Sciences II*		
MPT 2- 402			*Neurosciences: Physiotherapeutics II*		
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 2- 403			*Neurosciences: Recent Advances II*		
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination (For 80 marks Part A & Part B, for 40 Marks only Part A)

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*

Evaluation Pattern					
Course code : MPT 2- 404			*Neurosciences: Advanced Physiotherapeutics -II*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the log book/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination
- ***Practical Examination (80 marks)***

Semester – IV
Practical
- Clinical case (1) elective Long Case – 60 marks
- Clinical case (2) elective Short Case – 20 marks

Dissertation at the IV semester:
- Internal evaluation as per the process & execution: 50 marks
- Dissertation evaluation and Presentation: 50 marks (external)

Evaluation Pattern					
Course code : MPT 2- 405			Dissertation		
Written		**Total**	**Dissertation Presentation/ Viva**		**Total**
IA	**Final exam**		**IA**	**Final exam**	
--	--	--	50	50	100

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER IV
MPT 3: CARDIO-RESPIRATORY SCIENCES

MPT- Semester IV																			
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 3 - 401	Cardio-Respiratory Sciences: Clinical Sciences II	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 3 - 402	Cardio-Respiratory Sciences: Physiotherapeutics II	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 3 - 403	Cardio-Respiratory Sciences: Recent Advances II	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 3 - 404	Cardio-Respiratory Sciences: Advanced Physiotherapeutics II	-	-	288	288	-	-	18	18	-	-	6	6	-	-	-	20	80	100
	Total	176	160	288	624	11	10	18	39	11	5	6	22	50	200	250	20	80	100
	Research Dissertation	-	-	48	48	-	-	3	3	-	-	-	1 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-
MPT 3 - 405	Research Dissertation-Semester -I to IV (11 Credit Accumulated in Semester 4)	-	-	-	528	-	-	-	-	-	-	-	11	-	-	-	50	50	100

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective Based Advanced Physiotherapeutics - II:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -288 hours, Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 160 hrs, Scientific enquiry/Research dissertation – 48 hours

Note: The subjects of III - Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences – II*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical and Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics - II*** *consist of Biomechanics, Patho - mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances - II*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics - II*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES: Cardio-Respiratory Sciences: Clinical Sciences II (MPT 3-401)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
401.1	*Describe Anatomy & Physiology of heart, coronary circulation, development of cardiovascular system, fetal circulation.*	*PO1*
401.2	*Describe the pathophysiology, etiology, clinical features and impairments of cardiovascular conditions.*	*PO1, PO2*
402.3	*Analyze common investigations like ECG, ECHO, Color Doppler etc.*	*PO1, PO2*
402.4	*Describe medical & surgical management of cardiovascular diseases.*	*PO1, PO2, PO3*
402.5	*Formulate differential diagnosis with the help of the acquired knowledge.*	*PO1, PO2, PO4, PO9*

Cardio-Respiratory Sciences: Physiotherapeutics II (MPT 3-402)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
402.1	*Select appropriate scales, outcome measures and investigations.*	*PO1,PO2,PO4*
402.2	*Describe the patho-mechanics of cardiovascular conditions.*	*PO1, PO2*
402.3	*Interpret investigations and document as per ICF.*	*PO2, PO4*
402.4	*Perform physiotherapy assessment for cardiac conditions.*	*PO1, PO2, PO3, PO4, PO9*
402.5	*Create a physiotherapy management protocol on the basis of the assessment.*	*PO2,PO3,PO4, PO5, PO9*

Cardio-Respiratory Sciences: Recent Advances II (MPT 3-403)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
403.1	*Describe and perform detailed assessment for the various cardiovascular conditions.*	*PO1, PO2, PO3*
403.2	*Search reliable and valid sources for recent advances.*	*PO1, PO2, PO4, PO9*
403.3	*Critically evaluate recent articles related to the cardiovascular conditions.*	*PO1, PO2, PO4, PO9*
403.4	*Create a physiotherapy management protocol based on recent advances*	*PO1, PO2, PO4, PO5*

Cardio-Respiratory Sciences: Advanced Physiotherapeutics-II (MPT 3-404)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
404.1	*Take appropriate patient history in the prescribed format.*	*PO1,PO2,PO3*
404.2	*Select an appropriate outcome measure and correlate patient examination findings.*	*PO1, PO2, PO3, PO4*
404.3	*Use appropriate Physiotherapeutic Technique / approaches to treat patients.*	*PO1, PO2, PO3, PO5*
404.4	*Discuss the recent management approaches for common conditions and deliberate on best practice model for patient centered care*	*PO1, PO2, PO4, PO9*

Dissertation (MPT - 405)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
405.1	*Critically appraise the scientific literature and formulate a research question*	*PO1, PO4, PO9*
405.2	*Search the relevant database and develop a rationale for research*	*PO1, PO4, PO9*
405.3	*Effectively document and disseminate research findings*	*PO2, PO3, PO4, PO9*
405.4	*Facilitate collaborative relationships with other healthcare professionals*	*PO6*
405.5	*Use ICT for research*	*PO2, PO4*
405.6	*Develop innovative ways to promote evidence based clinical practice*	*PO2, PO4, PO6, PO9*

COURSE CONTENTS: CARDIAC CONDITIONS :

- Development of Cardiovascular system, fetal circulation.
- Review of Cardiovascular anatomy and physiology.
- Vascular mechanism.
- Neural control of cardiovascular system and autonomic nervous system.
- Maintenance of Blood Pressure.
- Fatigue.

- Evaluation of Cardiovascular system.
  - Inspection- Chest wall deformities, respiratory pattern, cyanosis, clubbing, palpation.
  - Auscultation- Heart sounds, normal and abnormal respiratory sounds.
  - ECG- Lead placement, tracing, recording, interpretation of normal and abnormal.
  - Stress testing.
  - ADL + Functional evaluation in cardiac patients.
  - Exercise testing
    - ✓ Low level/submaximal/maximal.
    - ✓ Procedure of testing, Contraindications & precautions in adults and Paediatrics.
    - ✓ Exercise testing and prescription, METS in stress testing.

- Evaluation of Peripheral vascular diseases- Artery/Vein/Lymphatic.
- ICU evaluation of cardiac patient.

- Cardio-pulmonary evaluation of ventilator dependant patient.
  - Respiratory rate, pulse rate, drainage tube, fluid collection, ABG, ECG, catheter, IV-line, central venous pressure, intra-cranial pressure.

- Radiological Investigations.
  - CT, MRI, Echo, Doppler, Angiography and its interpretations.

- Physiotherapy evaluation and management in Cardiac conditions – CHD, MI, Hypertension, Pericarditis, Cardiac tumours.
- Physiotherapy evaluation in cardiac surgeries- Preoperative & Post-operative.

- Causes, Pathomechanics, Signs and Symptoms, Medical/Surgical management, Physiotherapy management for:
  - Congenital heart disease. Valvular heart disease. Rheumatic heart disease. Diseases of myocardium Ischaemic heart disease. Hypertension, cardiac hypertrophy, Cardiac failure, altered heartbeat and rhythm.
  - Cardiac compliance in burns, conservative, pre & post-operative management.

- Recent advances in management of surgical conditions.
  - Thoracic wall surgeries.
  - Cardiac surgeries and rehabilitation.

- Cardiac evaluation and management in ICCU.
  - Monitoring, recording, ventilatory support, rehabilitation protocol.
  - Coma patient evaluation & management in ICCU.
  - Acute MI.
  - Defibrillators. and Cardiopulmonary resuscitations.

- Peripheral Vascular disorders - DVT, Venous insufficiency, oedema congestion, varicose veins, Claudication.
- Pre and Post-operative rehabilitation of Arterial disorders.
- Recent advances in management of cardiac conditions (surgical and conservative).
- Pharamco-therapeutics in cardiac conditions and its relevance in Physiotherapy

- Lifestyle modification for cardiac patients – Diet, Yoga, Exercises for prevention and management to improve health status.

REFERENCE BOOKS

MPT: CARDIORESPIRATORY SCIENCES

1. Textbook of work physiology – Guyton, pain Books Bangalore- 1991 8th edition.
2. Chest physiotherapy in Intensive care unit – Mc. kezie, Williams & Wilkins, Baltimore.
3. Cardiopulmonary symptoms in physiotherapy – Cohen M. Churchill, Livingstone, London 1988.
4. Cardiopulmonary symptoms in physiotherapy practice- Cohen M. Churchill Livingstone, London 1988.
5. Clinical application of ventilatory support – Kinby, Churchill Livingstone, New York 1990.
6. Cardiopulmonary Physiotherapy – Irwin, C.V. Mosby, St. Louis 1990.
7. Pulmonary rehabilitation: guidelines to success- Hoidkins, Butterworth, Boston, 1984.
8. Cardiac rehabilitation – Amundsen L.R. Churchill Livingstone, London 1988.
9. Dinwiddie R (1990) The diagnosis and management of respiratory disease. Churchill Livingstone.
10. Greenough A, Robertson C and Milner A (Ed) (1996) Neonatal respiratory disorders. Arnold.
11. Prassad S A and Hussey J M (Ed) (1994) Paediatric respiratory care – a guide for physiotherapists and other health professionals. Chapman and Hall.
12. Webber B and Pryor J (1993) Physiotherapy for respiratory and cardiac problems. Churchill Livingstone, London. ISBN 0-443-04471-6

