

UTTAR PRADESH UNIVERSITY OF MEDICAL SCIENCES:  
SAIFAI:ETAWAH: U.P-206130



## **ORDINANCES & REGULATIONS**

**FOR**

**Masters of Physiotherapy (M.P.T.)**

**(4 semester programs)**

**BRANCHES/SPECIALIZATION**

- 1. (ORTHOPEDECS)**
- 2. (NEUROLOGY)**

From Academic Year 2023-2024 Onwards

## **Infrastructure and functional requirements**

- (a) There should be a minimum of 1200 sq. ft of space for each speciality
- (b) In addition to the requirement for undergraduate program adequate number of standard equipments should be available as per Annexure A.

## **Student Learning time (SLT) for M.P.T Course:**

The total student learning time (SLT) for M.P.T course will be 2150 hrs for a duration of 4 semesters which includes Lectures, seminars, Practicals, demonstrations, Clinical discussions, clinical case presentations, Journal club, Classroom teaching, undergraduate teaching, Library, Clinical training, synopsis and dissertation work, community camps. Field visits, participation in workshops and conferences.

**Minimum Qualification for teachers for teaching MPT students:** Recommended specialty faculty with qualification as per U.G.C. norms and from core subjects (incorporated in curriculum & syllabus). All teaching faculty should be duly approved by the University.

Faculty for MPT will be in addition to the existing faculty for BPT Course and duly approved by the University for teaching MPT Course. It is recommended that a faculty and student ratio of 1:3 for PG course. Qualification of the guide should be minimum 5 years of teaching experience in Physiotherapy.

Total number of minimum faculty for all the two years will be as follows -:

### **Each Speciality**

Professor	-	01
Associate Professor	-	01
Assistant Professor	-	02

## **QUALIFICATIONS, EXPERIENCE AND OTHER ELIGIBILITY REQUIREMENTS FOR APPOINTMENT OF PHYSIOTHERAPY TEACHERS**

I. ASSISTANT PROFESSOR: Bachelor's Degree in Physiotherapy (B.P.T./B. Th.P./B.P.Th.), Master's Degree in Physiotherapy (M.P.Th/M.Th.P./M.Sc. P.T/M.P.T./ MSPT) with at least 55% marks (or an equivalent grade in a point scale wherever the grading system is followed) from a recognized University.

II. ASSOCIATE PROFESSOR: i) Essential: A Master's Degree in Physiotherapy (M.P.T./M.P.Th./M.Th.P/M.Sc. P.T./ MSPT) with eight years' experience as Assistant Professor. ii) Desirable: Higher Qualification, such as Ph.D. degree in any discipline of Physiotherapy recognized by the U.G.C, and published work of high standard in peer-reviewed or UGC - listed journals.

III. PROFESSOR: Essential: Master's Degree in Physiotherapy (M.P.T./ M.P.Th./M.Th.P./M.Sc. P.T./MSPT), with ten years' experience. Desirable: (i) Higher Qualification like Ph. D. in any subject of Physiotherapy recognized by U.G.C, and (ii) Published work of high standard in peer -reviewed or UGC- listed journals.

IV. PRINCIPAL /DEAN: Essential: Master's Degree in Physiotherapy (M.P.T./M.Th.P./M.Pth./M.Sc. P.T./MSPT) with fifteen years total teaching experience, (i) Senior-most Professor shall be designated as the Principal / Dean (Physiotherapy). (ii) Desirable: Higher qualification like Ph.D. in any discipline or Physiotherapy recognized by the UGC and published work of high standard in peer reviewed or UGC listed journals.

All teaching faculty should be full-time. The University will conduct regular faculty development programs, refresher courses, orientation programs, induction programs for developing the teaching and research skills of the faculty.

## **Appointment of Examiners:**

The Examiners shall be appointed by the University from amongst a panel of three external experts in Physiotherapy profession for each speciality who must hold at least Assistant Professor position in the department with a minimum of 5 years teaching and research experience or must be known scientists in the related area from established scientific organization/ Institute/ Department. On receipt of the dissertation, the dissertation shall be sent to one examiner of each speciality appointed by the Vice –Chancellor. The examination section of the University shall make all correspondence regarding the consent of examiners and shall also dispatch and receive the dissertation under secrecy.

### **Institutional Research Committee (R.C)**

The institutional body which will consider the research proposals for degree of M.P.T shall be called the research committee. Following shall be the composition of the R.C.

- (i) Principal/ Dean of the Physiotherapy speciality.
- (ii) One Professor/ Assoc. Prof of each speciality
- (iii) One Professor/Assoc. Prof from the College (Convener)

If the proposed research work entails experimental work on humans or work in the animal laboratory, the application shall be accompanied by a certificate from the Principal that clearance has been obtained from concerned Govt. approved Ethics Committee.

If the experimental study involves clinical trial (RCT), then the study should be registered with CTRI (Clinical trials registry of India).

External guide from outside Institution/place of clinical posting will be allowed to guide and supervise the research work of the candidate provided the external guide satisfies qualification as per norms.

The candidate shall meet and discuss with the guide the plans and progress of his/her research work when the guide ask him/her to do so.

The candidate shall submit the plans and progress of his/her research in a prescribed format once in 6 months. The progress reports will be reviewed by the Research Committee.

The candidate should publish at least one article in any indexed journal and it should be annexed in the dissertation.

When the dissertation is ready for submission to the university, the student shall also certify that the work presented in the dissertation is the candidate's own work and shall submit the draft thesis for plagiarism check in the University. The University will perform plagiarism checks of research work through an University approved software and only when it is satisfied that the research work is free of plagiarism shall the thesis work be accepted for submission for award of marks.

### **DISSERTATION & RESEARCH PROJECT:**

The candidate eligible for admission in Master of Physiotherapy (M.P.T) shall submit a detailed synopsis (5 copies) signed by the guide and by the candidate:

1. The evidence of his/her qualification
2. The topic of same specialty for M.P.T
3. The subject of the proposed research and dissertation
4. The outline of the proposed research work.
5. The place/Institution where he/she proposes to carry on his/her research work.
6. The name of the guide under whom he/she proposes to carry on his/her research work.

Once the candidate is registered and enrolled for the admission in Master of Physiotherapy, he/she shall settle the subject of his/her

dissertation work and prepare a brief outline under the guidance of the guide under whom he/she proposes to work and carry out his/her research works within three months of his admission to the program.

**Note: A person shall not be appointed Guide to supervise his/her relatives (son, daughter, husband, wife, sister, brother and relative in law)**

To consider the synopsis submitted for MPT programme of the University for Approval the University shall look into the following matters:

- i) That the candidate possesses the requisite qualifications.
- ii) Affidavit from the Management of the College that adequate and appropriate faculty and facilities exist at the place of research for the proposed work.

**Certificate of Supervisor/ Guide**

This is to certify that work embodied in this dissertation entitled..... Has been carried out by..... under my/our supervision and guidance.

No part of this dissertation has been submitted for any other degree. The work included in this dissertation is original and is own work of the candidate.

Annexure-A

Minimum required infrastructure and facilities to conduct the course

**A. Academic Block:** The minimum required area in the academic block for urban areas is 4000 Sq Meter (43040 Sq Ft) and for rural areas is 8000 Sq Meter (86080 Sq Ft). In case of more than one course in that building there must be an additional 2000 Sq. meter more area per course.

