

**Dr. D. Y. PATIL VIDYAPEETH**  
**FACULTY OF ALLIED MEDICAL SCIENCES**

**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.

**GOALS OF THE COURSE:**

1. To prepare a postgraduate student towards professional autonomy, promote community health through his/her professional practice by referral as well as first contact mode using evidence based practices.
2. To impart research basis to validate techniques during professional practice towards quality care of health care delivery.
3. To develop appropriate professional relationships in multi-disciplinary set up to provide total care of the name.
4. To update the students with recent advances in the professional practice and provide them opportunities to think, reason and practice towards excellent patients care.
5. To achieve skills in patients handling and professional teaching to other subordinates partly.
6. Inculcate the various skills in patient care handling including communication skills, confidence, clinical reasoning, counseling and research. .
7. Inculcate the quality of patient care handling with ethical values following the bioethical principles, and able to provide rational justification for ethical decisions
8. To train the graduates to execute professional practice through professional ethical code.

**NOMENCLATURE**

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

| <b>Sr. No.</b> | <b>Course</b>                                   |
|----------------|---|
| A              | MPT: Orthopedics                                |
| B              | MPT: Neurosciences                              |
| C              | MPT: Cardio – Respiratory Sciences              |
| D              | MPT: General & Community Based Rehabilitation   |
| E              | MPT: Paediatrics                                |
| F              | MPT: Musculoskeletal Sciences & Sports          |
| G              | MPT: Musculoskeletal Sciences & Manual Therapy  |
| H              | 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 August to December and Even Semesters shall be from January to May.

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

## FIRST YEAR MPT – SEMESTER 1

| Sub. Code | Subject   | Teaching Learning Hrs |            |            |            | Credits  |          |          |           |
|-----------|---|-----------------------|------------|------------|------------|----------|----------|----------|-----------|
|           |   | Theory                | Pract      | Clinic     | Total      | Theory   | Pract    | Clinic   | Total     |
| MPT 101   | Physiotherapy Practice and Education Technology | 32                    | 64         |            | 96         | 2        | 2        |          | 4         |
| MPT 102   | Research Methodology and Biostatistics          | 48                    | 0          |            | 48         | 3        | 0        |          | 3         |
| MPT 103   | Advanced Electro Therapy & Electro Diagnosis    | 48                    | 96         |            | 144        | 3        | 3        |          | 6         |
| MPT 104   | Physiotherapeutics-I                            |                       |            | 192        | 192        |          |          | 4        | 4         |
|           | <b>Total</b>                                    | <b>128</b>            | <b>160</b> | <b>192</b> | <b>480</b> | <b>8</b> | <b>5</b> | <b>4</b> | <b>17</b> |
|           | Research Dissertation                           |                       |            | 192        | 192        | 12       |          | 4        | 4         |
|           | <b>Grand total</b>                              |                       |            |            | <b>672</b> |          |          |          | 21        |

## FIRST YEAR MPT – SEMESTER II

| Sub. Code | Subject   | Teaching Learning Hrs |            |            |            | Credits   |          |          |           |
|-----------|---|-----------------------|------------|------------|------------|-----------|----------|----------|-----------|
|           |   | Theory                | Pract      | Clinic     | Total      | Theory    | Pract    | Clinic   | Total     |
| MPT 201   | Advanced Functional Diagnosis & Manipulative skills | 48                    | 96         |            | 144        | 3         | 3        |          | 6         |
| MPT 202   | Applied Biomechanics & Kinesiology                  | 64                    |            |            | 64         | 4         |          |          | 4         |
| MPT 203   | Exercise Physiology , Health & Fitness              | 64                    | 64         |            | 128        | 4         | 2        |          | 6         |
| MPT 204   | Physiotherapeutics-II                               |                       |            | 192        | 192        |           |          | 4        | 4         |
|           | <b>Total</b>  | <b>176</b>            | <b>160</b> | <b>192</b> | <b>528</b> | <b>11</b> | <b>5</b> | <b>4</b> | <b>20</b> |
|           | <b>Research Dissertation</b>                        |                       |            | 144        | 144        | 9         |          | 3        | 3         |
|           | <b>Total hours</b>                                  |                       |            |            | <b>672</b> |           |          |          | 23        |

## SECOND YEAR – SEMESTER – III

| Sub. Code | Subject                                  | Teaching Learning Hrs |            |            |            | Credits   |          |          |           |
|-----------|--|-----------------------|------------|------------|------------|-----------|----------|----------|-----------|
|           |  | Theory                | Pract      | Clinic     | Total      | Theory    | Pract    | Clinic   | Total     |
| MPT 301   | Elective based Clinical Sciences-I       | 64                    | 64         |            | 128        | 4         | 2        |          | 6         |
| MPT 302   | Elective based Physiotherapeutics – I    | 80                    | 64         |            | 144        | 5         | 2        |          | 7         |
| MPT 303   | Elective based Recent advances -I        | 32                    | 32         |            | 64         | 2         | 1        |          | 3         |
| MPT -304  | Advanced Physiotherapeutics (Elective)-I |                       |            | 192        | 192        |           |          | 4        | 4         |
|           | <b>Total</b>                             | <b>176</b>            | <b>160</b> | <b>192</b> | <b>528</b> | <b>11</b> | <b>5</b> | <b>4</b> | <b>20</b> |
|           | <b>Research Dissertation</b>             |                       |            | 144        | 144        |           |          | 3        | 3         |
|           | <b>Total Hours</b>                       |                       |            |            | <b>672</b> |           |          |          | 23        |

**Note:** - In all the subjects of the I & II semester, the course curriculum of bioethics, has been segregated as per the applicability in the following subjects

## SECOND YEAR – SEMESTER – IV

| Sub. Code       | Subject                                     | Teaching Learning Hrs |            |            |            | Credits                                      |          |          |           |
|-----------------|---|-----------------------|------------|------------|------------|--|----------|----------|-----------|
|                 |   | Theory                | Pract      | Clinic     | Total      | Theory                                       | Pract    | Clinic   | Total     |
| MPT 401         | Elective based Clinical Sciences-II         | 64                    | 96         |            | 160        | 4  | 3        |          | 7         |
| MPT 402         | Elective based Physiotherapeutics – II      | 64                    | 96         |            | 160        | 4  | 3        |          | 7         |
| MPT 403         | Elective based Recent advances – II         | 32                    | 32         |            | 64         | 2  | 1        |          | 3         |
| MPT 404         | Advanced Physiotherapeutics (Elective)-II   |                       |            | 240        | 240        |  |          | 5        | 5         |
|                 | <b>Total</b>                                | <b>160</b>            | <b>224</b> | <b>240</b> | <b>624</b> | <b>10</b>                                    | <b>7</b> | <b>5</b> | <b>22</b> |
| MPT - 405       | Research Dissertation- Sem IV               |                       |            | 48         | 48         |  |          | 1        | 1         |
|                 | <b>Total Hours</b>                          |                       |            |            | <b>672</b> |  |          |          | 23        |
| <b>MPT- 405</b> | <b>Research Dissertation- Semester I-IV</b> |                       |            |            | <b>528</b> | <b>11 (included in the semester credits)</b> |          |          |           |

## 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 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                | : | Minimum 3  |
| c) Clinical presentation   | : | Minimum 10 |

- |  |   |   |
|--|---|---|
| d) Special clinics   | : | Minimum 5                                 |
| e) Inter department meetings                               | : | Minimum 2                                 |
| f) Community work, camps/field visits                      | : | Minimum 1                                 |
| g) Special Clinical rounds                                 | : | Minimum 50                                |
| h) Dissertation work                                       | : | Minimum 140                               |
| i) Participation in conferences/<br>Presentation of papers | : | Minimum 2 in two years                    |
| j) Teaching Activities – UG Teaching                       | : | Minimum 10 in two years                   |
| k) Learning Activities                                     | : | Self Learning, Use of computers & library |
| l) Participation in departmental activities:               |   |   |
| m) 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 (Academic) 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 Masters Degree can be considered. This clause is subject to review by the academic year 2016-2017.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 6 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 6 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 & continuous appraisals separately, to be eligible for appearing the University examinations.**
  - Marks obtained in internal examination in first & second year will be simplified for 25 & 25 respectively for a total of 50 as internal marks. In case of marks simplified are in decimals, will be rounded to the nearest round figure, (e.g.) 42.01 to 42.49 will be considered to the round sum as 42 & 42.50 to 42.99 will be considered to the round sum as 43.

### I SEMESTER

| Sub. Code | Subject   | Theory    |            |            | Practical |           |            |
|-----------|---|-----------|------------|------------|-----------|-----------|------------|
|           |   | Int       | Ext        | Tot        | Int       | Ext       | Tot        |
| MPT101    | Physiotherapy Practice and Education Technology | 10        | 40         | 50         |           |           |            |
| MPT102    | Research Methodology and Biostatistics          | 10        | 40         | 50         |           |           |            |
| MPT103    | Advanced Electro Therapy & Electro-Diagnosis    | 20        | 80         | 100        |           |           |            |
| MPT 104   | Physiotherapeutics -I                           |           |            |            | 20        | 80        | 100        |
|           | <b>Total</b>                                    | <b>40</b> | <b>160</b> | <b>200</b> | <b>20</b> | <b>80</b> | <b>100</b> |

### II SEMESTER

| Sub. Code | Subject   | Theory    |            |            | Practical |           |            |
|-----------|---|-----------|------------|------------|-----------|-----------|------------|
|           |   | Int       | Ext        | Tot        | Int       | Ext       | Tot        |
| MPT 201   | Advanced Functional Diagnosis & Manipulative skills | 20        | 80         | 100        |           |           |            |
| MPT 202   | Applied Biomechanics & Kinesiology                  | 20        | 80         | 100        |           |           |            |
| MPT 203   | Exercise Physiology , Health & Fitness              | 20        | 80         | 100        |           |           |            |
| MPT 204   | Physiotherapeutics -II                              |           |            |            | 20        | 80        | 100        |
|           | <b>Total</b>  | <b>60</b> | <b>240</b> | <b>300</b> | <b>20</b> | <b>80</b> | <b>100</b> |

### III SEMESTER

| Sub. Code | Subject                                      | Theory    |            |            | Practical |           |            |
|-----------|--|-----------|------------|------------|-----------|-----------|------------|
|           |  | Int       | Ext        | Tot        | Int       | Ext       | Tot        |
| MPT - 301 | Elective based Clinical Sciences-I           | 20        | 80         | 100        |           |           |            |
| MPT - 302 | Elective based<br>Physiotherapeutics - I     | 20        | 80         | 100        |           |           |            |
| MPT - 303 | Elective based Recent advances - I           | 20        | 80         | 100        |           |           |            |
| MPT - 304 | Advanced Physiotherapeutics<br>(Elective –I) |           |            |            | 20        | 80        | 100        |
|           | <b>Total</b>                                 | <b>60</b> | <b>240</b> | <b>300</b> | <b>20</b> | <b>80</b> | <b>100</b> |