SCHEME OF EXAMINATION FOR MPT IV SEMESTER

Evaluation Pattern					
MPT 3 - 401			*Cardio-Respiratory Sciences: Clinical Sciences II*		
MPT 3 - 402			*Cardio-Respiratory Sciences: Physiotherapeutics II*		
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 3- 403			*Cardio-Respiratory Sciences: Recent Advances II*		
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination ***(For 80 marks Part A & Part B, for 40 Marks only Part A)***

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks = 15Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks = 15 Marks*

Evaluation Pattern					
Course code : MPT 3- 404			*Cardio-Respiratory Sciences: Advanced Physiotherapeutics-II*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the log book/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination
- ***Practical Examination (80 marks)***

Semester – IV
Practical
- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

Dissertation at the IV semester:
- *Internal evaluation as per the process & execution: 50 marks*
- *Dissertation evaluation & Presentation: 50 marks (external)*

Evaluation Pattern					
Course code : MPT 3 - 405			*Dissertation*		
Written		***Total***	***Dissertation Presentation/ Viva***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*50*	*50*	*100*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER IV
MPT-4 : GENERAL AND COMMUNITY BASED REHABILITATION

MPT- Semester IV																			
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 4 - 401	General & Community Based Rehabilitation: Clinical Sciences II	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 4 - 402	General & Community Based Rehabilitation: Physiotherapeutics II	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 4 - 403	General & Community Based Rehabilitation: Recent Advances II	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 4 - 404	General & Community Based Rehabilitation:Advanced Physiotherapeutics II	-	-	288	288	-	-	18	18	-	-	6	6	-	-	-	20	80	100
	Total	176	160	288	624	11	10	18	39	11	5	6	22	50	200	250	20	80	100
	Research Dissertation	-	-	48	48	-	-	3	3	-	-	-	1 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-
MPT 4 - 405	Research Dissertation-Semester -I to IV (11 Credit Accumulated in Semester 4)	-	-	-	528	-	-	-	-	-	-	-	11	-	-	-	50	50	100

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective Based Advanced Physiotherapeutics - II: -The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -288 hours, Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.)–160 hrs, Scientific enquiry/Research dissertation – 48 hours.

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences –II*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical and Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics – II*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-II*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics - II*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES:

General and Community Based Rehabilitation: Clinical Sciences II (MPT4-401)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
401.1	*Diagnose and analyze the clinical reasoning for condition like musculoskeletal, cardiovascular and psychological problems in geriatrics fitness*	*PO1,PO2, PO9*
401.2	*Distinguish commonly used drugs and their consequences with drug dependency.*	*PO1,PO2, PO4, PO9*
402.3	*Analyze the clinical condition like musculoskeletal system, cardiovascular, psychological and neurological problems in industrial workers.*	*PO1,PO2, PO4,PO9*
402.4	*Analyze various postural deviations in accordance with ergonomic sciences in industrial workers.*	*PO1,PO2, PO4,PO9*

General and Community Based Rehabilitation: Physiotherapeutics II(MPT4-402)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
402.1	*Formulate and deliver the management of complications during geriatric conditions due to cardiovascular complications and falls.*	*PO1,PO2,PO3, PO5,PO7,PO9*
402.2	*Manage and treat and promote fitness in geriatrics*	*PO1,PO3,PO4 PO5,PO7,PO9*
402.3	*Design and execute fitness programs for various industrial workers like IT workers and heavy industrial workers etc*	*PO1,PO2, PO5,PO9*
402.4	*Analyze the areas to organize awareness/ screening camp for geriatrics and industries.*	*PO1,PO2, PO5,PO7,PO9*

General and Community Based Rehabilitation: Recent Advances II (MPT4-403)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
403.1	*Review recent advances and formulate exercise prescription related to various geriatric conditions*	*PO1,PO2,PO4 ,PO9*
403.2	*Design health camps, awareness programs based on current health statistics in the different industries*	*PO1,PO6,PO7 ,PO8,PO9*
403.3	*Do competent evidenced based practice in geriatric and industrial health.*	*PO1,PO2,PO3 ,PO4,PO9*

General and Community Based Rehabilitation: Advanced Physiotherapeutics-II (MPT4-404)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
404.1	*Assess, diagnose and manage Age related disorders among geriatrics*	*PO1, PO2,PO3, PO 4, PO7,PO9*
404.2	*Assess, diagnose and manage with ergonomic advice for all types Industrial Workers*	*PO1, PO2,PO3, PO4, PO7, PO9*
404.3	*Document case histories in the prescribed format*	*PO 1, PO 2*
404.4	*Critically analyze different treatment and assessment procedures based on strong rationale and evidence for delivery of best patient care*	*PO 1, PO 2,PO9*
404.5	*Discuss the recent management approaches for different age-related disorders and betterment of Industrial worker's health and deliberate on best practice model for patient centered care*	*PO 1, PO 2, PO 4, PO5, PO7,PO9*

Dissertation (MPT -405)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
405.1	*Critically appraise the scientific literature and formulate a research question*	*PO3, PO 4*
405.2	*Search the relevant database and develop a rationale for research*	*PO3, PO 4*
405.3	*Effectively document and disseminate research findings*	*PO2, PO3,PO4*
405.4	*Facilitate collaborative relationships with other healthcare professionals*	*PO5, PO 6*
405.5	*Use ICT for research*	*PO3*
405.6	*Develop innovative ways to promote evidence based clinical practice*	*PO3, PO6*

COURSE CONTENTS: General and Community Based Rehabilitation
The syllabus shall focus on Industrial health, Geriatrics and health promotion.

Industrial Health-

- Applied anatomy, physiology and biomechanics related to Industrial health.
- Clinical decision-making skill in assessment and management of dysfunction related to Industrial community health.
- Ability Management:- Job analysis- Job description, Job demand Analysis, Task
- Analysis, Ergonomics Evaluation, Injury Prevention, Employee Fitness Programme
- Disability Management:- Acute care, Concept of Functional Capacity assessment, Work Conditioning and Work Hardening, workstation adaptations/ modifications
- Environmental stress in the industrial area --Accidents due to
- a] Physical agents-e.g.-Heat/cold, light, noise, Vibration, U.V. radiation, Ionizing radiation.
- b] Chemical Agents-Inhalation, local action, ingestion,
- c] Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration &
  - ergonomic evaluation of workplace and mechanical stresses per hierarchy –
  - i] Sedentary table work –executives, clerks, etc
- ii] Inappropriate seating arrangement- vehicle drivers,
- iii] Constant standing- watchman, Defense forces, surgeons, etc
- iv] Over-exertion in labourers,- common accidents
- d]-Psychological hazards- e.g monotonicity & dissatisfaction in job, anxiety of
  - work completion with quality,
- Physiotherapist role in industry – preventive, promotive, curative, intervention, ergonomic and rehabilitative services.
- Occupational Stress and its management.
- Health promotion in the industry

Geriatrics:-

- Applied anatomy, physiology and biomechanics related to Geriatrics.
- Clinical decision-making skill in assessment and management of dysfunction related to geriatric community health.
- Physiology of Aging, Theories of Aging, Age related changes in Musculoskeletal system, Central Nervous System, Cardio- Vascular system, Respiratory system, Immune system, Metabolic and Temperature related changes, Balance problems
- Role of Physiotherapy in a Home for the aged- geriatric care, holistic approach.
- Communication with Elderly,
- Fitness and Health promotion in Elderly.

- Evidence based practice in Elderly
- Psychosomatic approaches in management of disorders of stress, change in lifestyle to reduce risk factors for disability.
- Drug dependence and Iatrogenic disorders. Ethical considerations in Elderly
- Assistive Technology used for Stability & mobility to enhance function.

REFERENCE BOOKS

MPT: General and Community based Rehabilitation

1. Hogg K. Worksite health Development, Health Development Foundation 1987.
2. Rurrell J. J. Murphy L. R. Sauter, S.L. and Cooper, C.L. Occupational Stress: Issues and Development in Research Taylor and Francis, 1988.
3. C.B. back Schools and Ergonomics in Twomey L.R. and Taylor J.R. (eds) physical Therapy of the Low Back Churchill, Livingstone, 1987.
4. Mophee B and Worth, D.R. neck and upper extremity pain in the workplace in Grant R. Ed Physical Therapy of the cervical and Thoracic Spine Churchill, Livingstone, 1988.
5. Bidmeade, I, Health law in South Australia, 2nd edn. South Australian Health Commission, 1989.
6. Gardner, H. Ed. The Politics of Health the Australian Experience Churchill, Livingstone, 1989.
7. Handy, C. B. Understanding Organisations. 3rd edn Penguin, 1985.
8. Palmer, G.E. and Short S.D. Health Care and Public Policy an Australian Analysis, Macmillan, 1989.
9. Peters, T.J. and Waterman, R. H. in Search of Excellence Harper amd Row, 1984.
10. Pugh, D.S. Hichsen D.J. and Hinings, C.R. Writers on Organisation, 4th edn, Penguin.
11. South Australian Health Commission, Primary Health Care in South Australia: A Discussion Paper SAHC, 1998.
12. Wilenski, P Public Power and Public Administration Hale and iremonger, 1986.
13. Masoro, E.J. ed. CRC handbook of physiology in Agening, CRC press, 1981.
14. Clark, T.S. The Ergonomic of workspace and Machine: a design manual Taylor and Francis, 1984.
15. Corlett, N. and Wilson, J., The Ergonomic of working Postures, Taylor and Francis, 1986.
16. Grandjean, E, Fitting the Task to the Man, 4th edn., Taylor and Francis, 1988.
17. Manjchrzak, A Chang, TLC Banfield W. Ebert's, R. and Salvendy G. Human Aspects of Computer-Aided Design Taylor and Francis, 1987.
18. McCormick. E. J. and Sanders, M.S. Human Factors in Enfineering and Design 6th edn. Graw Hill 1987.
19. Oborne, D. J. Contemporary Ergonomics, Taylor and Francis, 1986 Pheasant, S. Bodysoace, Taylor and Francis, 1986.
20. Handbook of physiology in Aging – Masoro, C.R.C. Press, 1981.
21. Physiotherapy in obstetrics and gynecology - Polden & Mantle, Jayee Brothers, New Delhi 1994.
22. Physical therapy of the cancer patient- McGartex, charles Churchill Livingstone, New York , 1989.
23. Industrial therapy – Key G.L. Mosby, St. Louis 1987.