Space allotment	Requirement per unit (sq.ft)	No. of Units	Total area required (sq. ft.)
* Principal's /Dean's Office	300	1	300
*Department Office	500	1	500
* H.O. D's Office	300	1	300
Professor's Office	200	1	200
Associate Professor's office	100	2	200
Assistant Professor's office	100	8	800
Common room for Staff	300	1	300
Seminar room	1200	1	1200

Conference Hall (Common)	2500	1	2500
Class Rooms (with LCD projector, Audio Visual aids).	1200	4	4800
Girls common room (with required furniture)	500	1	500
Boys Common room (with required furniture)	500	1	500
Central Library with Reading Room(common)	2500	1	2500
Departmental library/reading room	200	1	200
Tutorial room	200	2	400
Hostel for Girls	Mandatory	Facility must be available within the campus.	
Hostel for Boys	Mandatory	Facility must be available within the campus.	
Physiotherapy OPD ( Minimum 50 patients/day)	2500	1	2500
Gymnasium	1000	1	1000
Laboratories		Required in BPT Year	Minimum Required Area
Human Anatomy Lab		Ist year	1200 SQ FT
Human Physiology Lab		Ist year	1200 SQ FT
Electrotherapy Lab & Electro-diagnosis Lab		Ist& 2 <sup>nd</sup> year	1200 SQ FT
Exercise Therapy Lab		Ist& 2 <sup>nd</sup> year	1200 SQ FT
Biomechanics & kinesiology Lab		Ist& 2 <sup>nd</sup> year	1200 SQ FT
Dept. of Musculoskeletal Physiotherapy		III & IV yr	1200 sq.ft

Dept. of Neurophysiotherapy (separate Pediatrics and adults sections)	III & IV yr	1200 sq.ft
Dept. of Community Physiotherapy (with Mobile Physiotherapy Van) for women's health ergonomics health promotion geriatrics.	III & IV yr	1200 sq. ft.

**Hospital** : Own hospital/ Attached hospital with 100 beds in which Orthopedic, Neurology, Cardiothoracic, ICU, Emergency and trauma, Gynecology. Physiotherapy department is mandatory. Student: Patient Ratio in hospital and Physiotherapy OPD should be 1:5. In case of an attached hospital there should be a maximum distance of 5 Km from the academic block of the College. The college must have its own/ tie-up with at least five PHCs/NGOs/Special Schools for Community based rehabilitation training.

**SCHEDULE – I****MODEL CHECKLIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS.**

Name of the Trainee :

Date :

Name of the Faculty / Observer :

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Article chosen was					
2.	Extent of understanding of scope and objectives of the paper by the candidate.					
3.	Whether cross-references have been consulted.					
4.	Whether other relevant publications consulted.					
5.	Ability to respond to questions on the paper / subject.					
6.	Audio – Visual aids used.					
7.	Ability to defend the paper.					
8.	Clarity of presentation.					
9.	Any other observation.					
	<b>Total Score</b>					

**SCHEDULE-II****MODEL CHECK LIST FOR EVALUATION OF SEMINAR PRESENTATIONS**

Name of the Trainee :

Date :

Name of the Faculty / Observer:

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness & Preparation.					
2.	Clarity of presentation.					
3.	Understanding of subject.					
4.	Whether other relevant publications consulted.					
5.	Whether cross-references have been consulted.					
6.	Ability to answer the questions.					
7.	Time scheduling.					
8.	Appropriate use of audio – visual aids.					
9.	Overall performance.					
10.	Any other observation.					
	<b>Total Score</b>					

**SCHEDULE-III****(a) MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN Outpatient Department***(To be completed once a month by respective unit heads including posting in other department)*

Name of the Trainee :

Date :

Name of the Unit Head :

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance.					
2.	Punctuality.					
3.	Interaction with colleagues and supportive staff.					
4.	Maintenance of case records.					
5.	Presentation of cases.					
6.	Investigations work up.					
7.	Chair-side manners.					
8.	Rapport with patients.					
9.	Over all quality of clinical work.					
	<b>Total Score</b>					

**(b) EVALUATION OF CLINICAL CASE PRESENTATION**

Name of the Trainee :

Date :

Name of the Faculty / Observer:

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness of history.					
2.	Whether all relevant points elicited.					
3.	Clarity of presentation.					
4.	Logical order.					
5.	Mentioned all positive and negative points					
6.	Accuracy of general physical examination.					
7.	Diagnosis: Whether it follows logically from history and findings.					
8.	Investigations required.					
	Complete list.					
	Relevant order.					
	Interpretation of investigations.					
9.	Ability to react to questioning Whether it follows logically from history and findings.					
10.	Ability to defend diagnosis.					
11.	Ability to justify differential diagnosis.					
12.	Others.					
	<b>Grand Total</b>					

Note: Please use a separate sheet for each faculty member.



## SCHEDULE-IV

### MODEL CHECKLIST FOR EVALUATION OF TEACHING SKILL

Name of the Trainee :

Date :

Name of the Faculty / Observer :

Sl. No	Items for observation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Communication of the purpose of the talk					
2.	Evokes audience interest in the subject.					
3.	The introduction.					
4.	The sequence of ideas.					
5.	The use of practical examples and / or illustrations.					
6.	Speaking style (enjoyable, monotonous, etc. specify)					
7.	Attempts audience participation.					
8.	Summary of the main points at the end.					
9.	Asks questions.					
10.	Answers questions asked by the audience.					
11.	Rapport of speaker with his audience.					
12.	Effectiveness of the talk.					
13.	Uses audio-visual aids appropriately.					

## SCHEDULE-V

### (a) MODEL CHECKLIST FOR DISSERTATION PRESENTATION

Name of the Trainee :

Date :

Name of the Faculty / Observer :

Sl. No.	Prints to be considered.	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1	Interest shown in selecting topic.					
2	Appropriate review.					
3	Discussion with guide and other faculty.					
4	Quality of protocol.					
5	Preparation of proforma					
	<b>Total Score</b>					

### (b) CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE / CO-GUIDE

Name of the Trainee :

Date :

Name of the Faculty / Observer :

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1	Periodic consultation with guide / co-guide.					
2	Regular collection of case material					
3	Depth of analysis / discussion.					
4	Quality of final output.					
5	Others					
	<b>Total Score</b>					

### SCHEDULE-VI

### OVERALL ASSESSMENT SHEET

Date :

Sl. No.	Faculty Member	Name of Trainee and Mean Score									
		A	B	C	D	E	F	G	H	I	J
1											
2											
3											

Signature of Department In-charge

Signature of Principal

Note: The overall assessment sheet used along with the logbook shall form the basis for certifying satisfactory completion of course of study, in addition to the attendance required.