### IV SEMESTER

| Sub. Code | Subject                                       | Theory    |            |            | Practical |            |            |
|-----------|---|-----------|------------|------------|-----------|------------|------------|
|           |   | Int       | Ext        | Tot        | Int       | Ext        | Tot        |
| MPT - 401 | Elective based<br>Clinical Sciences-II        | 20        | 80         | 100        |           |            |            |
| MPT - 402 | Elective based<br>Physiotherapeutics - II     | 20        | 80         | 100        |           |            |            |
| MPT - 403 | Elective based<br>Recent Advances - II        | 20        | 80         | 100        |           |            |            |
| MPT - 404 | Advanced Physiotherapeutics<br>(Elective –II) |           |            |            | 20        | 80         | 100        |
| MPT - 405 | Research Dissertation                         |           |            |            | <b>50</b> | <b>50</b>  | <b>100</b> |
|           | <b>Total</b>                                  | <b>60</b> | <b>240</b> | <b>300</b> | <b>70</b> | <b>130</b> | <b>200</b> |

**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** :- Essay 1 X 15marks = 15 marks



Short Answers (Any three out of four) 3 X 5 marks =15 marks

Short Notes (Any five out of six) 5 X 2 marks = 10 marks

**Part B** : - Essay 1 X 15marks = 15 marks

Short Answers (Any three out of four) 3 X 5 marks =15 marks

Short Notes (Any five out of six) 5 X 2 marks = 10 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 (external)

### **ELIGIBILITY CRITERIA FOR APPEARING IN THE UNIVERSITY EXAMINATION**

A candidate shall be permitted for appearing the university examination only if he/she fulfills 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 supervised clinical training 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 throughout 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 University).

### **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 mentioned 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)  | 9            | 81 and above |
| A+(Excellent)    | 8            | 71-80        |
| A(Very Good)     | 7            | 66-70        |
| B+(Good)         | 6.5          | 61-65        |
| B(Above Average) | 6            | 56-60        |
| C+(Average)      | 5.5          | 51-55        |
| C(Pass)          | 5            | 50           |
| 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

$$\text{SGPA (Si)} = \frac{\sum(C_i \times G_i)}{\sum C_i}$$

where  $C_i$  is the number of credits of the  $i$ th course and  $G_i$  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.

$$\text{CGPA} = \frac{\sum(C_i \times S_i)}{\sum C_i}$$

Where  $S_i$  is the SGPA of the  $i$ th semester and  $C_i$  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

| Course   | Credit | Grade letter | Grade point | Credit Point (Credit x Grade) |
|----------|--------|--------------|-------------|-------------------------------|
| Course 1 | 3      | A            | 8           | 3x8=24                        |
| Course 2 | 4      | B+           | 7           | 4x7=28                        |
| Course 3 | 3      | B            | 6           | 3x6=18                        |
| Course 4 | 3      | O            | 10          | 3x10=30                       |
| Course 5 | 3      | C            | 5           | 3x5=15                        |
| Course 6 | 4      | B            | 6           | 4x6=24                        |
|          | 20     |              |             | 139                           |

Thus,  $\text{SGPA} = 139/20 = 6.95$

### Illustration for CGPA

| Semester 1 | Semester 2 | Semester 3 | Semester 4 |
|------------|------------|------------|------------|
| Credit:20  | Credit:22  | Credit:25  | Credit:26  |
| SGPA:6.9   | SGPA:7.8   | SGPA:5.6   | SGPA:6.0   |

$$\text{Thus, CGPA} = \frac{20 \times 6.9 + 22 \times 7.8 + 25 \times 5.6 + 26 \times 6.0}{93} = 605.6/93 = 6.51$$

93

### 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 5.0 at the end of the programme, 10.1.4 He/She should have completed the internship with project work.
- ❖ 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 $\geq$ 7.5 |
| First class  | : | CGPA $\geq$ 6.0 |
| Second Class | : | CGPA $\geq$ 5.0 |

### ATTENDANCE % AND INTERNAL MARKS

The attendance % of the candidate will be converted to marks and will be included in the concerned semester SCT/SPT internal marks.

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

## SEMESTER – I

| Course Code  | Course Title                                    | Hours |     |                                  |     |
|--------------|---|-------|-----|----------------------------------|-----|
|              |   | Th.   | Pr  | Clinic<br>(Physiotherapeutics-I) | Tot |
| MPT 101      | Physiotherapy Practice and Education Technology | 32    | 64  |                                  | 96  |
| MPT 102      | Research Methodology and Biostatistics          | 48    | 0   |                                  | 48  |
| MPT 103      | Advanced Electro Therapy & Electro-Diagnosis    | 48    | 96  |                                  | 144 |
| MPT-104      | Physiotherapeutics-I                            |       |     | 192                              | 192 |
| <b>Total</b> |   | 128   | 160 | 192                              | 480 |

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      | (Physiotherapeutics-I)     |            |
|   |                  |     |        |    |     |         |    |     | IA                 | Final exam | Final exam | IA        | Final exam | Final exam | IA                         | Final exam |
| 32  | 64               | 96  | 2      | 4  | 6   | 2       | 2  | 4   | 10                 | 40         | 50         | --        | --         | --         | --                         | --         |
| LEARNING OBJECTIVES:  |                  |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| Physiotherapy Practice  |                  |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| <ul style="list-style-type: none"> <li>❖ Ethical codes, of Physio Therapy practice as well as moral and legal aspects</li> <li>❖ Constitutions and Function of the Indian Association of Physiotherapy</li> <li>❖ Be able to impart the knowledge with the undergraduate students</li> <li>❖ Acquire the brief knowledge of role of W.H.O. and W.C.P.T.</li> <li>❖ Acquire the managerial &amp; management skills in planning, implementation, &amp; administration in clinical practice (service / self-employment) &amp; academic activities including the skill of Documentation &amp; use of information technology in professional practice</li> </ul> |                  |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| Education Technology  |                  |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| <ul style="list-style-type: none"> <li>❖ Describe the development of Education and Aims from early civilization to modern times.</li> <li>❖ Compare and contrast the beliefs of traditional and modern philosophies of education.</li> <li>❖ Define the major educational theories and illustrate their application in curriculum development.</li> <li>❖ Describe the history of education in India giving the current issues and trends.</li> <li>❖ Describe and explain the concepts and principles of curriculum development, instruction, learning and evaluation.</li> <li>❖ Locate the use of library and other resources in planning.</li> </ul>    |                  |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| Course Content  |                  |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| Topic Serial No.  | Title of content |     |        |    |     |         |    |     |                    |            |            |           |            |            | Hours of teaching/learning |            |
|   |                  |     |        |    |     |         |    |     |                    |            |            |           |            |            | Theory                     | Practical  |

| <b>PHYSIOTHERAPY PRACTICE</b> |  |   |    |
|-------------------------------|--|---|----|
| 1                             | Concept of morality, Ethics & Legality, confidentiality and responsibility.  | 1 | 4  |
| 2                             | <b>Introduction to ethics &amp; bioethics ( 2hrs)</b> <ul style="list-style-type: none"> <li>• Meaning, nature of ethics, ethical statements</li> <li>• Meaning of bioethics</li> <li>• Health &amp; disease as values and facts</li> <li>• Principles of bioethics</li> </ul> Medical ethics- goals, committees,  | 2 | -- |
| 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 – c\Consumer protection act.   | 2 | 4  |
| 4                             | <b>Human dignity and human rights (2hrs)</b> <ul style="list-style-type: none"> <li>• Human dignity as an intrinsic value</li> <li>• Respect , care and Equality in dignity of all human beings</li> <li>• human dignity in different cultural and moral traditions</li> </ul> Ethical aspects of physiotherapists in patients relation in regard to human dignity in handling children, women, elderly ,mental & Physically challenged. | 2 |    |
| 5                             | <b>Benefit and harm of patient’s right &amp; dignity in Health care settings by physiotherapy (2hrs)</b> <ul style="list-style-type: none"> <li>• The WHO definition of health as a possible solution of health problems</li> <li>• What is the health benefit by physiotherapy</li> <li>• Possible harm for a patient during physiotherapy</li> <li>• Dimensions of comparing harms and benefits in individual patients</li> </ul>      | 2 |    |
| 6                             | Role of the Professional in Socio – economical context. Constitution & Functions of I.A.P. Role of W.C.P.T. and W.H.O.   | 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. <ul style="list-style-type: none"> <li>• Methods of maintaining records – Budget planning</li> <li>• Leadership and Teamwork.</li> </ul>   | 2 | 4  |
| 9                             | Quality control related to treatment procedure, audit and Programme evaluation   | 2 | 8  |
| <b>EDUCATION TECHNOLOGY</b>   |  |   |    |
| 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 and 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.  | 2 | 8 |

### TEXT BOOKS

| 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-secion-1., Ethics education program, Version 1.0 |

### REFERENCE BOOKS

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

### SCHEME OF EXAMINATION

| Evaluation Pattern |            |            |           |            |            |                        |            |
|--------------------|------------|------------|-----------|------------|------------|------------------------|------------|
| Written            |            | Total      | Practical |            | Total      | (Physiotherapeutics-I) |            |
| IA                 | Final exam | Final exam | IA        | Final exam | Final exam | IA                     | Final exam |
| 10                 | 40         | 50         | -         | -          | -          | --                     |            |