Disability

1. Hall D M B, Hill P D (1996) The Child with a Disability 2 nd Edition Blackwell Science
2. McCarthy G T (Ed) (1992) Physical Disability in Childhood An interdisciplinary approach to management. Churchill Livingstone, London. ISBN0-443-04288-8
3. Morris J (1998) Don't leave us out: Involving disabled children & young people with communication impairments. York Publishing Services, York. ISBN 1 899987 800
4. Robinson C and Stalker K (1998) Growing up with disability. Jessica Kingsley Publishers, London. ISBN 1 85302 568 2
5. Russell J (1988) Graded activities for children with motor difficulties. Cambridge University Press.

SCHEME OF EXAMINATION FOR MPT IV SEMESTER

Evaluation Pattern					
MPT 4- 401		*General & Community Based Rehabilitation: Clinical Sciences II*			
MPT 4- 402		*General & Community Based Rehabilitation: Physiotherapeutics II*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 4- 403		*General & Community Based Rehabilitation: Recent Advances II*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination

Written Examination ***(For 80 marks Part A & Part B, for 40 Marks only Part A)***

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks = 15 Marks*

Evaluation Pattern					
Course code : MPT 4- 404			*General & Community Based Rehabilitation: Advanced Physiotherapeutics-II*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the logbook/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – IV

Practical

- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

Dissertation at the IV semester:

- *Internal evaluation as per the process & execution: 50 marks*
- *Dissertation evaluation & Presentation: 50 marks (external)*

Evaluation Pattern					
Course code : MPT 4 - 405			*Dissertation*		
Written		***Total***	***Dissertation Presentation/ Viva***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*50*	*50*	*100*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER IV
MPT 5: PAEDIATRICS

MPT- Semester IV																				
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 5 - 401	Paediatrics: Clinical Sciences II	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 5 - 402	Paediatrics: Physiotherapeutics II	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 5 - 403	Paediatrics: Recent Advances II	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 5 - 404	Paediatrics: Advanced Physiotherapeutics II	-	-	288	288	-	-	18	18	-	-	6	6	-	-	-	20	80	100
	Total	176	160	288	624	11	10	18	39	11	5	6	22	50	200	250	20	80	100
	Research Dissertation	-	-	48	48	-	-	3	3	-	-	-	1 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-
MPT 5 - 405	Research Dissertation-Semester -I to IV (11 Credit Accumulated in Semester 4)	-	-	-	528	-	-	-	-	-	-	-	11	-	-	-	50	50	100

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective Based Advanced Physiotherapeutics - II:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -288 hours,Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) –160 hrs, Scientific enquiry/Research dissertation – 48 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences –II*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical and Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics-II*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-II*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-II*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

Course Outcomes:

Paediatrics: Clinical Sciences II (MPT5-401)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
401.1	*Plan assessment and management programme for critical care patients in ICU.*	*PO1, PO2, PO3, PO4 PO5, PO7, PO8*
401.2	*Gain knowledge related to embryology of cardiovascular, pulmonary and musculoskeletal system*	*PO1, PO2 PO4, PO5*
401.3	*Acquire the knowledge related to orthotics used in paediatrics conditions*	*PO1, PO2, PO3, PO4 PO5, PO9*
401.4	*Acquire knowledge related to amputation, limb deficiencies ,burns, tumours of bone and muscle in childhood-Classification, pathophysiology and management.*	*PO1, PO2, PO3, PO4 PO5,*
401.5	*Acquire the knowledge related to child Abuse.*	*PO1, PO2, PO3, PO4 PO5*

Paediatrics: Physiotherapeutics II(MPT5-402)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
402.1	*Acquire the skill related to assessment and diagnose of pediatric congenital and acquired cardiovascular, pulmonary & musculoskeletal conditions and to plan ICU and rehabilitation programme by applying recent technique / approached to treat & train.*	*PO1, PO2, PO3, PO4 PO5, PO6, PO7, PO9*
402.2	*Acquire the skill related to assessment and management of childhood obesity, exercise testing and prescription, strength, endurance, flexibility and sports injuries programme by applying recent technique/approaches.*	*PO1, PO2, PO3, PO4 PO5, PO6, PO7, PO9*
402.3	*Explicit and perform the steps of each Paediatric approaches skilfully*	*PO1, PO2, PO3, PO4 PO5, PO6, PO7, PO9*
402.4	*Recognise the implication of dysfunction of neurological deficit and its co-relation with clinical decision making*	*PO1, PO2, PO3, PO4 PO5, PO6, PO7, PO9*

Paediatrics: Recent Advances II(MPT5-403)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
403.1	*Expertise in the skill related to assessment and diagnose of Paediatrics congenital and acquired cardiovascular pulmonary and musculoskeletal conditions and to plan ICU and rehabilitation program by applying recent trends in pediatric research*	*PO1, PO2, PO3, PO4 PO5, PO6, PO7, PO9*
403.2	*Acquire the competence related to assessment and management of childhood obesity exercise testing and prescription, strength, endurance, flexibility and sports injuries with reference to recent trends in pediatric research.*	*PO1, PO2, PO3, PO4 PO5, PO6, PO7, PO9*
403.3	*Discussion and group studies about the merits and demerits of recent advances..*	*PO1,PO4,PO5 PO9*
403.4	*Raise a research question from every methodological studies*	*PO1,PO3, PO9*
403.5	*Create a physiotherapy based management protocol*	*PO1, PO2, PO3, PO4 PO5, PO6, PO7, PO9*

Paediatrics: Advanced Physiotherapeutics-II(MPT5-404)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
404.1	*Identify and discuss, the pediatric congenital and acquired cardiovascular ,pulmonary and musculoskeletal conditions by routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning, by applying recent technique/approaches, based on evidence-based practice in the field of Paediatric physiotherapy*	*PO1, PO2, PO3, PO4 PO5, PO6, PO7, PO9*
404.2	*Acquire the skill related to assessment and management of childhood obesity,exercise testing and prescription ,strength,endurance,flexibility and sports injuries programme by applying recent technique/approaches*	*PO 1, PO4, PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9*
404.3	*Document patients with latest and new version of scale, out come measures and asses the progression*	*PO2, PO4, PO5, PO9*
404.4	*Use Recent Physiotherapeutic Technique/ approaches to treat patients with disorders in different Paediatric age groups.*	*PO1, PO2, PO4 PO5,PO9*

Dissertation (MPT -405)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
405.1	*Critically appraise the scientific literature and formulate a research question*	*PO1, PO4, PO9*
405.2	*Search the relevant database and develop a rationale for research*	*PO1, PO4, PO9*
405.3	*Effectively document and disseminate research findings*	*PO2, PO3, PO4, PO9*
405.4	*Facilitate collaborative relationships with other healthcare professionals*	*PO6*
405.5	*Use ICT for research*	*PO2, PO4*
405.6	*Develop innovative ways to promote evidence based clinical practice*	*PO2, PO4, PO6, PO9*

COURSE CONTENTS:

Paediatrics – II

a) Embryology of cardiovascular, pulmonary and musculoskeletal system
b) Developmental deformities &congenital anomalies
c) Paediatric musculoskeletal condition
d) Paediatric cardio-vascular & pulmonary condition
e) Paediatric fitness

TOPICS:

- Development of heart, lung, conduction system, great vessels, hand, foot, thumb,
- Vertebral column, long bones and muscular system
- Anatomical and physiological differences of cardio-vascular and respiratory system in neonates, childhood and adults
- Fetal circulation
- Arthrogryposis
- Congenital dislocation of hip
- CTEV, vertical talus, Blount disease, Perthe's disease, slipped capital femoral epiphysis, limb length discrepancies and Osteogenesis Imperfecta.
- Deformities of vertebral column, deformities of chest wall
- Traumatic injuries in child – fractures, dislocations, epiphyseal injuries
- Infective condition of musculoskeletal – osteomyelitis, pyogenic arthritis, juvenile rheumatoid arthritis, tuberculous arthritis
- Amputation and Limb deficiencies in childhood
- Burns in childhood – Classification, Pathophysiology and Management.