## **EQUIPMENTS**

**The institution should have all the following equipments for MPT course (in addition to equipments as per BPT regulations)**

### Orthopedic Physiotherapy Laboratory

- Back Leg Chest Dynamometer
- Laser Therapy
- Microwave Diathermy
- Hand Evaluation Kit
- Pain Algometer
- Biofeedback Unit with facility EMG unit with integrated analysis software provided.
- Video Camera and software for movement analysis
- Desirable: Attachment to a center having Isokinetic Unit, Motion Analysis Unit.
- Mobile physiotherapy Van

### Neuro-physiotherapy Laboratory

- Hand Dynamometer
- 2 channel EMG with nerve-conduction testing facility
- Biofeedback unit with the facility to do quantitative analysis and therapy
- Sensory Integration kits
- Balance Boards
- Video Camera and software for movement analysis
- Desirable: Attachment to a center having Isokinetic Unit, Motion Analysis Unit.
- Mobile physiotherapy Van

## Syllabus

### For Master of Physiotherapy BRANCHES/SPECIALIZATION 1.(ORTHOPEDECS) 2.(NEUROLOGY)

#### COURSE STRUCTURE

##### FIRST SEMESTER

Paper Code.	Title	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT101	Basic Medical Sciences	50	4	4	25	75	100
MPT 102	General Bio-mechanics	50	4	4	25	75	100
MPT 103	Exercise Physiology	50	4	4	25	75	100
MPT 104	Research Methodology Biostatistics & Evidence Based Practice	50	4	4	25	75	100
MPT 102P	<i>Practical II</i> General Biomechanics	25	2	1	25	75	100
MPT 103P	<i>Practical III</i> Exercise Physiology	25	2	1	25	75	100
	<b>Total</b>	<b>250</b>	<b>20</b>	<b>18</b>	<b>150</b>	<b>450</b>	<b>600</b>
MPT 105	Clinics & Seminars Presentations	250	6	3	50	50	100
	<b>Grand Total</b>	<b>500</b>	<b>26</b>	<b>21</b>	<b>200</b>	<b>500</b>	<b>700</b>

##### SECOND SEMESTER

Paper Code.	Title	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT201	Electrophysiology	50	4	4	25	75	100
MPT 202	Advances in Physiotherapy Assessment	50	4	4	25	75	100
MPT 203	Advances in Physiotherapy Techniques	50	4	4	25	75	100
MPT 204	Elective -1	50	4	4	25	75	100
MPT 201P	<i>Practical- I</i> Electrophysiology	25	2	1	25	75	100
MPT 202P	<i>Practical- II</i> Advances in Physiotherapy Assessment	25	2	1	25	75	100

MPT 203P	<i>Practical – III-</i> Advances in Physiotherapy Techniques	50	2	1	25	75	100
	<b>Total</b>	<b>300</b>	<b>22</b>	<b>19</b>	<b>175</b>	<b>525</b>	<b>700</b>
MPT 205	Clinics & Seminars Presentations	250	6	3	50	50	100
	<b>Grand Total</b>	<b>550</b>	<b>28</b>	<b>22</b>	<b>225</b>	<b>575</b>	<b>800</b>

#### Electives I:

The student may choose from anyone options from the list of Program Elective combinations provided in the table below.

MPT 204O	Orthopaedic Disorders: Medical & Surgical Management	50	4	4	25	75	100
MPT 204N	Neurological Disorders: Medical & Surgical Management	50	4	4	25	75	100

#### THIRD SEMESTER

Course No.	Title	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 301	General Principles of Pedagogy	50	4	4	25	75	100
MPT 302	Clinic Management & Administration	50	4	4	25	75	100
MPT 303	Elective-2	50	4	4	25	75	100
MPT 304	Elective-3	50	4	4	25	75	100
MPT 304P	<i>Practical- I Elective-3</i>	25	2	1	25	75	100
MPT 305P	Practical II Dissertation	25	2	1	25	150	200
	<b>Total</b>	<b>300</b>	<b>20</b>	<b>18</b>	<b>175</b>	<b>525</b>	<b>700</b>
MPT 306	Clinics & Seminars Presentations	250	6	3	50	50	100
	<b>Grand Total</b>	<b>550</b>	<b>26</b>	<b>21</b>	<b>225</b>	<b>575</b>	<b>800</b>

#### Elective 2: Program Elective

The student may choose from anyone options from the list of Program Elective combinations provided in the table below.

MPT 303O	Orthopaedic Biomechanics	50	4	4	25	75	100
MPT 303N	Neuro Biomechanics	50	4	4	25	75	100

### Elective-3 Program Elective

The student may choose from anyone options from the list of Program Elective combinations provided in the table below.

MPT 304O	Advances in Orthopaedic Physiotherapy Assessment & Management-I	50	4	4	25	75	100
MPT 304N	Advances in Neuro Physiotherapy Assessment & Management-I	50	4	4	25	75	100

### FOURTH SEMESTER

Course No.	Title	Total Hours	Hours / week	Credits	IA Marks	SE Marks	Total Marks
MPT 401	Teaching Methodology in Physiotherapy	50	4	4	25	75	100
MPT 402	Ethical Legal & Professional Issues	50	4	4	25	75	100
MPT 403	Elective-4	50	4	4	25	75	100
MPT 403P	<i>Practical- I Elective 4</i>	50	4	2	25	75	100
MPT 404P	Practical II Dissertation	100	4	2	25	150	200
<b>Total</b>		<b>300</b>	<b>20</b>	<b>16</b>	<b>125</b>	<b>450</b>	<b>575</b>
MPT 405	Clinics & Seminars Presentations	250	8	4	50	50	100
<b>Grand Total</b>		<b>550</b>	<b>28</b>	<b>20</b>	<b>175</b>	<b>500</b>	<b>675</b>

### Elective-4 Program Elective

The student may choose from anyone option from the list of Program Elective combinations provided in the table below.

MPT 403O	Advances in Orthopaedic Physiotherapy Assessment & Management-II	50	4	4	25	75	100
MPT 403N	Advances in Neuro Physiotherapy Assessment & Management-II	50	4	4	25	75	100

### FIRST SEMESTER

Paper Code.	Title	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT101	Basic Medical Sciences	50	2	4	25	75	100
MPT 102	General Bio-mechanics	50	2	4	25	75	100
MPT 103	Exercise Physiology	50	2	4	25	75	100
MPT 104	Research Methodology Biostatistics & Evidence Based Practice	50	2	4	25	75	100
MPT 102P	<i>Practical II</i> General Biomechanics	25	1	1	25	75	100
MPT 103P	<i>Practical III Exercise Physiology</i>	25	1	1	25	75	100
	<b>Total</b>	<b>250</b>	<b>10</b>	<b>18</b>	<b>150</b>	<b>450</b>	<b>600</b>
MPT 105	Clinics & Seminars Presentations	250	6	6	50	50	100
	<b>Grand Total</b>	<b>500</b>	<b>16</b>	<b>24</b>	<b>200</b>	<b>500</b>	<b>600</b>

### SECOND SEMESTER

Paper Code.	Title	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT201	Electrophysiology	50	2	4	25	75	100
MPT 202	Advances in Physiotherapy Assessment	50	2	4	25	75	100
MPT 203	Advances in Physiotherapy Techniques	50	2	4	25	75	100
MPT 204	Elective -1	50	2	4	25	75	100
MPT 201P	<i>Practical- I</i> Electrophysiology	25	1	1	25	75	100
MPT 202P	<i>Practical- II</i> Advances in Physiotherapy Assessment	25	1	1	25	75	100
MPT 203P	<i>Practical – III-</i> Advances in Physiotherapy Techniques	50	2	2	25	75	100
	<b>Total</b>	<b>300</b>	<b>12</b>	<b>20</b>	<b>175</b>	<b>525</b>	<b>700</b>
MPT 204	Clinics & Seminars Presentations	250	6	6	50	50	100

	<b>Grand Total</b>	<b>550</b>	<b>18</b>	<b>26</b>	<b>225</b>	<b>575</b>	<b>800</b>
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**Electives I:**

MPT 204O	Orthopaedic Disorders: Medical & Surgical Management	50	2	4	25	75	100
MPT 204N	Neurological Disorders: Medical & Surgical Management	50	2	4	25	75	100