#### Preliminary Examination / University (Final) Examination

##### ❖ Written Examination ( 40 marks)

|   |   |          |
|---|---|----------|
| Essay 1 X 15marks                                 | = | 15 marks |
| Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
| Short Notes (Any five out of six) 5 X 2 marks     | = | 10 marks |



| <b>Course Title :- Research Methodology and Biostatistics</b>  |   |           |               |    |     |                |    |     |                           |            |            |           |            |            |                            |            |
|--|---|-----------|---------------|----|-----|----------------|----|-----|---------------------------|------------|------------|-----------|------------|------------|----------------------------|------------|
| <b>Course Code:- MPT 102</b>   |   |           |               |    |     |                |    |     |                           |            |            |           |            |            |                            |            |
| <b>Course Credit for Research Methodology and Biostatistics</b>  |   |           |               |    |     |                |    |     |                           |            |            |           |            |            |                            |            |
| <b>Hours</b>   |   |           | <b>Hrs/Wk</b> |    |     | <b>Credits</b> |    |     | <b>Evaluation Pattern</b> |            |            |           |            |            |                            |            |
| Th   | Pr  | Tot       | Lec           | Pr | Tot | Lec            | Pr | Tot | Written                   |            | Total      | Practical |            | Total      | (Physio-therapeutics-I)    |            |
|  |   |           |               |    |     |                |    |     | IA                        | Final exam | Final exam | IA        | Final exam | Final exam | IA                         | Final exam |
| 48   | -   | 48        | 3             | 0  | 3   | 3              | 0  | 3   | 10                        | 40         | 50         | --        | --         | --         | --                         | --         |
| <b>LEARNING OBJECTIVES:</b>  |   |           |               |    |     |                |    |     |                           |            |            |           |            |            |                            |            |
| <ul style="list-style-type: none"> <li>❖ Apply basic concepts of statistics &amp; principles of scientific enquiry in planning and evaluating the results.</li> <li>❖ Participate in or conduct descriptive, explorative, survey studies in PT practice.</li> <li>❖ Present data in appropriate methods</li> </ul> |   |           |               |    |     |                |    |     |                           |            |            |           |            |            |                            |            |
| <b>Course Content – (section A/B/C if applicable)</b>  |   |           |               |    |     |                |    |     |                           |            |            |           |            |            |                            |            |
| Topic Serial No.   | Title of content  |           |               |    |     |                |    |     |                           |            |            |           |            |            | Hours of teaching/learning |            |
|  | Theory  | Practical |               |    |     |                |    |     |                           |            |            |           |            |            |                            |            |
| <b>RESEARCH METHODOLOGY</b>  |   |           |               |    |     |                |    |     |                           |            |            |           |            |            |                            |            |
| 1  | <b>Introduction</b><br>Terminology in research, Ethical issues in research, Research process  |           |               |    |     |                |    |     |                           |            |            |           |            |            | 2                          |            |
| 2  | <b>Review of literature.</b><br>Importance, sources & steps in reviewing the literature.  |           |               |    |     |                |    |     |                           |            |            |           |            |            | 2                          |            |
| 3  | <b>Research design</b> <ul style="list-style-type: none"> <li>• Type of research – qualitative &amp; quantitative.</li> <li>• Experimental &amp; non experimental, survey – advantages &amp; disadvantages</li> </ul>                                     |           |               |    |     |                |    |     |                           |            |            |           |            |            | 3                          |            |
| 4  | <b>Research process</b> <ul style="list-style-type: none"> <li>• Research question, Aim &amp; objectives, Assumptions, Limitations &amp; Delimitations, Variables</li> <li>• Hypothesis – formation &amp; testing.</li> </ul>                             |           |               |    |     |                |    |     |                           |            |            |           |            |            | 3                          |            |
| 5  | <b>Sampling</b> <ul style="list-style-type: none"> <li>• Sampling technique</li> <li>• Population, sample,</li> <li>• Sample size &amp; determination</li> <li>• Sampling methods</li> <li>• Sampling error</li> </ul>                                    |           |               |    |     |                |    |     |                           |            |            |           |            |            | 2                          |            |
| 6  | <b>Data collection and analysis</b> <ul style="list-style-type: none"> <li>• Data sources, technique of data collection, tools</li> <li>• Reliability &amp; validity</li> <li>• Process of data collection</li> <li>• Pilot study-method, need</li> </ul> |           |               |    |     |                |    |     |                           |            |            |           |            |            | 2                          |            |
| 7  | <b>Interpretation &amp; presentation of data</b> <ul style="list-style-type: none"> <li>• Quantitative &amp; qualitative analysis</li> <li>• Graphical representation of data</li> <li>• Conclusion &amp; discussion</li> </ul>                           |           |               |    |     |                |    |     |                           |            |            |           |            |            | 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                   | <p><b>Autonomy and individual responsibility, Consent, ( 5hrs)</b></p> <ul style="list-style-type: none"> <li>• Autonomy and individual responsibility (2 hrs) <ul style="list-style-type: none"> <li>○ Different levels and notions of autonomy</li> <li>○ Responsibility: its different aspects and dual nature</li> <li>○ Autonomy and patient’s right to self-determination in treatment</li> <li>○ The patient’s right to refuse a health care provider’s recommendation</li> <li>○ Special measures for protecting the rights and interests of socially and mentally disabled patients</li> <li>○ patient responsibilities</li> </ul> </li> <li>• consent (2 hrs) <ul style="list-style-type: none"> <li>○ Purpose of the principle of consent <ul style="list-style-type: none"> <li>▪ Prior , free &amp; informed consent in patient treatment &amp; handling</li> </ul> </li> <li>○ What is express consent?</li> <li>○ Withdrawal of consent</li> <li>○ The patient’s right to refuse</li> <li>○ Consent of subjects of scientific research.</li> <li>○ Compare the provisions for consent in scientific research with those for medical interventions</li> <li>○ Consent by individual, group and community</li> <li>○ Exceptional circumstances for the application of the principle of consent</li> </ul> </li> <li>• Persons without the capacity to consent (1 hr) <ul style="list-style-type: none"> <li>○ Criteria for capacity to consent</li> <li>○ Categories of persons without the capacity to consent</li> </ul> </li> </ul> <p>How to obtain consent in health care practice for these special categories?</p> | 5 |  |
| <b>BIOSTATISTICS</b> |  |   |  |
| 1                    | <p><b>Introduction</b></p> <ul style="list-style-type: none"> <li>• Frequency distribution</li> <li>• Tabulation &amp; graphical presentation of data</li> </ul>   | 4 |  |
| 2                    | Measures of central tendency ( Mean, median, mode )  | 2 |  |
| 3                    | Measures of variability ( range, percentage, SD )  | 2 |  |
| 4                    | Sample distribution & error  | 2 |  |
| 5                    | <p><b>Correlation</b></p> <ul style="list-style-type: none"> <li>• Meaning</li> <li>• Rank order</li> <li>• Product Moment correlation (Pearson’s product moment, Spearman’s Regression analysis)</li> </ul>   | 2 |  |
| 6                    | <p><b>Statistical significance</b></p> <ul style="list-style-type: none"> <li>• Parametric tests-‘t’ tests, Tukeys following Oneway ANOVA</li> <li>• ANOVA (One way, two way – for parametric &amp; nonparametric ), ANCOVA, Multistage ANOVA</li> </ul>   | 4 |  |

|   |  |   |  |
|---|--|---|--|
|   | <ul style="list-style-type: none"> <li>• Nonparametric tests-Chi-square test, Mann Witney U test, 'Z' test</li> <li>• Wilcoxon's matched pairs test</li> </ul> |   |  |
| 7 | Vital health statistics  | 2 |  |
| 8 | Computer application for statistical analysis  | 2 |  |

### Text Books

| 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      | (Physiotherapeutics-I) |            |
| IA                 | Final exam | Final exam | IA        | Final exam | Final exam | IA                     | Final exam |
| 10                 | 40         | 50         | --        | --         | --         | --                     | --         |

### Preliminary Examination / University ( Final) Examination

#### ❖ Written Examination ( 40 marks)

|   |   |          |
|---|---|----------|
| Essay 1 X 15marks                                 | = | 15 marks |
| Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
| Short Notes (Any five out of six) 5 X 2 marks     | = | 10 marks |

| <b>Course Title :- Advanced electro Therapy &amp; electro diagnosis</b>  |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
|--|--|-----|---------------|----|-----|----------------|----|-----|---------------------------|------------|----------------------------|-----------|------------|------------|-------------------------|------------|
| <b>Course Code:- MPT 103</b>   |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
| <b>Course Credit for Advanced electro Therapy &amp; electro diagnosis</b>  |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
| <b>Hours</b>   |  |     | <b>Hrs/Wk</b> |    |     | <b>Credits</b> |    |     | <b>Evaluation Pattern</b> |            |                            |           |            |            |                         |            |
| Th   | Pr   | Tot | Lec           | Pr | Tot | Lec            | Pr | Tot | Written                   |            | Total                      | Practical |            | Total      | (Physio therapeutics-I) |            |
|  |  |     |               |    |     |                |    |     | IA                        | Final exam | Final exam                 | IA        | Final exam | Final exam | IA                      | Final exam |
| 48   | 96   | 144 | 3             | 6  | 9   | 3              | 3  | 6   | 20                        | 80         | 100                        | --        | --         | --         | --                      | --         |
| <b>LEARNING OBJECTIVES:</b>  |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
| <b>Advanced Electro Therapy</b>  |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
| <ul style="list-style-type: none"> <li>❖ Acquire the updated knowledge of production / biophysics as well as the Physiological / therapeutics effects (at the cellular levels) of various electrical currents, Thermal agents, ultra sound &amp; electro – magnetic forces &amp; potential risk factors on prolonged exposure.</li> <li>❖ Acquire the knowledge about various Pharmaco Therapeutic agents to be used in combination with various electro – therapeutic modes, with appropriate clinical decision &amp; reasoning in the management of pain / tissue healing / Wound care &amp; skin condition conditions.</li> </ul> |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
| <b>Electro Diagnosis:</b>  |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
| <b>LEARNING OBJECTIVES:</b>  |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
| At the end of the course the candidate will  |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
| <ul style="list-style-type: none"> <li>❖ Be able to interpret the E.M.G. and nerve conduction studies with appropriate clinical reasoning.</li> <li>❖ Acquire the sound Knowledge of E.M.G. machine for the simple electro diagnosis of motor unit and methodology of sensory and Motor conduction, Reflex study</li> <li>❖ Expertise in the skill of using various electrical currents for the purpose of Electro diagnosis able to interpret the same with appropriate clinical reasoning.</li> <li>❖ Be able to train the undergraduate students at Pre clinical and clinical level</li> </ul>                                    |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
| <b>Course Content</b>  |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
| Topic Serial No.   | Title of content   |     |               |    |     |                |    |     |                           |            | Hours of teaching/learning |           |            |            |                         |            |
|  |  |     |               |    |     |                |    |     |                           |            | Theory                     | Practical |            |            |                         |            |
| <b>ELECTROTHERAPY</b>  |  |     |               |    |     |                |    |     |                           |            |                            |           |            |            |                         |            |
| 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 & / 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 | <b>Respect for human vulnerability &amp; personal integrity (1 hr)</b> <ul style="list-style-type: none"> <li>• Different aspects of vulnerability - biological , social , cultural</li> <li>• Success and failures in physiotherapy treatments</li> <li>• Problems with the basic assumption that vulnerability should be eliminated</li> <li>• Care ethics- New approaches in bioethics, Solidarity, The duty to care</li> <li>• Relation between vulnerability and personal integrity</li> </ul> | 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  | Propagation of nerve impulses, 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) and abnormal. | 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 & compression syndromes.                                  | 2 | 4 |
| 15 | Evoked potentials SSEP  | 2 | 4 |

### Text Books

| 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 |            |            |           |            |            |                        |            |
|--------------------|------------|------------|-----------|------------|------------|------------------------|------------|
| Written            |            | Total      | Practical |            | Total      | (Physiotherapeutics-I) |            |
| IA                 | Final exam | Final exam | IA        | Final exam | Final exam | IA                     | Final exam |
| 20                 | 80         | 100        | --        | --         | --         | --                     | --         |