- Tumors of bone and muscle in Paediatrics
- Congenital heart disease – pathodynamics, clinical presentation, investigation, medico-surgical and physiotherapy management of cyanotic and acyanotic heart disease
- Rheumatic heart disease
- Chest injuries
- Respiratory disorder in childhood – IRDS, Bronchopulmonary dysplasia, pneumonia, lung abscess, asthma, cystic fibrosis, bronchitis, bronchiectasis, bronchiolitis, pertusis, CROUP, epiglotitis, chronic lung disease, primary ciliary diskinesia, fatigue, sleep apnoea, hyperventilation syndrome
- Respiratory problems in neonates – respiratory failure in neonates, neonatal ICU
- Child abuse
- Childhood obesity
- Exercise testing and prescription in children
- Strength endurance and flexibility in childhood
- Sports injuries in children
- PT management in PICU, NICU, emergency care and trauma, ventilator management, oxymeter, defibrillator.
- Paediatric cardio-thoracic surgeries.
- Recent advances in management of musculoskeletal, cardio-vascular and pulmonary conditions
- Role of Orthotics in Paediatric conditions.
- Social integration of child in school and community- measures to ensure-attitudinal, assistive Technology, legislation and support
- Disability Evaluation

REFERENCE BOOKS

1. Connelly B.H. & Montgomery, P.C. Therapeutic exercise in developmental disabilities, Chattanooga 1987.
2. Tecklin J.S. Pediatric Physical Therapy Lippincott, 1989.
3. Campion, Mr. Ed hydrotherapy in paediatric, Heinemann 1985.
4. Physical therapy Assessment in Early Infancy - Wilhelm Churchill Livingstone, New York, 1993.
5. Physical therapy for children – Campbell Suzann K. W.B. Saunders, Philadelphia, 1994.
6. Physical management of multiple handicapped – Fraser, William and Wilkins, Baltimore.
7. Elements of paediatric physiotherapy – Eckerley P. Churchill Livingstone, Edingburgh, 1993.
8. Physiotherapy in Peadiatrics – Shepherd R. Heinemann. London, 1980 2nd edition.
9. The growth chart – WHO, Geneva, 1986.
10. Child with spina Bifida – Anderson E.M. and Spina B Methun, Lodon 1977.
11. A manual of neonatal intensive care- Robert N.R.C. Edwaed Arnold, London 1986.
12. Burns Physiotherapy in the growing child. McDonald.
13. Campbell S (Ed) (2000) Physical therapy for children. WB Saunders Co.
14. Eckersley P (Ed.) (1993) Elements of paediatric physiotherapy. Churchill Livingstone, Edinburgh. ISBN 0-44-03894-S
15. O'Hagan M and Smith M (1998) Special issues in child care. Balliere Tindall, London ISBN 0-7020-1604-7
16. Shepherd R (1997) 2 nd edition. Physiotherapy in paediatrics. Butterworth and Heinemann.
17. Tecklin J S (1999) 3 rd edition Paediatric physical therapy. Lippincott Philadelphia.

DEVELOPMENT:

1. Sheridan M (1997) From birth to five years – children's developmental progress Nfer Nelson
2. Haywood K M (1993) "Lifespan Motor Development" 2 nd edition. Human Kinetics.
   Lee H (2000) The Developing Child 9 th Edition Allyn and Bacon

SCHEME OF EXAMINATION FOR MPT IV SEMESTER

Evaluation Pattern					
MPT 5- 401		*Paediatrics: Clinical Sciences II*			
MPT 5- 402		*Paediatrics: Physiotherapeutics II*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 5- 403		*Paediatrics: Recent Advances II*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination

Written Examination ***(For 80 marks Part A & Part B, for 40 Marks only Part A)***

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15marks*

Evaluation Pattern					
Course code : MPT 5- 404			*Paediatrics: Advanced Physiotherapeutics-II*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the log book/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination

- ***Practical Examination (80 marks)***

Semester – IV

Practical

- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

Dissertation at the IV semester:

- *Internal evaluation as per the process & execution: 50 marks*
- *Dissertation evaluation & Presentation: 50 marks (external)*

Evaluation Pattern					
Course code : MPT 5 - 405			*Dissertation*		
Written		***Total***	***Dissertation Presentation/ Viva***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*50*	*50*	*100*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER IV
MPT-6: MUSCULOSKELETAL SCIENCES AND SPORTS

MPT- Semester IV																				
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 6 - 401	Musculoskeletal Sciences & Sports: Clinical Sciences II	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 6 - 402	Musculoskeletal Sciences & Sports: Physiotherapeutics II	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 6 - 403	Musculoskeletal Sciences & Sports: Recent Advances II	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 6 - 404	Musculoskeletal Sciences & Sports: Advanced Physiotherapeutics II	-	-	288	288	-	-	18	18	-	-	6	6	-	-	-	20	80	100
	Total	176	160	288	624	11	10	18	39	11	5	6	22	50	200	250	20	80	100
	Research Dissertation	-	-	48	48	-	-	3	3	-	-	-	1 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-
MPT 6 - 405	Research Dissertation-Semester -I to IV (11 Credit Accumulated in Semester 4)	-	-	-	528	-	-	-	-	-	-	-	11	-	-	-	50	50	100

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective Based Advanced Physiotherapeutics - II:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -288 hours,Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 160 hrs, Scientific enquiry/Research dissertation – 48 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences –II*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical and Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics-II*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence*
- ***Elective Based Recent Advances-II*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-II*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES:

Musculoskeletal Sciences & Sports: Clinical Sciences II (MPT 6-401)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
401.1	*Apply scientific principles of clinical reasoning to assess, diagnose and manage musculoskeletal and sports injuries*	*PO 1, PO2,*
401.2	*Correlate neuro-musculoskeletal dysfunction within framework of clinical reasoning*	*PO 2, PO 3*
401.3	*Document patients' clinical findings with reliable and valid outcome measures and prognostic indicators*	*PO 2, PO 5*
401.4	*Prepare a comprehensive management plan based on informed clinical goals and robust clinical rationale*	*PO 2, PO 5*
401.5	*Discuss the clinical case scenarios with other healthcare professionals and disseminate the findings by maintaining professional ethics and integrity*	*PO 2, PO 3, PO 5*

Musculoskeletal Sciences & Sports: Physiotherapeutics II (MPT6-402)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
402.1	*Assess the prognostic indicators within the scope of practice of Physiotherapy, prepare and implement the management approach*	*PO 2, PO 3*
402.2	*Justify the clinical rationale for the treatment plan and assess its effectiveness using appropriate clinical outcome analysis*	*PO1, PO3, PO 5*
402.3	*Critically analyse the management approaches by referring to scientific literature*	*PO 2, PO4*
402.4	*Guide the undergraduate students in domains of Physiotherapy practices and disseminate the clinical knowledge gained through case presentations and discussions*	*PO 2, PO 3, PO 4, PO 6*

Musculoskeletal Sciences & Sports: Recent Advances II (MPT6-403)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
403.1	*Appraise the recent advancements in Physiotherapy practice and critically analyse and apply in domains of patient management*	*PO 4, PO 9*
403.2	*Lead healthcare professionals to disseminate the advances of Physiotherapeutic practices using appropriate clinical evaluation indicators*	*PO 3, PO 4, PO 9*
403.3	*Critically examine clinical decisions in light of new information and knowledge from the scientific literature*	*PO 4, PO 9*

Musculoskeletal Sciences & Sports: Advanced Physiotherapeutics II (MPT6-404)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
404.1	*Examine and assess the clinical case scenarios using reliable and valid outcome measures and comment on patient's progressions during the treatment*	*PO 2, PO 3, PO 5*
404.2	*Use evidence based clinical decision framework to evaluate and examine the advance Physiotherapeutic methods*	*PO 4, PO 9*
404.3	*Appraise the strength of scientific evidences in the advancements and comment on possible application into clinical practice*	*PO 2, PO 3, PO 9*
404.4	*Discuss, disseminate and document the advancements to innovate clinical and research practices*	*PO 4, PO 9*

Dissertation (MPT -405)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
405.1	*Critically appraise the scientific literature and formulate a research question*	*PO1, PO4, PO9*
405.2	*Search the relevant database and develop a rationale for research*	*PO1, PO4, PO9*
405.3	*Effectively document and disseminate research findings*	*PO2, PO3, PO4, PO9*
405.4	*Facilitate collaborative relationships with other healthcare professionals*	*PO6*
405.5	*Use ICT for research*	*PO2, PO4*
405.6	*Develop innovative ways to promote evidence based clinical practice*	*PO2, PO4, PO6, PO9*

COURSE CONTENTS:

Part -A

a) Exercise Physiology
b) Biomechanics & pathomechanics in sports activities
c) Assessment & evaluation of sports fitness, performance and injuries
d) Sport psychology

TOPICS:

- Sports team approach
- Communication among team members & participants
- Physiological changes & adaptations – aerobic exercises & anaerobic exercises
- Psychosocial factors of sports injuries
- Physical demand in different sports
- Neurodynamics in sports
- Physiological response to exercises
- Physiological response to injury – muscle, ligament, tendon, bone, synovial joint structure, nervous system, pain.
- Biomechanics of sports activities & its relation to injuries in – tennis, golf, cricket, volleyball, soccer, basketball, short & long distant runners, swimming, throwing events, jump events, pathomechanics of injuries (pattern, velocity, angular & linear movements)
- Warm up
- Protective & supportive equipments
- Injury evaluation &management _ sporting emergencies, principles of assessment & management, On-field assessment, decision making, evaluation, diagnosis, assessment of head injury & spinal cord, assessment of eye. Chest & abdominal injuries, fractures.
- Isokinetic testing
- Assessment of strength, power, endurance (muscular & cardiac), vo2max, flexibility, pliability, reaction time and pulmonary function.
- Body composition – assessment & its importance in sports
- Sports injuries - emergency sports injury assessment; mechanism, patho-mechanism, clinical presentation, assessment & examination of shoulder girdle injuries, elbow joint injuries, wrist & hand injuries, thigh injuries, knee injuries, injuries of patella, injuries to ankle & foot, injuries to cervical spine & skull, injuries to thoracic spine & thoracic cage, injuries to lumbo-sacral region, athletic injuries, swimming injuries, abdominal injuries

- Over-use syndrome, tenosynovitis, friction syndrome
- Radio-imaging in sports – X-Ray, CT, MRI, Ultrasonography.
- Ground evaluation
- Anthropometry in various age groups
- Evaluation of paediatric fitness & paediatric injuries
- Evaluation of injuries of old age
- Specific sports injuries in women
- Pathophysiology & assessment of fatigue
- Drugs in sports
- Sport psychology – athletic response to injury (Kubler –Ross grief model, Peretz model of loss, Cognitive stress model, Cognitive emotional response), psychological management
- Evaluation of disabled sportsmen.