**THIRD SEMESTER**

Course No.	Title	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 301	General Principles of Pedagogy	50	2	4	25	75	100
MPT 302	Clinic Management & Administration	50	2	4	25	75	100
MPT 303	Elective-2	50	2	4	25	75	100
MPT 304	Elective-3	50	2	4	25	75	100
MPT 304P	<i>Practical- I Elective-3</i>	50	1	2	25	75	100
MPT 305P	Practical II Dissertation	50	1	2	25	150	200
<b>Total</b>		<b>300</b>	<b>10</b>	<b>20</b>	<b>150</b>	<b>525</b>	<b>675</b>
MPT 306	Clinics & Seminars Presentations	250	6	6	50	50	100
<b>Grand Total</b>		<b>550</b>	<b>16</b>	<b>26</b>	<b>200</b>	<b>575</b>	<b>775</b>

**Elective 2:**

MPT 303O	Orthopaedic Biomechanics	50	2	4	25	75	100
MPT 303N	Neuro Biomechanics	50	2	4	25	75	100

**Elective-3**

MPT 304O	Advances in Orthopaedic Physiotherapy Assessment & Management-I	50	2	4	25	75	100
MPT 304N	Advances in Neuro Physiotherapy Assessment & Management-I	50	2	4	25	75	100

**FOURTH SEMESTER**



Course No.	Title	Total Hours	Hours / week	Credits	IA Marks	SE Marks	Total Marks
MPT 401	Teaching Methodology in Physiotherapy	50	2	4	25	75	100
MPT 402	Ethical Legal & Professional Issues	50	2	4	25	75	100
MPT 403	Elective-4	50	2	4	25	75	100
MPT 403P	<i>Practical- I Elective 4</i>	50	2	2	25	75	100
MPT 404P	Practical II Dissertation	100	4	2	25	150	200
<b>Total</b>		<b>300</b>	<b>12</b>	<b>18</b>	<b>125</b>	<b>450</b>	<b>575</b>
MPT 406	Clinics & Seminars Presentations	250	6	6	50	50	100
<b>Grand Total</b>		<b>550</b>	<b>18</b>	<b>24</b>	<b>175</b>	<b>500</b>	<b>675</b>

Elective-4 MPT

MPT 403O	Advances in Orthopaedic Physiotherapy Assessment & Management-II	50	2	4	25	75	100
MPT 403N	Advances in Neuro Physiotherapy Assessment & Management-II	50	2	4	25	75	100

**PAPER 101 - BASIC MEDICAL SCIENCE (50 hrs)**

**Course Description:** The course covers topics related to basic medical sciences with review of Anatomy and physiology.

**Course Objective:** The course should enable the student to develop a concept about different basic medical sciences and their application in various fields.

**Course Outcome:** The Students will be able to use this basic medical sciences knowledge in assessment and investigation of various diseases and disorders.

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	<ol style="list-style-type: none"> <li>Describe the microstructure of various soft tissue</li> <li>Explain about Ossification of various bones.</li> <li>Review the Musculoskeletal anatomy</li> <li>Describe the various aspects of Neuro anatomy</li> <li>Describe the various aspects of cardiovascular anatomy.</li> <li>Classify various joints with suitable examples</li> <li>Explain the physiology of muscle contraction</li> <li>Explain the changes and effects of ageing and disuse over muscles</li> </ol>	<p><b>ANATOMY AND PHYSIOLOGY</b></p> <ul style="list-style-type: none"> <li>Micro structure for various soft tissue structures like Ligaments, Tendon, Muscle, bone, cartilage, articular cartilage tendon and disc. Ossification of various bones.</li> <li>Review of Musculoskeletal anatomy</li> <li>Review of Neuro Anatomy</li> <li>Review of Cardiovascular Anatomy</li> <li>Review of Joints and Its Classification</li> <li>Review of Muscle Physiology, Contraction of skeletal muscle.</li> <li>Effects of ageing and disuse</li> </ul>	20	<ol style="list-style-type: none"> <li>Lectures, Practical demonstrations</li> <li>Orientation by charts and models.</li> </ol>	<ol style="list-style-type: none"> <li>Short answer questions</li> <li>Long answer type questions</li> </ol>
2	<ol style="list-style-type: none"> <li>Explain about NSAID's, Opioids, DMRD's, Muscle Relaxants, chemotherapy, Antibiotics and Nutritional supplements with classification.</li> <li>Describe the uses, pharmacodynamics, pharmacokinetics and adverse effects of NSAID's,</li> </ol>	<p><b>PHARMACOLOGY AND RADIOLOGY</b></p> <ul style="list-style-type: none"> <li>NSAIDS &amp; Opioids</li> <li>DMRD'S</li> <li>Muscle Relaxant</li> <li>Chemotherapy and Antibiotics</li> <li>Nutritional supplements</li> </ul>	10	<ol style="list-style-type: none"> <li>Lectures</li> <li>Practical demonstrations with charts and models.</li> </ol>	<ol style="list-style-type: none"> <li>Short answer questions</li> <li>Long essay questions</li> </ol>

	Opioids, DMRD's, Muscle Relaxants, chemotherapy, Antibiotics and Nutritional supplements				
3	1. Describe the basics imaging techniques of X-rays <ul style="list-style-type: none"> <li>● Ultrasonography</li> <li>● CT Scan</li> <li>● MRI scanning</li> <li>● Bone Scan</li> <li>● Dexa Scan</li> <li>● Arthroscopy</li> </ul>	<b>Basics of Imaging Techniques</b> <ul style="list-style-type: none"> <li>● X-rays</li> <li>● Ultrasonography</li> <li>● CT Scan</li> <li>● MRI scanning</li> <li>● Bone Scan</li> <li>● Dexa Scan</li> <li>● Arthroscopy</li> </ul>	20	1. Lectures 2. Practical demonstrations on cadaver and models. 3. Radiographic demonstrations	1. Short answer questions 2. Long answer questions

**PAPER 102 - GENERAL BIOMECHANICS (50 hrs)**

**Course Description:** the course covers the understanding of Biomechanics and kinesiology of body movement.

**Course Objective:** the course should enable the student to acquire in depth knowledge in understanding the biomechanics and kinesiology.

**Course Outcome:** On completion of the study of this Course the student should be able to identify and apply the principles of biomechanics and kinesiology in understanding the normal functioning of the human body.