### Preliminary Examination / University (Final) Examination

#### ❖ Written Examination ( 40 marks)

|        |   |   |          |
|--------|---|---|----------|
| Part A | Essay 1 X 15marks                                 | = | 15 marks |
|        | Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
|        | Short Notes (Any five out of six) 5 X 2 marks     | = | 10 marks |
| Part B | Essay 1 X 15marks                                 | = | 15 marks |
|        | Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
|        | Short Notes (Any five out of six) 5 X 2 marks     | = | 10 marks |

| Course Title :- PHYSIOTHERAPEUTICS-I   |          |          |        |       |       |           |       |       |                        |       |       |
|--|----------|----------|--------|-------|-------|-----------|-------|-------|------------------------|-------|-------|
| Course Code:- MPT 104                  |          |          |        |       |       |           |       |       |                        |       |       |
| Course Credit for Physiotherapeutics-I |          |          |        |       |       |           |       |       |                        |       |       |
| Hours                                  | Hrs/Wk   | Credits  |        |       |       |           |       |       | Evaluation Pattern     |       |       |
| Clinical                               | Clinical | Clinical | Theory |       |       | Practical |       |       | (Physiotherapeutics-I) |       |       |
|  |          |          | IA     | Final | Total | IA        | Final | Total | IA                     | Final | Total |
| 192                                    | 12       | 4        | --     | --    | --    | --        | --    | --    | 20                     | 80    | 100   |

## 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 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 – I

##### Practical

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

## SEMESTER – II

| Course Code  | Course Title  | Hours |     |   |     |
|--------------|---|-------|-----|---|-----|
|              |   | Th    | Pr  | Clinic Hrs./<br>(Physiotherapeutics-II) | Tot |
| MPT 201      | Advanced Functional Diagnosis & Manipulative skills | 48    | 96  |   | 144 |
| MPT 202      | Applied Biomechanics & Kinesiology                  | 64    |     |   | 64  |
| MPT 203      | Exercise Physiology , Health & Fitness              | 64    | 64  |   | 128 |
| MPT 204      | Physiotherapeutics-II                               |       |     | 192                                     | 192 |
| <b>Total</b> |   | 176   | 160 | 192                                     | 528 |

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      | Physiotherapeutics-II      |            |
|  |   |     |        |    |     |         |    |     | IA                 | Final exam | Final exam | IA        | Final exam | Final exam | IA                         | Final exam |
| 48   | 96  | 144 | 3      | 6  | 9   | 3       | 3  | 6   | 20                 | 80         | 100        | -         | -          | -          | -                          | -          |
| LEARNING OBJECTIVES:   |   |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| <ul style="list-style-type: none"> <li>❖ Acquire the knowledge and skill of various approaches of Manual therapy for joints of the limbs/spine.</li> <li>❖ Be able to integrate the manual therapies to rehabilitate the Mechanical Neuro. Muscular problems.</li> <li>❖ Be able to impart knowledge and train the undergraduate in Manual therapy.</li> </ul> |   |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| Course Content   |   |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| Topic Serial No.   | Title of content  |     |        |    |     |         |    |     |                    |            |            |           |            |            | Hours of teaching/learning |            |
|  |   |     |        |    |     |         |    |     |                    |            |            |           |            |            | Theory                     | Practical  |
| 1  | Physiological movements   |     |        |    |     |         |    |     |                    |            |            |           |            |            | 2                          | 2          |
| 2  | Articular Neuro Physiology and principles of applications.  |     |        |    |     |         |    |     |                    |            |            |           |            |            | 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, Karltensborn, Cyriax, Mulligan Mackenzie, Butler's Neural Mobilisation, Shacklock neural tissue mobilization. |     |        |    |     |         |    |     |                    |            |            |           |            |            | 16                         | 48         |
| 5  | Terminology, Principles, indications, contraindications, assessment & methods of application of Soft tissue approaches  |     |        |    |     |         |    |     |                    |            |            |           |            |            | 16                         | 44         |





**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      | (Physiotherapeutics-II) |            |
| IA                 | Final exam | Final exam | IA        | Final exam | Final exam | IA                      | Final exam |
| 20                 | 80         | 100        | --        | --         | --         | --                      | --         |

**Preliminary Examination / University (Final) Examination****❖ Written Examination ( 40 marks)**

|        |   |   |          |
|--------|---|---|----------|
| Part A | Essay 1 X 15marks                                 | = | 15 marks |
|        | Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
|        | Short Notes (Any five out of six) 5 X 2 marks     | = | 10 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         | Physio<br>therapeutics-II     |               |
|   |  |     |        |    |     |         |    |     | IA                 | Final<br>exam | Final<br>exam | IA        | Final<br>exam | Final<br>exam | IA                            | Final<br>exam |
| 64  | --   | 64  | 4      | -- | 4   | 4       | -- | 4   | 20                 | 80            | 100           | --        | --            | --            | --                            | --            |
| LEARNING OBJECTIVES:  |  |     |        |    |     |         |    |     |                    |               |               |           |               |               |                               |               |
| <ul style="list-style-type: none"> <li>❖ Acquire the updated knowledge of the Patho-mechanics of the human movement.</li> <li>❖ Be able to apply the principles of Biomechanics in functional analysis of movement Ergonomic analysis / advice &amp; prostheses / Orthotics.</li> <li>❖ Be able to prescribe, check out &amp; train in the application of lower limb upper prostheses, Spinal / lower / upper extremity Orthoses used as mobility aids.</li> <li>❖ Be able to prescribe the Ergonomic alternations at the work place &amp; industry.</li> <li>❖ Be able to fabricate, temporary hand splints and functional splints for gait training.</li> <li>❖ Acquire a skill in disability evaluation &amp; will be able to CERTIFY the same</li> <li>❖ Be able to impart knowledge and train the students in this subject at the undergraduate level</li> </ul> |  |     |        |    |     |         |    |     |                    |               |               |           |               |               |                               |               |
| Course Content  |  |     |        |    |     |         |    |     |                    |               |               |           |               |               |                               |               |
| Topic<br>Serial No  | Title of content   |     |        |    |     |         |    |     |                    |               |               |           |               |               | Hours of<br>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 & 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  | <b>Privacy and confidentiality, equality &amp; Non discrimination. (6 hrs)</b> <ul style="list-style-type: none"> <li>• Privacy and confidentiality (2 hrs) <ul style="list-style-type: none"> <li>○ Definitions of ‘privacy’ and ‘confidentiality’</li> </ul> </li> </ul> |     |        |    |     |         |    |     |                    |               |               |           |               |               | 2                             |               |

|  |   |   |  |
|--|---|---|--|
|  | <ul style="list-style-type: none"> <li>with reason in physiotherapy</li> <li>○ Justified breaches of confidentiality- <ul style="list-style-type: none"> <li>▪ Sharing information for patient care</li> <li>▪ Using interpreters</li> <li>▪ Teaching medical students</li> <li>▪ Mandatory reporting Serious danger to others</li> <li>▪ Patient or guardian consent</li> </ul> </li> <li>● Equality, justice and equity (2 hrs) <ul style="list-style-type: none"> <li>○ Definitions of ‘equality’, ‘justice’ and ‘equity’</li> <li>○ The right to health care &amp; Physiotherapy</li> <li>○ Disparities in health status <ul style="list-style-type: none"> <li>▪ Local disparities</li> <li>▪ National disparities</li> <li>▪ Global disparities</li> </ul> </li> <li>○ Roles of Physiotherapists in establishing health care priorities and allocating scarce health care resources as direct health care providers</li> </ul> </li> <li>● Non-discrimination and non-stigmatization, (1hr) <ul style="list-style-type: none"> <li>○ What is discrimination and stigmatization?</li> </ul> </li> <li>● Respect for cultural diversity and pluralism (1hrs) <ul style="list-style-type: none"> <li>○ Definition of culture and cultural diversity</li> <li>○ Definition and value of pluralism</li> </ul> </li> </ul> <p>Limits to the consideration for cultural specificities Human dignity, human rights and fundamental freedoms</p> | 2 |  |
|  |   | 1 |  |
|  |   | 1 |  |

### Text Books

| 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 Musculoskeletal System- Nordin Margareta |

## SCHEME OF EXAMINATION

| Evaluation Pattern |            |            |           |            |            |                         |            |
|--------------------|------------|------------|-----------|------------|------------|-------------------------|------------|
| Written            |            | Total      | Practical |            | Total      | (Physiotherapeutics-II) |            |
| IA                 | Final exam | Final exam | IA        | Final exam | Final exam | IA                      | Final exam |
| 20                 | 80         | 100        | --        | --         | --         | --                      | --         |

### Preliminary Examination / University (Final) Examination

#### ❖ Written Examination ( 40 marks)

|        |   |   |          |
|--------|---|---|----------|
| Part A | Essay 1 X 15marks                                 | = | 15 marks |
|        | Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
|        | Short Notes (Any five out of six) 5 X 2 marks     | = | 10 marks |

| Part B  | Essay 1 X 15marks = 15 marks  |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
|---|---|-----|--------|----|-----|---------|----|-----|--------------------|------------|------------|-----------|------------|------------|----------------------------|------------|
|   | Short Answers (Any three out of four) 3 X 5 marks = 15 marks  |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
|   | Short Notes (Any five out of six) 5 X 2 marks = 10 marks  |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| <b>Course Title :- EXERCISE PHYSIOLOGY , HEALTH &amp; FITNESS</b>   |   |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| <b>Course Code:- MPT 203</b>  |   |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| <b>Course Credit for Exercise Physiology , Health &amp; Fitness</b>   |   |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| Hours   |   |     | Hrs/Wk |    |     | Credits |    |     | Evaluation Pattern |            |            |           |            |            |                            |            |
| Th  | Pr  | Tot | Lec    | Pr | Tot | Lec     | Pr | Tot | Written            |            | Total      | Practical |            | Total      | Physio therapeutics-II     |            |
|   |   |     |        |    |     |         |    |     | IA                 | Final exam | Final exam | IA        | Final exam | Final exam | IA                         | Final exam |
| 64  | 64  | 128 | 4      | 4  | 8   | 4       | 2  | 6   | 20                 | 80         | 100        | --        | --         | --         | --                         | --         |
| <b>Learning Objectives:</b>   |   |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| <ul style="list-style-type: none"> <li>❖ Acquired the updated knowledge of Physiology and Physical exercise &amp; will be able to interpret the physiological effects of the vital parameters of simple laboratory tests, such as “ Stress Test”</li> <li>❖ Acquire the skill of using Bicycle – Ergometry &amp; Treadmill for the purpose of General Fitness &amp; Exercise tolerance for Healthy persons.</li> <li>❖ Be able to prescribe &amp; train for general fitness &amp; health promotion for children, pregnant/ lactating females, Obese &amp; elderly subjects.</li> <li>❖ Be able to impart knowledge for training the undergraduate student.</li> </ul> |   |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| <b>Course Content – (section A/B/C if applicable)</b>   |   |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| Topic Serial No.  | Title of content  |     |        |    |     |         |    |     |                    |            |            |           |            |            | Hours of teaching/learning |            |
|   |   |     |        |    |     |         |    |     |                    |            |            |           |            |            | Theory                     | Practical  |
| <b>EXERCISE PHYSIOLOGY</b>  |   |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| 1   | <b>ENERGY PRODUCTION, EXPENDITURE, AND TRANSFER</b>   |     |        |    |     |         |    |     |                    |            |            |           |            |            | 6                          | 6          |
|   | <ul style="list-style-type: none"> <li>• Energy transfer in cells during exercise.</li> <li>• Oxygen metabolism and transfer during metabolism.</li> <li>• Oxygen transport in blood</li> <li>• Oxygen deficit, Oxygen debt.</li> <li>• Oxygen measurement, Oxygen during exercise, Oxygen during recovery.</li> <li>• Energy release from carbohydrate, lipids and proteins.</li> <li>• BMR – during rest, at activity.</li> <li>• Energy expenditure during activity.</li> <li>• Short Term and Long term energy systems.</li> </ul>  |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |
| 2   | <b>EXERCISE PERFORMANCE</b>   |     |        |    |     |         |    |     |                    |            |            |           |            |            | 6                          | 6          |
|   | <ul style="list-style-type: none"> <li>• Lung function and its role in exercise performance</li> <li>• Regulation of ventilation &amp; blood pressure during exercise.</li> <li>• Cardiovascular adjustment during exercise.</li> <li>• Muscle fiber, types and its role in exercise performance.</li> <li>• Ventilation during steady and non-steady rate exercise.</li> <li>• Energy cost and breaking.</li> <li>• Blood pressure (BP) response to exercise.</li> <li>• Cardiac output during exercise in – trained / untrained.</li> <li>• Cardio vascular drift.</li> </ul> |     |        |    |     |         |    |     |                    |            |            |           |            |            |                            |            |