Part B.

1. Prevention of sports injuries.
2. Management of sports injuries.
3. Rehabilitation of sports injuries.
4. Diet & nutrition.

Topics:

- Detraining effects of cardiovascular, musculoskeletal nervous system.
- Sports specific training. & Cross training.
- Risk factors in sports injuries and strategies of prevention.
- Protection & supportive equipments.
- Emergency care & first aid, Transportation of injured athlete, Sports emergency kit.
- Athletic co-ordination programme.
- Warm up- sports specific.
- Manual therapy in sports.
- Therapeutic exercises - Strength training, power training, Flexibility training, endurance training, Plyometrics, Reaction training, Proprioceptive training, Stretching.
- Sports massage,
- Trigger point release, neural tissue mobilization.
- Core Stability assessment & Training.
- Pilates
- Swiss Ball training
- Sports taping
- Electrotherapy in sports injuries.
- Hydrotherapy.
- Physiotherapeutic management, rehabilitation & sports specific training for injuries in:-Shoulder girdle, Elbow joint, Wrist & hand, Thigh, Knee, Patella, Ankle & foot, Cervical spine & skull, Thoracic spine & thoracic cage, Lumbosacral region, Swimming, Athletic, Abdominal.
- Sports rehabilitation for disability.
- Exercise testing, prescription & rehabilitation of older adults and geriatrics.
- Sports during pregnancy.
- Diet & sports- Pre-session diet, pre-game meal, carbohydrate loading, high fat diet, high protein diet.
- Performance enhancing drugs, doping.

REFERENCE BOOKS

MPT- SPORTS

1. Sport and physical therapy – Bernhardt Donna, Churchill Livingstone, London 1995.
2. Bird, S. R., Black, N. Sports Injuries: Causes, Diagnosis, Treatment and Prevention Cheltenham: Stanley Thomes, 1997 ISBN: 0748731814
3. Brownstein, B. Functional movement in Orthopaedic and Sports Physical Therapy: Evaluation, Treatment and Outcomes
   New York; London: Churchill Livingstone, 1997 ISBN: 0443075301
4. Cash, M. Sport and Remedial Massage Therapy
   London: Edbury, 1996 ISBN: 0091809568
5. Johnson, R. J. and Lombardo, J (eds.) Current Review of Sports Medicine Philadelphia: Butterworth-Heinemann, 1998 (2nd edition) ISBN: 0750699655
6. Hollis, M. Massage for Therapists
   Oxford: Blackwell Science, 1998 (2nd edition) ISBN: 0632047887
7. Hutson, M.A. Sports Injuries, Recognition and Management
   Oxford: Oxford University Press, 2001 (3nd edition) ISBN: 0192632728
8. Kuprian, W. Physical Therapy for Sports
   Philadelphia; London: Saunders, 1995 (2nd edition) ISBN: 0721637582
9. Macdonald, R (ed.) Taping Techniques: Principles and Practice
   Oxford: Butterworth- Heinemann, 1994 ISBN: 0750605774
10. McLatchie, G. R. Lennox, C. M. E. (eds) Soft Tissues: Trauma and
    Sports Injuries Oxford: Butterworth-Heinemann, 1996 ISBN: 0750603655
11. Malone, T.R., McPoil, 1., and Nitz, A. J. Orthopedic and Sports Physical Therapy St Louis: Mosby, 1997 (3rd edition) ISBN: 0815158866
12. Norris, C.M. Sports Injuries: Diagnosis and Management
    Oxford: Butterworth/Heinemann, 1998 (2nd edition) ISBN: 0750628731
13. Prentice, W.E. (ed.) Rehabilitation Techniques in Sports Medicine
    Boston, Mass.: WCB/McGraw- Hill, 2003 (4rd edition) ISBN: 0071217134
14. Prentice, W.E. Therapeutic Modalities in Sports Medicine
    Boston, Mass: WCB/McGraw-HiII, 2002 (5th edition) ISBN: 0072560479
15. Rosser, M. Sports Therapy: an Introduction to Theory and Practice London: Hodder & Stoughton, 1997 ISBN: 0340673206
16. Salvo, S.G. Massage Therapy: Principles & Practice
    London: Saunders, 2003 (2nd edition) ISBN: 072160028X
17. Torg, J. S. and Shephard, R. I. Current Therapy in Sports Medicine
    St. Louis: Mosby, 1995 (3rd edition) ISBN: 1556643845

Journals

1. British Journal of Sports Medicine (UK)
2. Journal of Orthopaedic and Sports Physical Therapy (USA)
3. Journal of Sport Rehabilitation (USA)
4. Journal of Sports Chiropractic and Rehabilitation (USA)
5. Medicine and Science in Sports and Exercise (USA)

SCHEME OF EXAMINATION FOR MPT IV SEMESTER

Evaluation Pattern					
MPT 6- 401		*Musculoskeletal Sciences & Sports: Clinical Sciences II*			
MPT 6- 402		*Musculoskeletal Sciences & Sports : Physiotherapeutics II*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 6- 403		*Musculoskeletal Sciences & Sports : Recent Advances II*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination ***(For 80 marks Part A & Part B, for 40 Marks only Part A)***

Part A	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks) = 15 Marks* *Q.2 SAQ (any 1 out of 2 X 10 Marks) = 10 Marks* *Q.3 Short Notes (Any 3 out of 4) 3 X 5 marks = 15 Marks*

Evaluation Pattern					
Course code : MPT 6- 404			*Musculoskeletal Sciences & Sports: Advanced Physiotherapeutics-II*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 marks shall include completion of the logbook/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam marks simplified for 20 marks at the end of every semester.

Preliminary Examination / University (Final) Examination
- ***Practical Examination (80 marks)***

Semester – IV
Practical
- *Clinical case (1) elective Long Case – 60 marks*
- *Clinical case (2) elective Short Case – 20 marks*

Dissertation at the IV semester:
- *Internal evaluation as per the process & execution: 50 marks*
- *Dissertation evaluation & Presentation: 50 marks (external)*

Evaluation Pattern					
Course code : MPT 6 - 405			*Dissertation*		
Written		***Total***	***Dissertation Presentation/ Viva***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*50*	*50*	*100*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER IV
MPT 7: MUSCULOSKELETAL SCIENCES AND MANUAL THERAPY

MPT- Semester IV																			
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 7 - 401	Musculoskeletal Sciences & Manual Therapy: Clinical Sciences II	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 7 - 402	Musculoskeletal Sciences & Manual Therapy: Physiotherapeutics II	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 7 - 403	Musculoskeletal Sciences & Manual Therapy: Recent Advances II	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 7 - 404	Musculoskeletal Sciences & Manual Therapy:Advanced Physiotherapeutics II	-	-	288	288	-	-	18	18	-	-	6	6	-	-	-	20	80	100
	Total	176	160	288	624	11	10	18	39	11	5	6	22	50	200	250	20	80	100
	Research Dissertation	-	-	48	48	-	-	3	3	-	-	-	1 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-
MPT 7 - 405	Research Dissertation-Semester -I to IV (11 Credit Accumulated in Semester 4)	-	-	-	528	-	-	-	-	-	-	-	11	-	-	-	50	50	100

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective Based Advanced Physiotherapeutics - II:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -288 hours, Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 160 hrs, Scientific enquiry/Research dissertation – 48 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences –II*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical and Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus.*
- ***Elective Based Physiotherapeutics - II*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence.*
- ***Elective Based Recent Advances-II*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-II*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES :

Musculoskeletal Sciences & Manual Therapy: Clinical Sciences II (MPT7 - 401)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
401.1	*Apply scientific principles of clinical reasoning to assess, diagnose and manage musculoskeletal and sports injuries manually*	*PO1, PO2*
401.2	*Correlate neuro-musculoskeletal dysfunction within framework of clinical reasoning*	*PO1*
401.3	*Document patients' clinical findings with reliable and valid outcome measures and prognostic indicators*	*PO1, PO2, PO5, PO7,PO9*
401.4	*Prepare a comprehensive management plan based on informed clinical goals and robust clinical rationale*	*PO1, PO2, PO9*
401.5	*Discuss the clinical case scenarios with other healthcare professionals and disseminate the findings by maintaining professional ethics and integrity*	*PO1,PO2,PO3, PO7*

Musculoskeletal Sciences & Manual Therapy: Physiotherapeutics II(MPT 7-402)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
402.1	*Assess the prognostic indicators within the scope of practice of manual Physiotherapy, prepare and implement the management approach*	*PO1, PO2*
402.2	*Justify the clinical rationale for the treatment plan and assess its effectiveness using appropriate clinical outcome analysis*	*PO1,PO2*
402.3	*Critically analyse the management approaches by referring to scientific literature*	*PO1, PO2, PO6*
402.4	*Guide the undergraduate students in domains of Physiotherapy practices and disseminate the clinical knowledge gained through case presentations and discussions*	*PO1, PO2, PO6, PO7*

Musculoskeletal Sciences & Manual Therapy: Recent Advances II(MPT7-403)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
403.1	*Appraise the recent advancements in Physiotherapy practice and critically analyse and apply in domains of patient management*	*PO1, PO2, PO9*
403.2	*Lead healthcare professionals to disseminate the advances of Physiotherapeutic practices using appropriate clinical evaluation indicators*	*PO1, PO9*
403.3	*Critically examine clinical decisions in light of new information and knowledge from the scientific literature*	*PO1,PO6, PO9*