S. No.	Learning Objective	Content	No. of Hrs.	Teaching-learning Activities	Assessment Methods
1	1. Explain the classical mechanics. 2. Differentiate between structural and mechanical properties. 3. Describe the Uniaxial tensile test, Compression tests, Shear tests, Bending tests. Categorize the material deformations- Elastic deformation, Plastic deformation, Viscoelasticity- Strain rate, Stress relaxation, Creep, Hysteresis, Load, Elongation, Viscoelastic Experiments-Ultimate load, Ultimate elongation, Stiffness, Engineering stress, Cauchy stress, Engineering strain, Ultimate tensile strength, Ultimate	<b>HISTORY OF BIOMECHANICS</b> -Introduction to classical mechanics, Structural Versus Mechanical Properties, Types of Mechanical Tests- Uniaxial tensile test, Compression tests, Shear tests, Bending tests, Categorization of Material Deformations- Elastic deformation, Plastic deformation, Viscoelasticity- Strain rate, Stress relaxation, Creep, Hysteresis, Load, Elongation, Viscoelastic Experiments-Ultimate load, Ultimate elongation, Stiffness, Engineering stress, Cauchy stress, Engineering strain, Ultimate tensile strength, Ultimate tensile strain, Tangent modulus	4	1. Lecture 2. Tutorial 3. Demonstrations through charts and models 4. Power point presentations	1. Assignments 2. Short answer type questions 3. Practical exam 4. Viva Voce

	tensile strain, Tangent modulus				
2	<ol style="list-style-type: none"> <li>1. Define computational modeling.</li> <li>2. Explain the concept of computational modeling</li> <li>3. Enumerate the advantages and disadvantages of computational modeling.</li> </ol>	<b>COMPUTATIONAL MODELING:</b> Advantages and disadvantages	4	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Practical exam</li> <li>4. Viva Voce</li> </ol>
3	<ol style="list-style-type: none"> <li>1. Discuss about the movement patterns as the essence of biomechanics.</li> <li>2. Define various human movements</li> <li>3. Describe the various movement patterns.</li> <li>4. Compare the qualitative and quantitative movement analysis</li> <li>5. Summarize various terminologies to describe the movement patterns.</li> </ol>	<b>MOVEMENT PATTERNS</b> – the essence of biomechanics: Introduction, Defining human movements, Some fundamental movements, Movement patterns, Comparison of qualitative and quantitative movement analysis, Summary, Study tasks, important terms.	4	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva Voce</li> </ol>
4	<ol style="list-style-type: none"> <li>1. Describe the structured analysis of frame work, preparation stage, how to observe body movements.</li> <li>2. Describe the observational stage of movement</li> <li>3. Analyze the movement and describe the right and wrong in a movement.</li> <li>4. Provide feedback by identifying critical features of a movement.</li> </ol>	<b>QUALITATIVE ANALYSIS OF BODY MOVEMENTS:</b> Introduction, A structured analysis framework, Preparation stage – knowing what and how to observe, Observation stage – observing reliably Evaluation and diagnosis stage – analyzing what’s right and wrong in a movement, Intervention stage – providing appropriate feedback, Identifying critical features of a movement.	4	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ol>
5	<ol style="list-style-type: none"> <li>1. Describe the fundamentals of movement.</li> <li>2. Define and explain about linear motion and center of mass.</li> <li>3. Describe geometry of angular motion.</li> </ol>	<b>THE GEOMETRY OF MOTION:</b> Introduction, Movement patterns revisited, Fundamentals of movement Linear motion and the centre of mass, The geometry of angular motion, The coordination of joint rotations.	4	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ol>

	4. Explain the coordination of joint rotations				
6	<ol style="list-style-type: none"> <li>Describe how to record body movements using videography</li> <li>Explain the data processing of movements.</li> <li>Explain about projectile motion, linear velocities and accelerations caused by rotation.</li> <li>Describe the rotations in three dimensional space.</li> </ol>	<b>QUANTITATIVE ANALYSIS OF MOVEMENT:</b> Introduction, The use of videography in recording body movements, Recording the movement, Experimental procedures, Data processing, Projectile motion, Linear velocities and accelerations caused by rotation, Rotation in three-dimensional space.	4	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations through charts and models</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Practical exam</li> <li>Viva-voce</li> </ol>
7	<ol style="list-style-type: none"> <li>Describe the about of forces on movement.</li> <li>Explain about momentum and laws of linear motion.</li> <li>Draw time graphs of movement patterns.</li> <li>Describe how to determine the center of mass of human body.</li> <li>Enumerate the fundamentals of angular kinetics.</li> <li>Describe how do you measure force and pressure.</li> </ol>	<b>CAUSES OF MOVEMENT – FORCES AND TORQUES:</b> Introduction, Forces in movements, Combinations of forces on the performer, Momentum and the laws of linear motion, Force–time graphs as movement patterns, Determination of the centre of mass of the human body, Fundamentals of angular kinetics, Generation and control of angular momentum, Measurement of force, Measurement of pressure.	4	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations through charts and models</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Practical exam</li> <li>Viva-voce</li> </ol>
8	<ol style="list-style-type: none"> <li>Describe the Experimental procedures in electromyography</li> <li>Interpret the EMG data.</li> </ol>	<b>ELECTROMYOGRAPHY – WHAT MUSCLES DO:</b> Experimental procedures in electromyography, EMG data processing and interpretation.	4	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations through charts and models</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Practical exam</li> <li>Viva-voce</li> </ol>
9	<ol style="list-style-type: none"> <li>Define isokinetic dynamometry</li> <li>Explain the Basic procedures, principles, testing of various muscle groups</li> </ol>	<b>ISOKINETIC DYNAMOMETRY-</b> Basic procedures, principles, testing of various muscle groups	4	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations through charts and models</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Practical exam</li> <li>Viva-voce</li> </ol>
10	<ol style="list-style-type: none"> <li>Describe the structure and composition of</li> </ol>	<b>MUSCLE MECHANICS</b> Structure & composition of muscle	4	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> </ol>

	<p>muscle fiber.</p> <ol style="list-style-type: none"> <li>Enumerate the mechanical properties</li> <li>Describe the effects of ageing, exercise and immobilization on muscles.</li> <li>Define positive and negative work on muscles.</li> <li>Enumerate the causes of inefficient movement</li> <li>Explain the concept of Co-contraction Isometric contraction Energy generation at one joint and absorption at another Energy flow, Energy storage.</li> </ol>	<p>Fiber length &amp; cross section area Mechanical properties EMG changes during fatigue &amp; contraction. Changes in mechanical properties because of aging and exercised &amp; immobilization Clinical applications.</p> <p>Positive and Negative work of muscle, mechanical power, Causes of inefficient movement Co-contraction Isometric contraction Energy generation at one joint and absorption at another Energy flow, Energy storage.</p>		<p>through charts and models</p> <ol style="list-style-type: none"> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Long answer type questions</li> <li>Practical exam</li> <li>Viva-voce</li> </ol>
11	<ol style="list-style-type: none"> <li>Describe the structure, composition and mechanical properties of Muscle and tendon.</li> <li>Explain the procedure to measure cross sectional area of muscle.</li> <li>Enumerate the changes in mechanical properties of muscle due to ageing, exercise and immobilization and their clinical applications.</li> </ol>	<p><b>LIGAMENT &amp; TENDON MECHANICS</b></p> <p>Structure and composition Mechanical properties Cross sectional area measurements Muscle tendon properties Temperature sensitivity Changes in mechanical properties because of aging exercise and immobilization Mechanoreceptors Clinical applications</p>	4	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations through charts and models</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Practical exam</li> <li>Viva-voce</li> </ol>
12	<ol style="list-style-type: none"> <li>Describe the various phases of gait</li> <li>Explain the kinetics and kinematics of gait.</li> <li>Describe the biomechanics of stair climbing.</li> <li>Explain the effects</li> </ol>	<p><b>GAIT</b></p> <p>Gait parameter Kinetics Kinematic Time- Space determinants Pathological gait, Biomechanics of Stair climbing Changes in gait following various surgeries/ diseases/ disorders</p>	3	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations through charts and models</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Practical exam</li> <li>Viva-voce</li> </ol>

	of diseases, disorders and surgeries on the gait.				
13	<ol style="list-style-type: none"> <li>1. Demonstrate the skills gained on the various orthotics and prosthesis</li> <li>2. Explain the procedure of prescribing orthotics and prosthesis</li> <li>3. Describe the biomechanical principles of various aids in management of disability</li> </ol>	<b>ORTHOSIS &amp; PROSTHESIS</b>  Orthosis of spine Orthosis of upper limb Orthosis of lower limb Prescriptions checkouts & proper fittings Bio-mechanical principles governing them Aids used in management of disability.	3	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ol>

### PAPER 103 EXERCISE PHYSIOLOGY (50 hrs)

**Course description:** This course aims to deliver knowledge on scientifically based standards on exercise and its effects on various systems of the body. It prepares students through the process of selecting and administering therapeutic exercises using exercise guidelines to interpret results, and drafting an physiotherapy interventional prescription that is in line with exercise guidelines parameters.