|                             |   |   |   |
|-----------------------------|---|---|---|
| 3                           | <b>AEROBIC AND ANAEROBIC EXERCISES</b> <ul style="list-style-type: none"> <li>Principles of Training</li> <li>Anaerobic system changes with training</li> <li>Aerobic system changes with training</li> <li>Factors affecting aerobic and anaerobic training response.</li> <li>System adaptation to aerobic and anaerobic training</li> <li>Overtraining</li> <li>Strength training –physiology in various age groups</li> <li>Methods of training, Circuit training &amp; De-training</li> <li>DOMS.</li> <li>Aid in enhancing training and performance.</li> </ul> | 6 | 6 |
| 4                           | <b>EXERCISE AND ENVIRONMENT</b> <ul style="list-style-type: none"> <li>Acclimatization</li> <li>Exercising at high and low altitude and hypoxia.</li> <li>Exercise at hot climate, thermoregulations, dehydration and rehydration.</li> <li>Exercise at cold climate.</li> </ul>  | 6 | 6 |
| 5                           | <b>FATIGUE</b> <ul style="list-style-type: none"> <li>Classification, physiology</li> <li>Assessment and management.</li> </ul>   | 6 | 6 |
| <b>HEALTH &amp; FITNESS</b> |   |   |   |
| 1                           | <b>NUTRITION:</b> <ul style="list-style-type: none"> <li>Carbohydrates:- Nature, Source, Classification, Recommended intake, and role in exercise.</li> <li>Lipids: - Nature, Source, Classification, Recommended intake, and role in exercise.</li> <li>Proteins: - Nature, Source, Recommended intake, and role in body.</li> <li>Vitamins: - Kind, Source, Role of vitamins.</li> <li>Minerals :- Kind, Source, Role of minerals : Calcium, Phosphorus, magnesium, Iron, sodium, potassium, Chlorine.</li> <li>Nutritional deficiencies and management.</li> </ul> | 6 | 6 |
| 2                           | <b>DIET</b> <ul style="list-style-type: none"> <li>Recommended dietary intake, Pre-competition meal,</li> <li>Diet for endurance and strength training.</li> </ul>  | 6 | 6 |
| 3                           | <b>FITNESS TESTING</b> <ul style="list-style-type: none"> <li>Predicting/ measurement of aerobic fitness <ul style="list-style-type: none"> <li>➤ Field tests</li> <li>➤ Lab tests</li> <li>➤ Sub-maximal test ( cycle ergometer, treadmill tests )</li> <li>➤ Maximal testing</li> </ul> </li> <li>Predicting / measurement of anaerobic fitness, strength and power</li> <li>Predicting / measurement of flexibility.</li> <li>Predicting / measurement of agility</li> <li>Fitness testing for special population-Paediatrics, women, geriatrics</li> </ul>        | 6 | 6 |

|   |  |   |    |
|---|--|---|----|
| 4 | <b>BODY COMPOSITION</b> <ul style="list-style-type: none"> <li>Obesity and weight control.</li> <li>Measurement of body composition – BMI, WHR, indirect methods of measurement</li> </ul>   | 5 | 6  |
| 5 | <b>EXERCISE TESTING AND PRESCRIPTION FOR SPECIAL CONDITION</b> <ul style="list-style-type: none"> <li>Diabetes mellitus</li> <li>Hypertension</li> <li>Cardio-vascular system</li> <li>Respiratory impairment</li> </ul>   | 5 | 6  |
| 6 | <b>PAEDIATRIC EXERCISE SCIENCE</b><br>(Practical application of various manual therapy modes given in no. d & e above.)  | 5 | 5  |
| 7 | <b>Protecting future generations, Protection of the environment ( 2hr)</b> <ul style="list-style-type: none"> <li>Why care about the future? Contexts of concern</li> <li>The scope and limits of future related responsibilities Intergenerational; distant generations, all unborn generations?</li> <li>Obligations over health care providers to the possible people of the future?</li> <li>Health care and future generations</li> <li>The relation of bioethics and environmental issues</li> <li>Basic principles of environmental ethics             <ol style="list-style-type: none"> <li>environmental justice</li> <li>intergenerational justice</li> <li>respect for nature</li> </ol> </li> </ul> | 2 | -- |

#### Text Books

| 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      | (Physiotherapeutics-II) |            |
| IA                 | Final exam | Final exam | IA        | Final exam | Final exam | IA                      | Final exam |
| 20                 | 80         | 100        | --        | --         | --         | --                      | --         |

#### Preliminary Examination / University (Final) Examination

##### ❖ Written Examination ( 40 marks)

|        |   |   |          |
|--------|---|---|----------|
| Part A | Essay 1 X 15marks                                 | = | 15 marks |
|        | Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
|        | Short Notes (Any five out of six) 5 X 2 marks     | = | 10 marks |

|        |   |   |          |
|--------|---|---|----------|
| Part B | Essay 1 X 15marks                                 | = | 15 marks |
|        | Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
|        | Short Notes (Any five out of six) 5 X 2 marks     | = | 10 marks |

| Course Title :- PHYSIOTHERAPEUTICS-II   |          |          |                    |       |       |           |       |       |                         |       |       |
|---|----------|----------|--------------------|-------|-------|-----------|-------|-------|-------------------------|-------|-------|
| Course Code:- MPT 204                   |          |          |                    |       |       |           |       |       |                         |       |       |
| Course Credit for Physiotherapeutics-II |          |          |                    |       |       |           |       |       |                         |       |       |
| Hours                                   | Hrs/Wk   | Credits  | Evaluation Pattern |       |       |           |       |       |                         |       |       |
| Clinical                                | Clinical | Clinical | Theory             |       |       | Practical |       |       | (Physiotherapeutics-II) |       |       |
|   |          |          | IA                 | Final | Total | IA        | Final | Total | IA                      | Final | Total |
| 192                                     | 12       | 4        | --                 | --    | --    | --        | --    | --    | 20                      | 80    | 100   |

### 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

## Semester III

### The syllabus for the following Specialties

| Sr.No. | Course   |
|--------|--|
| A.     | MPT: Orthopaedics                                |
| B.     | MPT: Neuro Sciences                              |
| C.     | MPT: Cardio Respiratory Sciences                 |
| D.     | MPT: General & Community based Rehabilitation    |
| E.     | MPT: Paediatrics                                 |
| F.     | MPT: Musculo-Skeletal Science & Sports           |
| G.     | MPT: Musculo-Skeletal Science & Manual Therapy   |
| H.     | MPT: Musculo-Skeletal Science & Hand Conditions. |

**Applicable for MPT in Orthopedics (A) , Neurology(B), Cardio-Respiratory Sciences (c), CBR (D)& Pediatrics(E)**

**MPT in Musculo-Skeletal sciences ( Sports (F), Manual Therapy (G) & Hand Conditions (H) ).**

#### SEMESTER III - SPECIALITY PAPER I

| Paper Code | Sub. Code | Subject                             | Teaching Learning Hrs |     |     |     | Teaching LearningHrs/Week |    |    |     | Credit Hrs |     |    |   | Exam Marks |     |     |           |      |     |
|------------|-----------|-------------------------------------|-----------------------|-----|-----|-----|---------------------------|----|----|-----|------------|-----|----|---|------------|-----|-----|-----------|------|-----|
|            |           |                                     | Th                    | Pr  | Cl  | Tot | Th                        | Pr | Cl | Tot | Th         | Pr. | Cl | Tot                                       | Theory     |     |     | Practical |      |     |
|            |           |                                     |                       |     |     |     |                           |    |    |     |            |     |    |   | Int        | Ext | Tot | Int       | EXT. | Tot |
| IX (A-H)   | MPT - 301 | Elective based Clinical Sciences-I  | 64                    | 64  |     | 128 | 4                         | 4  |    | 8   | 4          | 2   |    | 6   | 20         | 80  | 100 |           |      |     |
| X (A-H)    | MPT - 302 | Elective based Physiotherapeutics-I | 80                    | 64  |     | 144 | 5                         | 4  |    | 9   | 5          | 2   |    | 7   | 20         | 80  | 100 |           |      |     |
| XI (A-H)   | MPT - 303 | Elective based Recent advances - I  | 32                    | 32  |     | 64  | 2                         | 2  |    | 4   | 2          | 1   |    | 3   | 20         | 80  | 100 |           |      |     |
| XII (A-H)  | MPT - 304 | Advanced Physiotherapeutics-I       |                       |     | 192 | 192 |                           |    | 12 | 12  |            | 3   | 3  |   |            |     |     | 20        | 80   | 100 |
|            |           | Research Dissertation               |                       |     | 144 | 144 |                           |    |    | 9   |            |     |    | <b>3 Credit accumulated in Semester 4</b> |            |     |     |           |      |     |
|            |           | <b>Total Hours</b>                  | 176                   | 160 |     | 672 |                           |    |    | 42  |            |     |    |   |            |     |     |           |      |     |

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)

Advanced Physiotherapeutics (elective)-I:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.