Musculoskeletal Sciences & Manual Therapy: Advanced Physiotherapeutics-II (MPT7-404)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
404.1	*Examine and assess the clinical case scenarios using reliable and valid outcome measures and comment on patient's progressions during the treatment*	*PO1, PO4*
404.2	*Use evidence based clinical decision framework to evaluate and examine the advance Physiotherapeutic methods*	*PO1, PO4*
404.3	*Appraise the strength of scientific evidences in the advancements and comment on possible application of manual therapy into clinical practice*	*PO1, PO4,PO9*
404.4	*Discuss, disseminate and document the advancements to innovate clinical and research practices*	*PO1, PO3, PO9*

Dissertation (MPT -405)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
405.1	*Critically appraise the scientific literature and formulate a research question*	*PO1, PO4, PO9*
405.2	*Search the relevant database and develop a rationale for research*	*PO1, PO4,PO9*
405.3	*Effectively document and disseminate research findings*	*PO2, PO3, PO4, PO9*
405.4	*Facilitate collaborative relationships with other healthcare professionals*	*PO6*
405.5	*Use ICT for research*	*PO2, PO4*
405.6	*Develop innovative ways to promote evidence based clinical practice*	*PO2, PO4, PO6, PO9*

COURSE CONTENTS:

- Introduction and Basic concepts of Manual therapy
- Principles of Manual Therapy- principles of subjective examination and physical examination, treatment, re-assessment of spinal and peripheral joint problems
- Communication, Documentation, Clinical Reasoning, Evidence based practice & Medico-legal issues in manual therapy.
- Pain – Concepts, theories, assessment, differential diagnosis & principles of management.
- General schools of thought of Manual Therapy – principles & philosophies.
- Neurodynamics and neural tissue mobilization.
- basics of anatomy, physiology ,biomechanics of neural tissue
- clinical reasoning, principles of subjective, objective, treatment and reassessment in spinal and extremity adverse neural tension disorders
- Clinical presentation of the intraneural and extraneural pathology
- indications ,contraindications and precautions in adverse neural tension testing and management in upper and lower extremity and spine
- Osteopathic and Chiropractic school of thoughts
- Different schools of thought – its clinical applications, principles of assessment & management of various segments of the body (Joints, Spine, Soft-Tissues), in accordance with the pathology, patho-mechanics (Traumatic and Non-Traumatic) of structural 7 functional dysfunction.
- Mulligan-principles of assessment and treatment using mulligan concept
  - NAGS, SNAGS, RNAGS, MWM, application in spinal and peripheral joint dysfunction
- Maitland-Principles and application in spinal and peripheral joint dysfunction
- Kaltenborn - Principles and application in spinal and peripheral joint dysfunction
- Cyriax - history, physical examination-selective tissue tension test, management strategies in spinal and peripheral joint and soft tissue techniques - deep transverse friction massage, massage, manipulation , injection
- Mc Kenzie-classification of spinal pain as adopted by McKenzie-postural, dysfunction and derangement - assessment and treatment procedures
- Pilates techniques., Mennel's technique
- Myofasial Release technique—fibromyalgia, trigger point therapy principles of assessment and treatment
- Positional release technique - assessment and treatment procedures strain and counter strain technique - Functional technique

- Muscle Energy Technique--theories of spinal and peripheral joint dysfunction - Fayette's laws of physiological spinal motion - segmental vertebral dysfunction- NRS, ERS, FRS - screening examination ,scanning examination, skill rolling, segmental definition (diagnosis) , treatment using MET
- Neuro-Muscular Taping
- Combined Movements of spine
- Recent advances & controversies in manual therapy and grey areas of research.
- Theories of Interdependency

REFERENCE BOOKS

1. Black d and Dummbleton J. H. clinical Biomechanics 2nd edn. Churchill Livingstone 1987.
2. Sullivan P.D. and Minor M.A. An Integrated Approach to Therapeutic Exercises Resten 1982.
3. Donatelli R. ed. Physical Therapy of the Shoulder, 2nd edn Churchill, Livingston 1991.
4. Donatelli R. and wooden M.J. Ed Orthopaedic Physical Therapy Churchill, Livingston 1989.
5. Grant, R. (ed) Physical Therapy of the Cervical and Thoracic Spine, Churchill, Livingstone, 1987.
6. Grieve G. P. Common Vertebral Joint Problems, 2nd edn Churchill, Livingstone, 1988.
7. Jayson M.I.V. (ed) The Lumber Spine and Back Pain, 3rd edn Churchill, Livingstone, 1987.
8. Kirkaldy- Willis W. H. (ed) Managing low back pain, 2nd edn Churchill, Livingstone, 1988.
9. Traveil J. G. and Simons, D.G. Myofascial pain and Dysfunction. The Trigger Point manual, Williams and Willkins, 1983.
10. Cruess, R.L. ed. The Musculoskeletal System: Embryology, Bio- Chemistry and Physiology, Churchill, Livingstone, 1982.
11. Vander, A. J. Human Physiology: The mechanisms of body Function, 5th edn. Mc. Graw-Hill, 1990.
12. Chaffin, D.B. and Anderson, G. Occupational Biomechanics, 2nd edn. Wiley, 1984.
13. Orthopaedic physical therapy – Donatelli, London Churchill Livingstone 1994.
14. Clinical biomechanics of spine – White A.A and Panjabi- J.B. Lippincot, Philadelphia 1978.
15. Vertebral manipulation- Maitland G.D. Boston, Butterworth & Co. Boston, 1997.
16. Peripheral manipulation - Maitland G.D. Boston, Butterworth & Co. Boston, 1997.
17. Benson, Fixsen and Macnicol (Ed) Children's orthopaedics and fractures. Churchill Livingstone.
18. Cyriax James. Textbook of Orthopaedic Medicine , diagnosis of soft Tissue Lesions 8th edn. Bailliere Tindall1982.
19. Mobilization of the extremity joint – Kaltenbore, Harper and Row, Philadelphia, 1980.
20. Kisner C. and Colby L. A. (2002). Therapeutic Exercise: Foundations and Techniques, 4th ed. Philadelphia, PA: F. A. Davis.
21. Lederman E. (1997): Fundamentals of Manual Therapy–Physiology, Neurology and Psychology. New York: Churchill-Livingstone.
22. Kaltenborn F.M., Evjenth O., Volowitz E., Kaltenborn T.B., and Morgan D. (2002) Manual Mobilization of the Extremity Joints, 6th ed. Oslo, Norway: Orthopedic Physical Therapy Products (OPTP).
23. Rich G.J. (2002, ed) Massage Therapy: The Evidence for Practice. New York, U.S.A.: Mosby.
24. Mulligan B. (2003) Manual Therapy: NAGS, SNAGS, MWMS etc., 4th ed. Wellington, New Zealand: Plane View Services
25. Chaitow L., Liebenson L., Murphy D.R. (2001) Muscle Energy Techniques. New York, U.S.A.: Elsevier Science.
26. Orthopaedics – A Post Graduate Manual, Dr.(col)S.K.Biswas, Jaypee Publication,New Delhi 1st edition, 2012.

SCHEME OF EXAMINATION FOR MPT IV SEMESTER

Evaluation Pattern					
MPT 7- 401		*Musculoskeletal Sciences & Manual Therapy: Clinical Sciences II*			
MPT 7- 402		*Musculoskeletal Sciences & Manual Therapy: Physiotherapeutics II*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 7- 403		*Musculoskeletal Sciences & Manual Therapy: Recent Advances II*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination (For 80 marks Part A & Part B, for 40 Marks only Part A)

Part A	*Q.1 LAQ (1 X 15 Marks)*	*= 15 Marks*
	Q.2 SAQ (any 1 out of 2 X 10 Marks)	*= 10 Marks*
	Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks	*= 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks)*	*= 15 Marks*
	Q.2 SAQ (any 1 out of 2 X 10 Marks)	*= 10 Marks*
	Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks	*= 15 Marks*

Evaluation Pattern					
Course code : MPT 7- 404			*Musculoskeletal Sciences & Manual Therapy: Advanced Physiotherapeutics-II*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 Marks shall include completion of the logbook/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam Marks simplified for 20 Marks at the end of every semester.