**Course Objective:** This course should deliver the concepts in exercise physiology, and prepare students to test and prescribe suitable exercises to different groups of the population and conditions.

**Course Outcome:** On completion of the study of this course the student should be able to select and administer using exercise guidelines to interpret results, and drafting an therapeutic exercise prescription to different populations and conditions.

S.N O	Learning Objective	Content	No. of Hrs.	Teaching-learning Activities	Assessment Methods
1	<ol style="list-style-type: none"> <li>1. Describe the mechanics if energy transfer in body, exercise.</li> <li>2. Enumerate the energy expenditure during various activities.</li> <li>3. Explain the mechanism of fatigue</li> <li>4. Describe the biochemical changes in response to endurance training</li> </ol>	<b>Energy Transfer for Physical Activity:</b> a. Energy transfer in Body. b. Energy transfer in exercise. c. Energy expenditure during various activities. d. Fatigue. e. Biochemical responses to endurance training.	3	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ol>
2	<ol style="list-style-type: none"> <li>1. Describe the effects of exercise on various cell activities.</li> <li>2. Explain how the cell organelles adopt to exercise.</li> <li>3. Explain the adaptations of cell</li> </ol>	<b>Exercise and cell biology</b> - effect of exercise on various cell activities, adaptation of organelles with exercise, exercise and aging-physiology changes of aging	3	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> </ol>

	organelles to aging			presentations	3. Long answer type questions 4. Practical exam 5. Viva-voce
3	<ol style="list-style-type: none"> <li>1. Explain the term second wind and oxygen debt.</li> <li>2. Describe the effect of breath holding and high pressure ventilation and scuba diving.</li> <li>3. Describe the regulation of respiration during exercise.</li> </ol>	<p><b>Exercise and Respiratory System:</b></p> <ol style="list-style-type: none"> <li>a. Second Wind.</li> <li>b. Oxygen Debt.</li> <li>c. Breath Holding, High Pressure Ventilation. Scuba Diving.</li> <li>d. Regulation of Respiration during exercise.</li> </ol>	3	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ol>
4	<ol style="list-style-type: none"> <li>1. Describe the role of exercise on growth.</li> <li>2. Explain how repair and adaptation occurs during exercise.</li> <li>3. Explain about DOMS</li> <li>4. Prescribe the exercises for low back pain</li> <li>5. Explain the techniques of training of strength and endurance</li> <li>6. What are the muscle fiber typing and explain its significance.</li> </ol>	<p><b>Skeletal System:</b></p> <ol style="list-style-type: none"> <li>a. Growth and Exercise.</li> <li>b. Repair and adaptation during exercise. Delayed Onset Muscle Soreness (DOMS)</li> <li>c. Exercise prescription for chronic low back pain</li> <li>d. Training for Muscular Strength and Endurance.</li> <li>e. Muscle fibre typing and significance.</li> </ol>	3	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ol>
5	<ol style="list-style-type: none"> <li>1. Describe the effects of exercise on nervous system.</li> <li>2. Explain the concept of cerebral perfusion and exercise</li> <li>3. Describe and demonstrate the exercises for mood enhancement and relieving of anxiety.</li> </ol>	<p><b>Exercise and nervous system</b> - neural adaptation with exercises, cerebral perfusion and exercises, exercise for mood enhancement and anxiety.</p>	3	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ol>
6	<ol style="list-style-type: none"> <li>1. Describe the cardiovascular adaptations to exercise.</li> <li>2. Explain how to protect from coronary artery disease with emphasis on lipids.</li> <li>3. Explain the causes of sudden</li> </ol>	<p><b>Exercise and cardiovascular system:</b></p> <ol style="list-style-type: none"> <li>a. Athletes Heart.</li> <li>b. Cardio Vascular adaptations to sustained aerobic exercises.</li> <li>c. Lipids and sports, protection</li> </ol>	3	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> </ol>



	<p>cardiac death in sports.</p> <p>4. Explain how the circulatory system adapts to exercise.</p>	<p>from coronary heart disease, exercise and optimization of lipid profile.</p> <p>d. Sudden cardiac death in sports. Regulation of circulation during exercise. Exercise and vascular system-cardiovascular adaptation to sustained aerobic exercises, exercise and optimization of lipid profile, regulation of circulation during exercise</p>		<p>presentations</p>	<p>3. Long answer type questions</p> <p>4. Practical exam</p> <p>5. Viva-voce</p>
7	<p>1. Describe the effects of exercise on GIT and Liver.</p> <p>2. Explain Hormone regulation of fluid and electrolytes during exercise.</p> <p>3. Explain the effects of exercise on menstrual cycle.</p> <p>4. Describe the role of stress hormones in exercise.</p>	<p><b>Gastrointestinal Tract and Endocrine system:</b></p> <p>a. Effect of exercise on GIT and Liver.</p> <p>b. Hormone regulation of fluid and electrolytes during exercise.</p> <p>c. Exercise and Menstrual Cycle.</p> <p>d. Stress Hormones in Exercise.</p>	3	<p>1. Lecture</p> <p>2. Tutorial</p> <p>3. Demonstrations through charts and models</p> <p>4. Power point presentations</p>	<p>1. Assignments</p> <p>2. Short answer type questions</p> <p>3. Long answer type questions</p> <p>4. Practical exam</p> <p>5. Viva-voce</p>
8	<p>1. Describe the hormonal regulation of fluid and electrolytes during exercise.</p> <p>2. Describe the hormonal regulation of menstrual cycle.</p> <p>3. Explain the effects of exercise on various hormones.</p> <p>4. Explain about Runners high and exercise addiction.</p>	<p><b>Exercise and endocrine system-</b></p> <p>Hormonal regulation of fluid and electrolytes during exercise and menstrual cycle, stress hormone in various activities, effect of exercise on various hormones in exercise, effect of exercise on GIT and liver, Opioids, Runners High. exercise addiction.</p>	3	<p>1. Lecture</p> <p>2. Tutorial</p> <p>3. Demonstrations through charts and models</p> <p>4. Power point presentations</p>	<p>1. Assignments</p> <p>2. Short answer type questions</p> <p>3. Long answer type questions</p> <p>4. Practical exam</p> <p>5. Viva-voce</p>
9	<p>1. Prescribe the exercises for diabetic patients.</p> <p>2. Explain how exercise can control diabetes.</p>	<p><b>Diabetes and Exercise</b></p> <p>a. Exercise in diabetic patients</p> <p>b. Exercise as a method of control of diabetes</p>	3	<p>1. Lecture</p> <p>2. Tutorial</p> <p>3. Demonstrations through charts and models</p> <p>4. Power point presentations</p>	<p>1. Assignments</p> <p>2. Short answer type questions</p> <p>3. Long answer type questions</p> <p>4. Practical exam</p> <p>5. Viva-voce</p>