# MPT – ORTHOPAEDICS -I

**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**

## **Objective**

At the end of the course, the candidate will

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 and arrive at appropriate functional diagnosis with clinical reasoning.
2. Use the anatomical rationale for the clinical tests used in differential diagnosis.
3. Learn the ability to perform an appropriate subjective and physical examination, with development of suitable analytical skills to evaluate data obtained.
4. Further develop clinical reasoning that incorporates theoretical concept with evidence-based practice in the field of musculoskeletal physiotherapy.
5. Recognize the implication of dysfunction on the Neuro- Musculoskeletal system and the student's clinical decision making.
6. Document patients with scale, out come measures and asses the progression.
7. Use recent Technique/ approaches to treat & train patients with musculo-skeletal deficit in children, adults & geriatrics.
8. Be able to impart knowledge for training the under graduate students.

## **ORTHOPAEDICS**

- ❖ 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
    - 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. Fore arm 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 Fasciitis, 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

### MPT: Orthopaedics

1. Black d and Dumbleton 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 Lumbar 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 Dysfunction. The Trigger Point manual, Williams and Wilkins, 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

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## M P T – NEUROSCIENCES-I

**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**

**Objectives: -**

At the end of the course. The student should be able to

1. Assess and diagnose all possible findings on the patient to plan a Rehabilitation programme.
2. Document patients with scale, outcome measures and assess the progression.
3. Use recent Technique/ approaches to treat & train patients with Neurological deficit in children, adults & Geriatrics.
4. Be able to impart knowledge for training the under graduate students.

**SYLLABUS**

**NEUROSCIENCES**

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

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 infarcts, gross infarct, degradation of Brain,
- ❖ Movement dysfunction (Cerebellar lesions, basal ganglionic lesions).
- ❖ Bladder & Bowel dysfunction.
- ❖ Convulsive disorders.
- ❖ Vestibular Disorder.
- ❖ Pain pathway & management.
- ❖ Electro diagnosis – SD curve.
- ❖ Basic elements of Neuro diagnostic tests – CT, MRI, Myelography, NCV and EMG.
- ❖ 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
- ❖ Fatigue.

## 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 – Eigel. 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. Champion, 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
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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) 2 nd 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.

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# MPT - CARDIO-RESPIRATORY SCIENCES-I

**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**

## **Objectives**

At the end of the year the students will

1. Be able to identify, discuss & analyse, the Various cardio-respiratory dysfunction & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations and arrive at appropriate functional diagnosis with clinical reasoning.
2. Use the anatomical rationale for the clinical tests used in differential diagnosis.
3. Learn the ability to perform an appropriate subjective and physical examination, with development of suitable analytical skills to evaluate data obtained.
4. Further develop clinical reasoning that incorporates theoretical concept with evidence-based practice in the field of cardio-pulmonary physiotherapy.
5. Document patients with scale, out come measures and asses the progression.
6. Use recent Technique/ approaches to treat & train patients with cardio-respiratory dysfunction in children, adults & geriatrics.
7. Be able to impart knowledge for training the under graduate students.

## **CARDIO-RESPIRATORY DISEASES**

### **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.

- ❖ 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<sub>2</sub> Therapy, Nebulization, Suctioning, Endotracheal Tube, Tracheostomy Tube, Neonate ICU.
- ❖ PFT- Evaluation and Interpretation.
- ❖ Pulmonary fitness testing- Adults/Paeds/Geriatric.
- ❖ Geriatric Lung.
- ❖ Evaluation & 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

### MPT: Cardio Respiratory Sciences

1. Text book 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 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. Prasad 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
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# MPT - General and Community Based Rehabilitation-I

**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**

## **Objectives:**

At the end of the course the candidate will –

1. Acquire the in-depth understanding of the concept of Community Based Rehabilitation, Physiotherapy in community health and Institution Based Rehabilitation.
2. Be able to assist in planning and organization camps at community level.
3. Be able to organize events for health promotions as per various days as recommended by WHO.
4. Be able to impart services and training at the community level effectively with minimum resources.
5. Be able to plan and implement treatment programme adequately and appropriately for various conditions in community and during disaster or natural calamities.
6. This course shall enable the candidate to expertise in the Community health and function in the general set up as consultant.
7. As a consultant, works with the team of health professionals involved in various areas.

## **GENERAL AND COMMUNITY BASED REHABILITATION**

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 & 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.



## **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 child care.
- 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 child care.
- Psychological and emotional changes and coping up with demands of new born.
- 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
- Application of Electro- therapeutic measures in Obstetrics and Gynecology with Clinical reasoning

## **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 hand book 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. Osborne, D. J. Contemporary Ergonomics, Taylor and Francis, 1986 Pheasant, S. Bodysoace, Taylor and Francis, 1986.
20. Hand book 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 and young people with communication impairments. York Publishing Services, York. ISBN 1 899987 80 0
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.



# MPT – PAEDIATRICS-I

**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**

## **Objectives**

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

1. Assess and diagnose all possible findings on the patient to plan a Rehabilitation programme.
2. Document patients with scale, outcome measures, electro diagnostic procedures and assess the progression.
3. Use recent Technique/ approaches to treat & train children with Neurological, Orthopaedic & Cardiorespiratory deficit .
4. Be able to impart knowledge for training the under graduate students.

## **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
- ❖ 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, neurosyphilis, 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
- ❖ Mother and child care
- ❖ Electro physiological studies – somatosensory evoked potentials, brainstem, auditory evoked potentials, visual evoked potentials, EMG, single fiber EMG, nerve conduction studies.

## REFERENCE BOOKS

### MPT: Paediatrics

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 Paediatrics – 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

MPT – MUSCULO-SKELETAL SCIENCE & MANUAL THERAPY

MPT – MUSCULO-SKELETAL SCIENCE & SPORTS

MPT – MUSCULO-SKELETAL SCIENCE & HAND CONDITIONS

**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**

### **Objective**

At the end of the course, the candidate will

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 and arrive at appropriate functional diagnosis with clinical reasoning.
2. Use the anatomical rationale for the clinical tests used in differential diagnosis through manual therapy.
3. Learn the ability to perform an appropriate subjective and physical examination, with development of suitable analytical skills to evaluate data obtained.
4. Further develop clinical reasoning that incorporates theoretical concept with evidence-based practice in the field of musculoskeletal physiotherapy.
5. Recognize the implication of dysfunction on the Neuro- Musculoskeletal system and the student's clinical decision making.
6. Document patients with scale, out come measures and asses the progression.
7. Use Manual Therapy Technique/ approaches to treat & train patients with musculo-skeletal deficit in children, adults & geriatrics.
8. Be able to impart knowledge for training the under graduate students.

### **MUSCULO-SKELETAL SCIENCE**

#### **Common paper for**

**MPT – MUSCULO-SKELETAL SCIENCE & MANUAL THERAPY**

**MPT – MUSCULO-SKELETAL SCIENCE & SPORTS**

**MPT – MUSCULO-SKELETAL SCIENCE & HAND CONDITIONS**

- ❖ 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. Fore arm 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 & 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 Fasciitis, Calcaneal Spur, IT Syndrome, TMJ dysfunction.
  - Sprains & strains of spine & extremities.
  - 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 dysfunction, 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

## REFERENCE BOOKS

### MPT-MUSCULO-SKELETAL SCIENCE & MANUAL THERAPY

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. Text book of Orthopaedic Medicine , diagnosis of soft Tissue Lesions 8th edn. Bailliere Tindall 1982.
  19. Mobilization of the extremity joint – Kaltenbore, Harper and Row, Philadelphia, 1980.
  20. Kisner C. & Colby L.A. (2002). Therapeutic Exercise: Foundations and Techniques, 4<sup>th</sup> 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, 6<sup>th</sup> 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. Orthopedics – A Post Graduate Manual, Dr.(col)S.K.Biswas, Jaypee Publication, New Delhi 1<sup>st</sup> edition, 2012.
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### Scheme of Examination for MPT III Semester

| Evaluation Pattern ( course code MPT 301,302,303) |            |            |           |            |            |  |            |
|---|------------|------------|-----------|------------|------------|--|------------|
| Written   |            | Total      | Practical |            | Total      | Advanced<br>Physiotherapeutics<br>(Elective)-I |            |
| IA  | Final exam | Final exam | IA        | Final exam | Final exam | IA   | Final exam |
| 20  | 80         | 100        | --        | --         | --         | --   | --         |

#### Preliminary Examination / University ( Final) Examination

##### Written Examination (80 marks)

|        |   |   |          |
|--------|---|---|----------|
| Part A | Essay 1 X 15marks                                 | = | 15 marks |
|        | Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
|        | Short Notes (Any five out of six) 5 X 2 marks     | = | 10 marks |
| Part B | Essay 1 X 15marks                                 | = | 15 marks |
|        | Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
|        | Short Notes (Any five out of six) 5 X 2 marks     | = | 10 marks |

#### Course Title :- ADVANCED PHYSIOTHERAPEUTICS (ELECTIVE) -I

Course Code:- MPT 304

#### Course Credit for Advanced Physiotherapeutics (elective) -I

| Hours    | Hrs/Wk   | Credits  | Evaluation Pattern |       |       |           |       |       |  |       |       |
|----------|----------|----------|--------------------|-------|-------|-----------|-------|-------|--|-------|-------|
| Clinical | Clinical | Clinical | Theory             |       |       | Practical |       |       | Advanced<br>Physiotherapeutics<br>(Elective)-I |       |       |
|          |          |          | IA                 | Final | Total | IA        | Final | Total | IA   | Final | Total |
| 192      | 12       | 4        | --                 | --    | --    | --        | --    | --    | 20   | 80    | 100   |

#### SCHEME OF EXAMINATION FOR Advanced Physiotherapeutics (Elective)-I

| 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 – III

##### Practical

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



## **MPT- SECOND YEAR** **Semester IV**

**The syllabus for the following specialities**

| S. No | Course   |
|-------|--|
| A.    | MPT: Orthopaedics  |
| B.    | MPT: Neuro Sciences  |
| C.    | MPT: Cardio Respiratory Sciences                                   |
| D.    | MPT: General & Community based Rehabilitation                      |
| E.    | MPT: Paediatrics   |
| F.    | MPT: Musculo-Skeletal Science & Manual Therapy<br>Sports           |
| G.    | MPT: Musculo-Skeletal Science & Manual Therapy                     |
| H.    | MPT: Musculo-Skeletal Science & Manual Therapy<br>Hand Conditions. |

Applicable for MPT in Orthopedics (A) , Neurology(B), Cardio-Respiratory Sciences (c), CBR (D)& Pediatrics(E)  
MPT in Musculo-Skeletal sciences (Sports (F), Manual Therapy (G) & Hand Conditions (H) ).