Preliminary Examination / University (Final) Examination
- ***Practical Examination (80 Marks)***

Semester – IV
Practical
- *Clinical case (1) elective Long Case – 60 Marks*
- *Clinical case (2) elective Short Case – 20 Marks*

Dissertation at the IV semester:
- *Internal evaluation as per the process & execution: 50 Marks*
- *Dissertation evaluation & Presentation: 50 Marks (external)*

Evaluation Pattern					
Course code : MPT 7 - 405			*Dissertation*		
Written		***Total***	***Dissertation Presentation/ Viva***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*50*	*50*	*100*

MPT- SECOND YEAR
SYLLABUS FOR SEMESTER IV
MPT 8: MUSCULOSKELETAL SCIENCES AND HAND CONDITIONS

MPT- Semester IV																			
Course Code	Course	Teaching Learning Hrs.				Teaching Learning Hrs/Week.				Credit Hrs.				Exam Marks					
														Theory			Practical		
		Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Th.	Pr.	Cl.	Tot.	Int.	Ext.	Tot.	Int.	Ext.	Tot.
MPT 8 - 401	Musculoskeletal Sciences & Hand Conditions: Clinical Sciences II	64	64	-	128	4	4	-	8	4	2	-	6	20	80	100	-	-	-
MPT 8 - 402	Musculoskeletal Sciences & Hand Conditions: Physiotherapeutics II	80	64	-	144	5	4	-	9	5	2	-	7	20	80	100	-	-	-
MPT 8 - 403	Musculoskeletal Sciences & Hand Conditions: Recent Advances II	32	32	-	64	2	2	-	4	2	1	-	3	10	40	50	-	-	-
MPT 8 - 404	Musculoskeletal Sciences & Hand Conditions: Advanced Physiotherapeutics II	-	-	288	288	-	-	18	18	-	-	6	6	-	-	-	20	80	100
	Total	176	160	288	624	11	10	18	39	11	5	6	22	50	200	250	20	80	100
	Research Dissertation	-	-	48	48	-	-	3	3	-	-	-	1 Credit Assessed & Accumulated in Semester 4						
	Total Hours	-	-	-	672	-	-	-	42	-	-	-	-	-	-	-	-	-	-
MPT 8 - 405	Research Dissertation-Semester -I to IV (11 Credit Accumulated in Semester 4)	-	-	-	528	-	-	-	-	-	-	-	11	-	-	-	50	50	100

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)
Elective Based Advanced Physiotherapeutics - II:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

Didactic – 176 hours, Clinical training -288 hours, Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 160 hrs, Scientific enquiry/Research dissertation – 48 hours

Note: The subjects of III-Semester MPT shall include the following contents as classified for examination.

- ***Elective Based Clinical Sciences –II*** *consist of Anatomy, Physiology, Pathophysiology, Etiology, Clinical Feature, Complications, Impairments, Clinical Assessment, Medical and Surgical Management, Prognosis, Investigations, Differential Diagnosis of the condition mentioned in the syllabus*
- ***Elective Based Physiotherapeutics-II*** *consist of Biomechanics, Patho- mechanics, Physiotherapy Assessment including Scales, outcome measure, Investigation, ICF, Physiotherapy Management of the condition mentioned in the syllabus Supported with Evidence.*
- ***Elective Based Recent Advances-II*** *This paper shall focus on recent advances of the clinical conditions including its assessment and management with emphasis on Physiotherapy context. However due importance shall also be given for advances in Anatomy and Physiology.*
- ***Elective Based Advanced Physiotherapeutics-II*** *This paper shall focus on planning implementation and management of conditions mentioned in the syllabus with emphasis on empirical clinical learning and decision making.*

COURSE OUTCOMES:

Musculoskeletal Sciences & Hand Conditions: Clinical Sciences II (MPT 8-401)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
401.1	*Be able to identify, discuss and analyse, the Hand dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis and co-relate the same with the provisional diagnosis, routine radiological and Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of hand physiotherapy.*	*PO 1, PO 2, PO 4*
401.2	*Be able to correlate neuromusculoskeletal system with clinical decision making*	*PO 1, PO 2, PO 9*
401.3	*Document patients with scale, out come measures and asses the progression*	*PO 1, PO 2, PO 3*
401.4	*Use Manual Therapy Technique/ approaches to treat patients with hand disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students.*	*PO 1, PO 2, PO 3, PO 5*
401.5	*Be able to correlate neuromusculoskeletal system with clinical sign and symptoms along with Medical and Surgical Management*	*PO 1, PO 2*

Musculoskeletal Sciences & Hand Conditions: Physiotherapeutics II (MPT 8-402)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
402.1	*Be able to identify, discuss and correlate provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of hand physiotherapy.*	*PO 1, PO 2, PO 3*
402.2	*Be able to correlate neuromusculoskeletal system with clinical decision making*	*PO 1, PO 2*
402.3	*Document patients with scale, out come measures and asses the progression*	*PO 2, PO 3*
402.4	*Use Manual Therapy Technique/ approaches to treat patients with hand disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students*	*PO 1, PO 2, PO 3, PO 5*

Musculoskeletal Sciences & Hand Conditions: Recent Advances II (MPT 8-403)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
403.1	*Be able to, discuss &analyse, the Musculo skeletal dysfunction in terms of updated recent developments in Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the Recent Trends in provisional diagnosis, routine radiological & Electro-physiological investigations with appropriate functional diagnosis and clinical reasoning based on evidence-based practice in the field of hand physiotherapy.*	*PO 1, PO 2, PO 9*
403.2	*Be able to correlate neuromusculoskeletal system with Updated methods of clinical decision making*	*PO 1, PO 2, PO 9*
403.3	*Document patients with current version of scale, out come measures and asses the progression*	*PO 1, PO 2, PO 3*
403.4	*Use of Recent and Updated Manual Therapy Technique/ approaches to treat patients with musculoskeletal disorders in different age groups and be able to transfer skill and knowledge for training undergraduate students.*	*PO 1, PO 2, PO 3, PO 5*

Musculoskeletal Sciences & Hand Conditions: Advanced Physiotherapeutics II (MPT 8-404)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
404.1	*assess, diagnose and manage musculoskeletal dysfunction for common musculoskeletal hand conditions*	*PO 2*
404.2	*document case histories in the prescribed format*	*PO 3*
404.3	*critically analyze different treatment and assessment procedures based on strong rationale and evidence for delivery of best patient care*	*PO 2, PO 3*
404.4	*discuss the recent management approaches for different musculoskeletal conditions and deliberate on best practice model for patient centered care*	*PO 1, PO 2, PO 7, PO 9*

Dissertation (MPT -405)

CO No.	***At the end of the course, the learner should be able to:***	***Mapped Programme Outcomes***
405.1	*Critically appraise the scientific literature and formulate a research question*	*PO 4, PO 9*
405.2	*Search the relevant database and develop a rationale for research*	*PO 4, PO 9*
405.3	*Effectively document and disseminate research findings*	*PO 3, PO 4, PO 9*
405.4	*Facilitate collaborative relationships with other healthcare professionals*	*PO 6*
405.5	*Use ICT for research*	*PO 4*
405.6	*Develop innovative ways to promote evidence based clinical practice*	*PO 4, PO 6*

COURSE CONTENTS:
HAND CONDITIONS – PART A

1. **Anatomy & Biomechanics**
   Embryology of hand, Wrist joint , Carpometacarpal joint, Metacarpo - Phalengeal Joint, Inter phalengeal joint
   Surface Anatomy
   a. Flexor Retinaculum and recurrent branches of median nerve.
   b. Motor functions of median, ulnar and radial nerve.
   c. Pulse points

   Muscles
   a. Dorsal interossei, Palmar Interossei, Adductor Pollicis, Thenar Muscles, Hypothenar Muscles, Lumbricals,

   Soft tissue
   a. Carpal Tunnel & Structures, Palmar Aponeurosis, Palmaris Brevis, Anatomical Snuff Box
   b. Extensor Hoods, Tunnels and Synovial Sheath of flexor and extensor tendons

   Lymphatic system.
   Common vascular and lymphatic disorders of upper limb

   Biomechanics & Kinesiology
   a) Biomechanics and Pathomechanics of hand
   b) Functions of hand
   c) Mode of Prehension
   d) Percussion contact gestures
   e) Positions of functions and of immobilization
   f) Motor & sensory testing and function of the upper limb
   g) Prehensile ability of hand

2. **EXAMINATION**

- Anatomy & biomechanics of hand and wrist., Assessment and evaluation of Hand & Wrist, Elbow, Shoulder, Brachial plexus, Cervical spine, Nerves, Architecture of hand, Assessment of strength, power, endurance, specific scales and outcome measures of pain, movement, ROM, flexibility, joint pliability, joint mobility (articular & Osteo), skin.

3] HAND TRAUMA

- Debridement, Contaminated wounds I and II, Amputation, Arthrodesis in trauma, Joint transfer, Mutilated hand, crushed hand, Pediatric mutilated hand, Nail bed, Fingertip
- Skin Grafts, Cross and reverse cross finger flaps
- Local regional flaps of the hand, Emergency free flaps
- Dorsal hand reconstruction, Soft tissue coverage-traumatized limb
- Thumb replant/immediate pollicization/immediate transfer
- Chemical, radiation, frostbite injuries
- Electrical burns, Injection injuries, Farm injuries, Microvascular techniques
- Recent advances in the management of replantation.

4] TENDONS

- Applied anatomy, physiology and biomechanics of tendons
- Scientific basis of flexor rehabilitation, Technical aspects of flexor repair
- History of flexor tendon repair
- Postoperative management flexor tendon injuries
- Extensor tendon injuries: Extensor tendon repair I and II: bracing/splinting/therapy
- Extrinsic, intrinsic tightness, quadregia, and lumbrical plus

5] BONE

- Anatomy/physiology of bone healing & cartilage, Kienbock/Preisers, Scapular & clavicular fractures
- Shoulder and Humerus (extrarticular) fractures, Elbow fractures, Forearm (Extrarticular) fractures, Distal radius fractures
- Distal radius malunion, Distal ulna fracture & dislocations DRUJ
- Scaphoid fractures, Scaphoid nonunions / malunions, Carpal dislocation. / fractures (not scaphoid), CMC, MCPJ dislocation without fractures
- Metacarpal and P1 fractures, P2 fractures PIP fractures -dislocations
- P3 fractures & dislocations and bony mallet
- Phalangeal/metacarpal malunions, Carpal instability
- Principles and advantages of External Fixation in hand & wrist fractures.

6] ARTHROPLASTY

- Principles and physiotherapy management with recent advances for Shoulder, Elbow, Wrist

7] ARTHROSCOPY

- Rehabilitation of Shoulder, Elbow, Wrist with advancements.