10	<ol style="list-style-type: none"> <li>Enumerate the Child and adolescent athlete's problems.</li> <li>Explain the special problems associated with athletes.</li> <li>List out the concerns for differently abled athletes</li> </ol>	<p><b><i>Exercises for special categories</i></b></p> <ol style="list-style-type: none"> <li>Child and adolescent athlete's problems</li> <li>Special problems of older athletes</li> <li>Special concerns for differently abled athletes</li> </ol>	3	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations through charts and models</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Practical exam</li> <li>Viva-voce</li> </ol>
11	<ol style="list-style-type: none"> <li>Define sports amenorrhea and list out the causes.</li> <li>Explain the pathophysiology and causes for injury to female reproductive tract.</li> </ol>	<p><b><i>Female Specific Problems:</i></b></p> <ol style="list-style-type: none"> <li>Sports Amenorrhoea.</li> <li>Injury to female reproductive tract.</li> <li>Menstrual Synchrony.</li> <li>Sex determination.</li> <li>Exercise and pregnancy.</li> <li>Eating disorders in athletes.</li> </ol>	3	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations through charts and models</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Practical exam</li> <li>Viva-voce</li> </ol>
12	<ol style="list-style-type: none"> <li>Describe the clinical features, pathophysiology and management of Rheumatoid arthritis, SLE and Juvenile Rheumatoid Arthritis. Ankylosing Spondylitis. Osteoarthritis</li> <li>Explain the cost and benefits of exercise prescription in osteoporosis.</li> </ol>	<p><b><i>Rheumatology &amp; Geriatric Disorder:</i></b></p> <ol style="list-style-type: none"> <li>Rheumatoid arthritis, SLE and Juvenile Rheumatoid Arthritis.</li> <li>Ankylosing Spondylitis.</li> <li>Osteoarthritis and other geriatric conditions.</li> <li>Cost and benefits of exercise prescription in Osteoporosis.</li> </ol>	3	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations through charts and models</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Practical exam</li> <li>Viva-voce</li> </ol>
13	<ol style="list-style-type: none"> <li>Describe the dietary recommendations for healthy individuals.</li> <li>Explain the epidemiology, classification of causes, complications and treatment of obesity.</li> <li>Explain the Regulation of food consumption, complications and prevention in pediatric obesity.</li> </ol>	<p><b><i>Obesity and related problems</i></b></p> <ol style="list-style-type: none"> <li>Dietary recommendation for healthy individuals.</li> <li>Obesity – epidemiology, classification of causes, complications and treatment.</li> <li>Pediatric obesity- Regulation of food consumption, complications and prevention.</li> </ol>	3	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations through charts and models</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Practical exam</li> <li>Viva-voce</li> </ol>

14	<ol style="list-style-type: none"> <li>1. Define the word stress and describe its characteristics</li> <li>2. Apply the clinical skills gained on stress over the patients.</li> <li>3. Explain how to cope with stress</li> <li>4. Apply the skills of self management of stress.</li> <li>5. Recall the tools for stress management.</li> </ol>	<p><b><i>Stress Management</i></b></p> <p>a. Introduction i. The history and definition of "stress" ii. The characteristics of stressors iii. Clinical implications of stress iv. Coping with stress – styles of coping, recruiting resources for coping</p> <p>b. Self management</p> <p>c. Tools for stress management</p>	3	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ol>
15	<ol style="list-style-type: none"> <li>1. Recall the physiological, psychological and behavioral impact of cigarette smoking.</li> <li>2. Apply the skills gained on evidence based possibilities of treatment.</li> <li>3. Explain the principles of treatment for smoking cessation.</li> </ol>	<p><b><i>Hazards of Smoking</i></b></p> <p>a. The physiological, psychological and behavioral impact of cigarette smoking</p> <p>b. Evidence based possibilities for treatment</p> <p>c. Treatment for smoking cessation</p>	3	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ol>
16	<ol style="list-style-type: none"> <li>1. Describe the basic concepts in sleep medicine.</li> <li>2. Explain the physiology of sleep.</li> <li>3. Classify various sleep disorders.</li> <li>4. Examine the clinical features of sleep disturbance.</li> <li>5. Describe the Physiotherapeutic measures for sleep deprivation</li> </ol>	<p><b><i>Sleep Medicine</i></b></p> <p>a. Acquaintance with basic concepts in sleep medicine, the structure and physiology of sleep</p> <p>b. Classification of sleep disorders</p> <p>c. Clinical implications of sleep disturbance</p> <p>d. Physiotherapeutic measures for sleep deprivation</p>	3	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ol>
17	<ol style="list-style-type: none"> <li>1. Exemplify the important pranayamas, strengthening and rejuvenating asanas in yoga.</li> <li>2. Differentiate between physiotherapy techniques of strengthening and yoga.</li> </ol>	<p><b><i>Yoga</i></b></p> <p>a. Important Pranayamas and strengthening and rejuvenating asanas.</p> <p>b. Methods, advantages and contraindications.</p>	2	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ol>

**MPT 104- RESEARCH METHODOLOGY, BIostatISTICS & EVIDENCE BASED PRACTICE (50hrs)**

**Course Description:** The course covers the concept of research methodology, Evidence based practice and biostatistics related to physical therapy

**Course Objective:** The course aims to introduce the principles of research, methods of research and analyzing the research studies using Biostatistics.

**Course Outcome:** On completion of the study of this course the student should be able to understand the methods of research process and design so as to effectively plan a research.

To understand the statistical measures used in the analysis and interpretation of research data.

To acquire skills of critically reviewing the literature

S.N O	Learning Objective	Content	No. of Hrs.	Teaching-learning Activities	Assessment Methods
1	<ol style="list-style-type: none"> <li>Define research.</li> <li>Explain how to apply the concepts of research in physiotherapy field.</li> <li>Exemplify various sources, approaches, concepts of research in physiotherapy.</li> </ol>	<p><b>Research in physiotherapy:</b> Introduction, Research for Physiotherapist: Why? How? When? , Research – Definition, concept, purpose, approaches, Internet sites for Physiotherapists.</p>	2	<ol style="list-style-type: none"> <li>Lectures</li> <li>Power point presentations</li> <li>Internet Browsing</li> </ol>	Short answer type questions
2	<ol style="list-style-type: none"> <li>Define measurement and its framework.</li> <li>Recall the terms learned in relation to research</li> <li>Explain about scales of measurement, pilot study, Types of variables, Reliability &amp; Validity, Drawing Tables, Graphs, Master chart</li> </ol>	<p><b>Research fundamentals:</b> Define measurement, Measurement framework, Scales of measurement, Pilot Study, Types of variables, Reliability &amp; Validity, Drawing Tables, Graphs, Master chart</p>	3	<ol style="list-style-type: none"> <li>Lectures</li> <li>Chart demonstrations</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Assignments</li> </ol>
3	<ol style="list-style-type: none"> <li>Define and classify Lipids.</li> <li>Describe the functions of Lipids</li> <li>Describe the functions of essential and non essential fatty acids.</li> <li>Explain the process of - □□Oxidation of fatty acids</li> <li>Brief about fatty liver and ketosis</li> </ol>	<p><b>Writing a research proposal:</b> Defining a problem, Review of Literature, Formulating a question, Operational Definition, Inclusion &amp; Exclusion criteria, Methodology- Forming groups Data collection &amp; method for analysis, Informed Consent Steps of documentation – Title to Scope of study</p>	4	<ol style="list-style-type: none"> <li>Lectures</li> <li>Chart demonstrations</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Short answer type questions</li> <li>Long answer type questions</li> <li>Assignments</li> </ol>