**SEMESTER IV - SPECIALITY PAPER I**

| Paper Code | Sub. Code | Subject                                   | Teaching Learning Hrs |     |     |            | Teaching Learning Hrs/Week |     |    |           | Credit Hrs |    |    |      | Exam Marks                         |     |      |           |     |      |
|------------|-----------|---|-----------------------|-----|-----|------------|----------------------------|-----|----|-----------|------------|----|----|------|------------------------------------|-----|------|-----------|-----|------|
|            |           |   | Th.                   | Pr. | Cl  | Tot.       | Th.                        | Pr. | Cl | Tot.      | Th.        | Pr | Cl | Tot. | Theory                             |     |      | Practical |     |      |
|            |           |   |                       |     |     |            |                            |     |    |           |            |    |    |      | Int                                | Ext | Tot. | Int       | Ext | Tot. |
| IX (A-H)   | MPT - 401 | Elective based Clinical Sciences-II       | 64                    | 96  |     | 160        | 4                          | 6   |    |           | 4          | 3  |    | 7    | 20                                 | 80  | 100  |           |     |      |
| X (A-H)    | MPT - 402 | Elective based Physiotherapeutics-II      | 64                    | 96  |     | 160        | 4                          | 6   |    |           | 4          | 3  |    | 7    | 20                                 | 80  | 100  |           |     |      |
| XI (A-H)   | MPT - 403 | Elective based Recent advances - II       | 32                    | 32  |     | 64         | 2                          | 2   |    |           | 2          | 1  |    | 3    | 20                                 | 80  | 100  |           |     |      |
| XII (A-H)  | MPT - 404 | Advanced Physiotherapeutics (Elective)-II |                       |     | 240 | 240        |                            |     | 15 | 15        |            |    | 5  | 5    |                                    |     |      | 20        | 80  | 100  |
|            |           | <b>Total</b>                              | 160                   | 224 | 240 | 624        | 10                         | 14  | 15 | 39        | 10         | 7  | 5  | 22   |                                    |     |      |           |     |      |
|            |           | Research Dissertation                     |                       |     | 48  | 48         |                            |     |    | 3         |            |    |    |      | 1 Credit accumulated in Semester 4 |     |      |           |     |      |
|            |           | <b>Total Hours</b>                        |                       |     |     | <b>672</b> |                            |     |    | <b>42</b> |            |    |    |      |                                    |     |      |           |     |      |
|            | MPT - 405 | Research Dissertation                     |                       |     |     |            |                            |     |    |           |            |    |    |      |                                    |     | 50   | 50        |     | 100  |

Duration – 20 weeks. (16 weeks of teaching learning hours for 672 clock hours of course duration)

Advanced Physiotherapeutics (Elective)-II:-The regular clinical posting shall be done in the concerned elective and clinical training/ laboratory work shall be done in various special clinics.

# MPT – ORTHOPAEDICS II

**Didactic – 160 hours,**

**Clinical training -240 hours**

**Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 224 hrs,**

**Scientific enquiry/Research dissertation – 48 hours**

## **Objective**

At the end of the course, the candidate will

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 and arrive at appropriate functional diagnosis with clinical reasoning.
2. Use the anatomical rationale for the clinical tests used in differential diagnosis.
3. Learn the ability to perform an appropriate subjective and physical examination, with development of suitable analytical skills to evaluate data obtained.
4. Further develop clinical reasoning that incorporates theoretical concept with evidence-based practice in the field of musculoskeletal physiotherapy.
5. Recognize the implication of dysfunction on the Neuro- Musculoskeletal system and the student's clinical decision making.
6. Document patients with scale, out come measures and asses the progression.
7. Use recent Technique/ approaches to treat & train patients with musculo-skeletal deficit in children, adults & geriatrics.
8. Be able to impart knowledge for training the under graduate students.

## **ORTHOPAEDICS - II**

- ❖ Osteokinematics & Arthrokinematics of Musculoskeletal system
- ❖ Podiometry.
- ❖ Gait Analysis - Walking. Jogging. Running. Climbing up & Down the stairs.
- ❖ Congenital Malformation.- Congenital hip displasia. Congenital Talipes Equinovarus. Calcaneoalgus. Arthrogryposis Multiplex Congenita. Congenital Torticollis. Acromelia. Phocomelia. Amelia. Spina bifida.
- ❖ Development Disease Of Skeleton- Chondro-osteodystrophy. Osteogenesis. Imperfecta. Osteoporosis. Heterotopic ossification. Osteochondritis 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

## REFERENCE BOOKS

### MPT: Orthopaedics

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 Dysfunction. The Trigger Point manual, Williams and Wilkins, 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

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# M P T – NEUROSCIENCES II

**Didactic - 160 hours,**

**Clinical training -240 hours**

**Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 224 hrs,**

**Scientific enquiry/Research dissertation – 48 hours**

**Objectives: -**

At the end of the course. The student should be able to

1. Assess and diagnose all possible findings on the patient to plan a Rehabilitation programme.
2. Document patients with scale, outcome measures and assess the progression.
3. Use recent Technique/ approaches to treat & train patients with Neurological deficit in children, adults & Geriatrics.
4. Be able to impart knowledge for training the under graduate students.

## **SYLLABUS**

- a) **I.C.U. Management**
- b) **Neuro surgery**
- c) **Neuro Psychology**

**Objective:-**

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

- a) Assess & 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, behavioral 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, drug 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, Neutrinosis Angioma, Cranio Pharyngioma, Pituitary adenoma.
- ❖ Traumatic spinal cord injury- complete, in-complete.
- ❖ Disorder of spinal cord- Compression of spinal cord, spinal cord tumors, neoplasm of vertebral column, IVDP, Extradural & Epidural Abscess, 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.
- ❖ Sensory for approaches – (PNF, Roods, Burnstrom, NDT, SI, Vojta, Temple-Fay).
- ❖ Motor learning theories.
- ❖ Motor control theories.
- ❖ Oro- motor Dysfunction.
- ❖ Central palsy.
- ❖ Stroke (Hemorrhagic).
- ❖ Adult ICU - evaluation & management.
- ❖ Pediatrics ICU - Evaluation & management.
- ❖ Disability Evaluation
- ❖ Role of Orthotics in Neurological conditions.

## 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. Skinnern 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) 2 nd 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.

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# MPT - CARDIO-RESPIRATORY SCIENCES-II

**Didactic - 160 hours,**

**Clinical training -240 hours**

**Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) - 224 hrs,**

**Scientific enquiry/Research dissertation - 48 hours**

## **Objectives**

At the end of the year the students will

1. Be able to identify, discuss & analyse, the Various cardio-respiratory dysfunction & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations and arrive at appropriate functional diagnosis with clinical reasoning.
2. Use the anatomical rationale for the clinical tests used in differential diagnosis.
3. Learn the ability to perform an appropriate subjective and physical examination, with development of suitable analytical skills to evaluate data obtained.
4. Further develop clinical reasoning that incorporates theoretical concept with evidence-based practice in the field of cardio-pulmonary physiotherapy.
5. Document patients with scale, out come measures and asses the progression.
6. Use recent Technique/ approaches to treat & train patients with cardio-respiratory dysfunction in children, adults & geriatrics.
7. Be able to impart knowledge for training the under graduate students.

## **CARDIO-RESPIRATORY DISEASES - II**

### **CARDIAC CONDITIONS**

- ✚ Development of Cardiovascular system, fetal circulation.
- ❖ Review of Cardiovascular anatomy & physiology.
- ❖ Vascular mechanism.
- ❖ Neural control of cardiovascular system & 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 & abnormal respiratory sounds.
  - ECG- Lead placement, tracing, recording, interpretation of normal & 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 + interpretations.



- ❖ Physiotherapy evaluation and management in Cardiac conditions – CHD, MI, Hypertension, Pericarditis, Cardiac tumours.
- ❖ Physiotherapy evaluation in cardiac surgeries- Pre operative & Post operative.
- ❖ Causes, Pathomechanics, Signs & 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 heart beat & rhythm.
  - Cardiac compliance in burns, conservative, pre & post operative management.
- ❖ Recent advances in management of surgical conditions.
  - Thoracic wall surgeries.
  - Cardiac surgeries & rehabilitation.
- ❖ Cardiac evaluation and management in ICCU.
  - Monitoring, recording, ventilatory support, rehabilitation protocol.
  - Coma patient evaluation & management in ICCU.
  - Acute MI.
  - Defibrillators. & Cardiopulmonary resuscitations.
- ❖ Peripheral Vascular disorders- DVT, Venous insufficiency, oedema congestion, varicose veins, Claudication.
- ❖ Pre & Post operative rehabilitation of Arterial disorders.
- ❖ Recent advances in management of cardiac conditions (surgical and conservative).
- ❖ Life style modification for cardiac patients – Diet, Yoga, Exercises for prevention and management to improve health status.

## REFERENCE BOOKS

### MPT: Cardio Respiratory Sciences

1. Text book 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 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. Prasad 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
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# MPT - General and Community Based Rehabilitation-II

**Didactic - 160 hours,**

**Clinical training -240 hours**

**Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) - 224 hrs,**

**Scientific enquiry/Research dissertation - 48 hours**

## **Objectives:**

At the end of the course the candidate will –

1. Acquire the in-depth understanding of the concept of Community Based Rehabilitation, Physiotherapy in community health and Institution Based Rehabilitation.
2. Be able to assist in planning and organization camps at community level.
3. Be able to organize events for health promotions as per various days as recommended by WHO.
4. Be able to impart services and training at the community level effectively with minimum resources.
5. Be able to plan and implement treatment programme adequately and appropriately for various conditions in community and during disaster or natural calamities.
6. This course shall enable the candidate to expertise in the Community health and function in the general set up as consultant.
7. As a consultant, works with the team of health professionals involved in various areas.

## **General and Community Based Rehabilitation - II**

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, work station 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 work place 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 life-style 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.
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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 hand book 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.
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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 Engineeing and Design 6th edn. Graw Hill 1987.
19. Osborne, D. J. Contemporary Ergonomics, Taylor and Francis, 1986 Pheasant, S. Bodysoace, Taylor and Francis, 1986.
20. Hand book 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 and 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.



# MPT – PAEDIATRICS-II

**Didactic – 160 hours,**

**Clinical training -240 hours**

**Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 224 hrs,**

**Scientific enquiry/Research dissertation – 48 hours**

## **Objectives**

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

1. Assess and diagnose all possible findings on the patient to plan a Rehabilitation programme.
2. Document patients with scale, outcome measures, electro diagnostic procedures and assess the progression.
3. Use recent Technique/ approaches to treat & train children with Neurological, Orthopaedic & Cardiorespiratory deficit .
4. Be able to impart knowledge for training the under graduate students.