8] MISCELLANEOUS

- History of hand surgery, Tourniquet, Transplantation of the hand, Elbow pathology (not neuropathy),Shoulder pathology/treatment, Trigger digits, Compartment syndromes, Vascular disorders, Sports injuries

HAND CONDITIONS – PART B.

1] TUMORS:

- Benign & Malignant soft tissue tumors, Benign bone tumors, Malignant and metastasis, Radiology of bone tumors, Skin cancer, Melanoma in the hand, Ganglion cysts

2] INFECTIONS:

- Common infections (excluding tenosynovitis): Atypical hand infections: Tenosynovitis

3] DUPUYTREN'S:

- Anatomy and pathobiology & Treatment

4] NERVE COMPRESSIONS:

- Compressive neuropathies, Neuro microanatomy, physiology Nerve blood flow, Sense and sensibility; Nerve grafting in acute/chronic injury; Vascularized nerve grafts, Carpal tunnel, Carpal tunnel: open vs. closed, Median compression outside the carpal tunnel, Radial compressive neuropathy, Ulnar compressive neuropathy, Decision making in nerve compression, History of nerve compression

5] NERVE PALSIES

- Ulnar nerve palsy, Radial nerve palsy, Median nerve palsy, Brachial plexus, Obstetrical palsy, Tendon transfers in tetraplegia, Tendon transfers in plexus, Combined nerve palsy, Cerebral palsy/stroke

6] NERVE:

- Nonsurgical neuropathies, Dystrophy/chronic regional pain, Painful neuromas/neurolysis, Pain Management

7] CONGENITAL:

- Overview, Genesis,
- Examination of the congenital hand, Congenital radiology, Transverse absence/symbrachydactyly/phocomelia, Radial club hand, Radial deficiencies, Camptodactyly, clinodactyly, Kirner's, delta phalanx, Syndactyly and Thumb clasped and windblown hand,
- Polydactyly, Macrodactyly, constriction band syndrome, Synostosis and brachydactyly

8] ARTHRITIS

- Medical treatment, Non R A arthridites
- Osteoarthritis wrist, including arthrodesis and arthroplasties
- Osteoarthritis digits (not CMC)
- RA general principles, Swan neck/boutonierre, CMC except arthroplasty
- CMC Jt. Arthroplasty

9] HAND THERAPY:

- Hand Therapy, Massage for hand, Prosthetics & Orthotics of upper limb, principles of tendon splinting.
- Clinical decision-making skill in assessment and management of Hand conditions in details
- Recent advances and evidence-based practice in Hand Rehabilitation
- Disability evaluation

REFERENCE BOOKS

1. Clinical Mechanics of hand (2nd edn); Paul Brand & Anne Hollister [Mobsy publications]
2. Hand rehabilitation: A practical guide (2nd edn); Gaylord L.Clark [Churchill Livingston]
3. Clinical pathways in therapeutic intervention upper extremities; David C.Saidoff & Andrew L.McDonough [Mobsy publications]
4. The Hand; Fundamental of therapy (2nd edn); Judith Boscheinen Morrin & Victoria Davey [Butter worth Heinemann]
5. Examination of hand & wrist; Tubiana [Mobsy publications]
6. Fundamentals of hand rehabilitation; Salter [Mobsy publications]
7. Concepts of hand rehabilitation [Mobsy publications]
8. Rehabilitation of Hand; J.M. Hunter [C.V.Mobsy]
9. Hand splinting: Principles of designer fabrication Judith L.Wilton; W.B.Saunders
10. Structural and dynamic bases of surgery; Zancolli; J.B.Lippincott
11. Rehabilitation of Hand; Wynn Parry [Butter worth Heinemann]
12. Hand Rehabilitation: A Quick Reference Guide and Review Nancy Falkenstein (Author), Susan Weiss- Lessard [Mobsy publications]

13. *Hand Secrets by Peter Jebson [Mobsy publications]*
14. *Hand and Upper Extremity Rehabilitation: A Practical Guide by Susan L. Burke [Mobsy publications]*
15. *Physical Agent Modalities: Theory and Application for the Occupational Therapist by Alfred Bracciano [Mobsy publications]*
16. *Splinting the Hand and Upper Extremity: Principles and Process by MaryLynn A Jacobs [Mobsy publications]*
17. *Hand and Upper Extremity Splinting: Principles and Methods by Elaine Ewing Fess [Mobsy publications]*
18. *Hunter, Mackin and Callahan's Rehabilitation of the Hand and Upper Extremity (2 Volume Set) by Evelyn J. Mackin [Mobsy publications]*
19. Hand rehabilitation – Christine - Churchill Livingstone, London 1995.

JOURNALS

1. Journal of hand therapy.
2. Journal of hand surgery**.**
3. Journal of bone & joint surgery.
4. Achieves of physical medicine & rehabilitation**.**
5. Occupational therapy & rehabilitation.
6. American journal of hand surgery

REFERENCE BOOKS - GENERAL

1. Wall P.D. and Melzack 8 (eds) Textbook of pain 2nd edn Churchill Livingstone 1989.
2. Knight, K. L. Cryotherapy: Theory, thechique and Physiology, Chattanooga, 1985.
3. Melzack R. and Wall., P.D. The Challenge of Pain, 2nd edn. Penguin 1988.
4. Michlovitz S.L. Thermal Agents in Rehabilitation , Davis 1988.
5. Currier, D.P. Elements of Research in Physical Therapy, 3rd edn, Williams and Wilkins, 1990.
6. Hicks, C. M. Practical Research Methods for Physiotherapists, Churchill, Livingstone, 1988.
7. Lister, M. J. Writing manuscripts in a scientific journal. Physiotherapy Practice 5:147-155. 1989.
8. Polgar, S. and Thomas, S.A. Introduction to research in the Health Science. Churchill, Livingstone, 1988.
9. Shilling, L.M. Twenty tips for conquering writing anxiety. Physical Therapy 65:1113-1115.
10. Simmonds, D. and Brogg. G. Charts and Graphs. Guidelines for visual Presentation of Statistical Data in the Life Sciences MTP Press 1980.
11. Currier, D. P. Elements of Research in Physical Therapy 3rd edn. Williams and Wilkins 1990.
12. Sproull, N.I. Handbook of Research Methods, scarecrow Press, 1988.
13. Research for physiotherapists – Hicks C. Churchill Livingstone, London, 1988.
14. Introduction to Research in Health Science – Polgar S. Churchill Livingstone, London, 1988.
15. Elements of Research in physical Therapy- Currier D. P. Williams & Wilkins, Baltimore, 1990, Ed. 3.
16. Hand book of Research Method – Sproull, Scarecrow Press, 1998.
17. Physical Therapy Research – Domholdt, W.B. Saunders, Philadelphia, 1993.
18. Public power & Administration – Wilenski, Hale & lremonger, 1986.
19. Physical Therapy Administration & Management- Hickik Robert J.
20. Management Principles for physiotherapists – Nosse Lorry J.
21. Physical rehabilitation: assessment and treatment- O Sullivan, F.A. Davis, Philadelphia 1994.
22. Yoga Therapy- Kuvalayananda Swami and Vinekar, popular prakashan, Bombay, 1992.
23. Gait analysis – Perry J. Black Thorofare, New Jersy, 1992.

SCHEME OF EXAMINATION FOR MPT IV SEMESTER

Evaluation Pattern					
MPT 8- 401		*Musculoskeletal Sciences & Hand Conditions: Clinical Sciences II*			
MPT 8- 402		*Musculoskeletal Sciences & Hand Conditions: Physiotherapeutics II*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
20	*80*	*100*	--	--	--

Evaluation Pattern					
MPT 8- 403		*Musculoskeletal Sciences & Hand Conditions: Recent Advances II*			
Written		***Total***	***Practical***		***Total***
IA	*Final exam*		*IA*	*Final exam*	
10	*40*	*50*	--	--	--

Preliminary Examination / University (Final) Examination
Written Examination *(For 80 Marks Part A & Part B, for 40 Marks only Part A)*

Part A	*Q.1 LAQ (1 X 15 Marks)*	*= 15 Marks*
	Q.2 SAQ (any 1 out of 2 X 10 Marks)	*= 10 Marks*
	Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks	*= 15 Marks*
Part B	*Q.1 LAQ (1 X 15 Marks)*	*= 15 Marks*
	Q.2 SAQ (any 1 out of 2 X 10 Marks)	*= 10 Marks*
	Q.3 Short Notes (Any 3 out of 4) 3 X 5 Marks	*= 15 Marks*

Evaluation Pattern					
Course code : MPT 8- 404			*Musculoskeletal Sciences & Hand Conditions: Advanced Physiotherapeutics-II*		
Written		***Total***	***Practical***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
--	--	--	*20*	*80*	*100*

IA= 20 Marks shall include completion of the logbook/ work diary with graded responsibility, continuous appraisals, attendance % and internal exam Marks simplified for 20 Marks at the end of every semester.

Preliminary Examination / University (Final) Examination
- ***Practical Examination (80 Marks)***

Semester – IV
Practical
- *Clinical case (1) elective Long Case – 60 Marks*
- *Clinical case (2) elective Short Case – 20 Marks*

Dissertation at the IV semester:
- *Internal evaluation as per the process & execution: 50 Marks*
- *Dissertation evaluation & Presentation: 50 Marks (external)*

Evaluation Pattern					
Course code : MPT 8 - 405			*Dissertation*		
Written		***Total***	***Dissertation Presentation/ Viva***		***Total***
IA	***Final exam***		***IA***	***Final exam***	
	--	--	*50*	*50*	*100*