## **Paediatrics – II**

- a) Embryology of cardiovascular, pulmonary & musculoskeletal system
- b) Developmental deformities & congenital anomalies
- c) Paediatric musculo-skeletal 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 & muscular system
- ❖ Anatomical & physiological differences of cardio-vascular & respiratory system in neonates, childhood & adults
- ❖ Fetal circulation
- ❖ Arthrogyrosis
- ❖ 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 musculo-skeletal – osteomyelitis, pyogenic arthritis, juvenile rheumatoid arthritis, tuberculous arthritis
- ❖ Amputation and Limb deficiencies in childhood
- ❖ Burns in childhood – Classification, Pathophysiology and Management.
- ❖ Tumors of bone & muscle in pediatrics
- ❖ Congenital heart disease – pathodynamics, clinical presentation, investigation, medico-surgical & physiotherapy management of cyanotic & acyanotic heart disease
- ❖ Rheumatic heart disease
- ❖ Chest injuries
- ❖ Respiratory disorder in childhood – IRDS, Bronchopulmonary dysplasia, pneumonia, lung abscess, asthma, cystic fibrosis, bronchitis, bronchiectasis, bronchiolitis, pertussis, CROUP, epiglottitis, chronic lung disease, primary ciliary dyskinesia, fatigue, sleep apnoea, hyperventilation syndrome
- ❖ Respiratory problems in neonates – respiratory failure in neonates, neonatal ICU

- ❖ Child abuse
- ❖ Childhood obesity
- ❖ Exercise testing & prescription in children
- ❖ Strength endurance & flexibility in childhood
- ❖ Sports injuries in children
- ❖ PT management in PICU, NICU, emergency care & trauma, ventilator management, oxymeter, defibrillator.
- ❖ Paediatric cardio-thoracic surgeries.
- ❖ Recent advances in management of musculo skeletal, cardio-vascular & pulmonary conditions
- ❖ Role of Orthotics in Paediatric conditions.

## REFERENCE BOOKS

### MPT: Paediatrics

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 Paediatrics – 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

## MPT – MUSCULO-SKELETAL SCIENCE & MANUAL THERAPY-II

**Didactic - 160 hours,**

**Clinical training -240 hours**

**Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 224 hrs,**

**Scientific enquiry/Research dissertation – 48 hours**

### **Objective**

At the end of the course, the candidate will

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 and arrive at appropriate functional diagnosis with clinical reasoning.
2. Use the anatomical rationale for the clinical tests used in differential diagnosis through manual therapy.
3. Learn the ability to perform an appropriate subjective and physical examination, with development of suitable analytical skills to evaluate data obtained.
4. Further develop clinical reasoning that incorporates theoretical concept with evidence-based practice in the field of musculoskeletal physiotherapy.
5. Recognize the implication of dysfunction on the Neuro- Musculoskeletal system and the student's clinical decision making.
6. Document patients with scale, out come measures and asses the progression.
7. Use Manual Therapy Technique/ approaches to treat & train patients with musculo-skeletal deficit in children, adults & geriatrics.
8. Be able to impart knowledge for training the under graduate students.

### **MANUAL THERAPY**

#### **General Course Objectives:**

After completing this course, students are expected

1. Describe the basic theories and principles of various types of manual therapy
2. Understand the indications and contra-indications, treatment efficacy, and clinical applications of each kind of manual therapy
3. Explicit and perform the steps of each manual therapy skills

#### **GOALS:**

1. Identify the scope of manual therapy and summarize basic biomechanics of synovial joint and its related soft tissues
2. Demonstrate basic techniques of orthopedic physical therapy assessment, especially biomechanical examination
3. Identify the indications, limitations, and contra-indication of joint mobilization and soft tissue mobilisation
4. Explicit interpretations and principles of orthopedic physical therapy assessment
5. Distinguish the differences in core concepts among various schools of thought

## Syllabus

- ❖ Introduction & 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 & Non Traumatic) of structural & 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
- ❖ McKenzie-- classification of spinal pain as adopted by McKenzie-postural, dysfunction and derangement -assessment and treatment procedures
- ❖ Pilates techniques.
- ❖ Mennel's technique
- ❖ Myofascial 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 -fryette'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.

## REFERENCE BOOKS

### MPT-MUSCULO-SKELETAL SCIENCE & MANUAL THERAPY

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  11. Vander, A. J. Human Physiology: The mechanisms of body Function, 5th edn. Mc. Graw-Hill, 1990.
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  14. Clinical biomechanics of spine – White A.A and Panjabi- J.B. Lippincot, Philadelphia 1978.
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  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 Tindall 1982.
  19. Mobilization of the extremity joint – Kaltenbore, Harper and Row, Philadelphia, 1980.
  20. Kisner C. & Colby L.A. (2002). Therapeutic Exercise: Foundations and Techniques, 4<sup>th</sup> 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, 6<sup>th</sup> 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. Orthopedics – A Post Graduate Manual, Dr.(col)S.K.Biswas, Jaypee Publication, New Delhi 1<sup>st</sup> edition, 2012.
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# MPT - SPORTS-II

**Didactic – 160 hours,**

**Clinical training -240 hours**

**Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) – 224 hrs,**

**Scientific enquiry/Research dissertation – 48 hours**

**Objectives:-**

**At the end of the course, the candidate will be able to**

1. Understand the psychosocial factors, environmental factors & individual factors affecting the performance.
2. 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 and arrive at appropriate functional diagnosis with clinical reasoning for fitness training & rehabilitation.
3. Use the anatomical rationale for the clinical tests used in differential diagnosis.
4. Be able to identify, discuss & analyse, the various cardio-respiratory function & co-relate the same with the provisional diagnosis, for fitness training & rehabilitation.
5. Lay down rehabilitation protocol for sports specific injuries focusing an early rehabilitation to injuries.
6. Identify the causes prone for injury & prevent them.
7. Guide participants for a confident sports activity & rehabilitation to attain maximal achievement.
8. Understand the role of Sports physiotherapist in the team.

**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 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
- ❖ 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 (3rd 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-Hill, 2002 (5th edition) ISBN: 0072560479
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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)
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# MPT - HAND CONDITIONS-II

**Didactic - 160 hours,**

**Clinical training -240 hours**

**Laboratory work (includes project / review of literature/ seminars/case Presentation, journal clubs etc.) - 224 hrs,**

**Scientific enquiry/Research dissertation - 48 hours**

**Objectives:-**

**At the end of the course, the candidate will be able to**

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 and arrive at appropriate functional diagnosis with clinical reasoning.
2. Use the anatomical rationale for the clinical tests used in differential diagnosis.
3. Learn the ability to perform an appropriate subjective and physical examination, with development of suitable analytical skills to evaluate data obtained.
4. Further develop clinical reasoning that incorporates theoretical concept with evidence-based practice in the field of Hand rehabilitation.
5. Recognize the implication of dysfunction on the Neuro- Musculoskeletal system on hand function and the student's clinical decision making for rehabilitation.
6. Assess and diagnose all possible findings on the patient to plan a Rehabilitation programme.
7. Lay down rehabilitation protocol for sports specific hand injuries focusing an early rehabilitation to injuries.
8. Identify the causes prone for injury & prevent them.
9. Document patients with scale, outcome measures and assess the progression.
10. Use recent Technique/ approaches to treat & train patients with hand dysfunction in children, adults & geriatrics.
11. Be able to impart knowledge for training the under graduate students.

## **Hand Conditions - Part A**

### **1. Anatomy:**

Wrist joint , Carpometacarpal joint, Metacarpo-Phalangeal Joint, Interphalangeal joint

### **2. Surface Anatomy**

- a. Flexor Retinaculum and recurrent branches of median nerve.
- b. Motor functions of median, ulnar and radial nerve.
- c. Pulse points

### **3. Muscles**

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

### **4. Soft tissue**

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

## **2. Lymphatic system.**

### **3. 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 & outcome measures of pain, movement, ROM, flexibility, joint pliability, joint mobility (articular & Osteo), skin.

## **3] HAND TRAUMA**

- Debridement, Contaminated wounds I & 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 & II: bracing/splinting/therapy
- Extrinsic, intrinsic tightness, quadregia, and lumbrical plus

## **5] BONE**

- Anatomy/physiology of bone healing & cartilage, Kienbock/Preisers, Scapular and clavicular fractures
- Shoulder & 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, Neuromicroanatomy, 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 RA arthritides
- Osteoarthritis wrist, including arthrodesis and arthroplasties
- Osteoarthritis digits (not CMC)
- RA general principles, Swan neck/boutonniere, 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**

### **MPT: Hand Conditions.**

1. Clinical Mechanics of hand (2<sup>nd</sup> edn); Paul Brand & Anne Hollister [Mobsy publications]
2. Hand rehabilitation: A practical guide (2<sup>nd</sup> 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 (2<sup>nd</sup> 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 & 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 & Iremonger, 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- Kunalayananda Swami and Vinekar, popular prakashan, Bombay, 1992.
  23. Gait analysis – Perry J. Black Thorofare, New Jersey, 1992.
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## Scheme of Examination for MPT IV Semester

| Evaluation Pattern ( Course ccode MPT 401,402,403) |            |            |           |            |            |   |            |
|--|------------|------------|-----------|------------|------------|---|------------|
| Written  |            | Total      | Practical |            | Total      | Advanced<br>Physiotherapeutics<br>(Elective)-II |            |
| IA   | Final exam | Final exam | IA        | Final exam | Final exam | IA  | Final exam |
| 20   | 80         | 100        | --        | --         | --         | --  | --         |

### Preliminary Examination / University ( Final) Examination

#### ❖ Written Examination ( 80 marks)

|        |   |   |          |
|--------|---|---|----------|
| Part A | Essay 1 X 15marks                                 | = | 15 marks |
|        | Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
|        | Short Notes (Any five out of six) 5 X 2 marks     | = | 10 marks |
| Part B | Essay 1 X 15marks                                 | = | 15 marks |
|        | Short Answers (Any three out of four) 3 X 5 marks | = | 15 marks |
|        | Short Notes (Any five out of six) 5 X 2 marks     | = | 10 marks |

| Course Title :- ADVANCED PHYSIOTHERAPEUTICS (ELECTIVE) -II   |          |          |                    |       |       |           |       |       |   |       |       |
|--|----------|----------|--------------------|-------|-------|-----------|-------|-------|---|-------|-------|
| Course Code:- MPT 404  |          |          |                    |       |       |           |       |       |   |       |       |
| Course Credit for Advanced Physiotherapeutics (Elective) -II |          |          |                    |       |       |           |       |       |   |       |       |
| Hours  | Hrs/Wk   | Credits  | Evaluation Pattern |       |       |           |       |       |   |       |       |
| Clinical   | Clinical | Clinical | Theory             |       |       | Practical |       |       | Advanced<br>Physiotherapeutics<br>(Elective)-II |       |       |
|  |          |          | IA                 | Final | Total | IA        | Final | Total | IA  | Final | Total |
| 192  | 12       | 4        | --                 | --    | --    | --        | --    | --    | 20  | 80    | 100   |

### SCHEME OF EXAMINATION FOR ADVANCED PHYSIOTHERAPEUTICS (ELECTIVE) -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 – 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)