4	<ol style="list-style-type: none"> <li>1. Explain the importance of research ethics.</li> <li>2. Enumerate the main ethical issues in human subjects research.</li> <li>3. List out the components of an ethically valid informed consent for research.</li> </ol>	<p><b>Research ethics:</b> Importance of Ethics in Research, Main ethical issues in human subjects“ research, Main ethical principles that govern research with human subjects, Components of an ethically valid informed consent for research.</p>	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> <li>2. Long answer type questions</li> <li>3. Assignments</li> </ol>
5	<ol style="list-style-type: none"> <li>1. Describe the Observational, Descriptive-Case study/ series, Cross sectional, Normative, Correlational, Analytical; case control, cohort.</li> <li>2. Explain about Experimental- True &amp; quasi experimental</li> </ol>	<p><b>Overview of study designs:</b> Observational, Descriptive-Case study/ series, Cross sectional, Normative, Correlational, Analytical; case control, cohort, Experimental- True &amp; quasi experimental</p>	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> <li>2. Long answer type questions</li> <li>3. Assignments</li> </ol>
6	<ol style="list-style-type: none"> <li>1. Differentiate between random and non random sampling.</li> <li>2. Enumerate the types of sampling</li> <li>3. Identify the sampling errors.</li> </ol>	<p><b>Sampling:</b> Random and non-random sampling, Various methods of sampling – simple random, stratified, systematic, cluster and multistage. Sampling and non-sampling errors and methods of minimizing these errors.</p>	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> <li>2. Long answer type questions</li> <li>3. Assignments</li> </ol>
7	<ol style="list-style-type: none"> <li>1. Define plagiarism.</li> <li>2. Mention the methods to identify and avoid plagiarism.</li> <li>3. List out various software methods to detect plagiarism.</li> </ol>	<p><b>Plagiarism:</b> Definition of Plagiarism, types, Avoiding plagiarism , software methods to detect plagiarism.</p>	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> <li>2. Long answer type questions</li> <li>3. Assignments</li> </ol>
8	<ol style="list-style-type: none"> <li>1. Define evidence based practice.</li> <li>2. Explain the importance of evidence based practice in physiotherapy.</li> <li>3. Explain the evidence based decision making and management practices in health care.</li> <li>4. Enumerate the types of</li> </ol>	<p><b>Evidence Based Practice:</b> Introduction to evidence–based complementary medicine. Evidence–based health care, Evidence–based practices, Evidence–based decision making and management, Types of evidence: Definition of</p>	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> </ol>

	evidences.	evidence, Forms of evidence : Case-control studies, Cohort studies, Randomized controlled trials, Systematic Reviews, Importance of Hierarchy of Evidence			
9	<ol style="list-style-type: none"> <li>1. Explain how to structure ,formulate and implement thesis.</li> <li>2. Explain how to review scientific data/meta analysis.</li> <li>3. Describe how to critique a research article.</li> <li>4. Identify the techniques to review an indexed refereed research paper.</li> <li>5. Evaluate merits of a scientific paper.</li> <li>6. List out the reasons for rejection of a scientific paper.</li> </ol>	<b>Key element of scientific writing:</b> Structure, formulation and implementation of thesis, Structure, formulation and implementation of original research report ,Structure, formulation and implementation of systematic review/meta –analysis, How to read and critique research, Review of an indexed refereed research paper, - Evaluating paper scientific merit, Providing constructive feedback to the author, typical review formats for reviewing a paper ,Reasons for rejection	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> <li>2. Long answer type questions</li> <li>3. Assignments</li> </ol>
10	<ol style="list-style-type: none"> <li>1. Describe how to write and submit a research paper.</li> <li>2. Explain the strategies for writing and publishing a research paper.</li> <li>3. List out the sources of publishing a research paper.</li> </ol>	<b>Presenting Research:</b> Writing and submitting papers, Strategies of paper writing, Design of paper writing, Tactics of paper writing - Where to publish	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type question</li> <li>2. Long answer type</li> </ol>
11	<ol style="list-style-type: none"> <li>1. Differentiate between descriptive and inferential statistics.</li> <li>2. Enumerate the types of data</li> <li>3. Explain about the parametric and non-parametric tests.</li> </ol>	<b>SECTION – II BIOSTATISTICS</b>  <b>Introduction:</b> Descriptive and Inferential statistics, Types of data: Qualitative and Quantitative, Parametric and Non- Parametric tests, Which tests to use.	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> <li>2. Long answer type questions</li> <li>3. Assignments</li> </ol>
12	<ol style="list-style-type: none"> <li>1. Identify the basics of testing hypothesis.</li> <li>2. Differentiate between Type-I and Type-II errors.</li> <li>3. Explain about level of significance.</li> <li>4. Describe about various tests to measure level of significance.</li> </ol>	<b>Tests of significance:</b> Basics of testing of hypothesis – Null and alternate hypothesis, type I and type II errors, level of significance and power of the test, p value. Tests of significance (parametric) - t – test (paired and unpaired), Chi square test and test of	4	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> <li>2. Long answer type questions</li> <li>3. Assignments</li> </ol>

		proportion, one way analysis of variance. Repeated measures analysis of variance. Tests of significance (non-parametric)-Mann-Whitney u test, Wilcoxon test, e. Kruskal-Wallis analysis of variance. Friedman's analysis of variance.			
13	<ol style="list-style-type: none"> <li>1. Differentiate between correlation and regression.</li> <li>2. Explain the procedure to check significance of correlation coefficient.</li> <li>3. Differentiate linear and multiple regression.</li> <li>4. Interpret the r value.</li> </ol>	<b>Correlation and regression:</b> Simple correlation – Pearson's and Spearman's; testing the significance of correlation coefficient, linear and multiple regressions. Interpretation of r.	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> <li>2. Long answer type questions</li> <li>3. Assignments</li> </ol>
14	<ol style="list-style-type: none"> <li>1. Explain the concept of probability and its distribution.</li> <li>2. Define standard error and confidence intervals.</li> <li>3. Differentiate between skewness and kurtosis.</li> </ol>	<b>Basic probability distributions and sampling Distributions:</b> Concept of probability and probability distribution. Normal, Poisson and Binomial distributions, parameters and application. Concept of sampling distributions, Standard error and confidence intervals, Skewness and Kurtosis	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> <li>2. Long answer type questions</li> <li>3. Assignments</li> </ol>
15	<ol style="list-style-type: none"> <li>1. Recall the technique of describing data by graph.</li> <li>2. Describe the data with averages , mean, median and mode.</li> <li>3. Explain variance , standard deviation .</li> </ol>	<b>Graphical Presentation:</b> Frequency distributions, Describing data with Graphs, Describing data with Averages Mode Median Mean, Describing variability Variance, Standard deviation, etc. Normal Distributions	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> <li>2. Long answer type questions</li> <li>3. Assignments</li> </ol>
16	<ol style="list-style-type: none"> <li>1. Identify the role of computers in physiotherapy research.</li> <li>2. Recall the details of computer hardware and soft ware.</li> <li>3. Describe how to use the Windows, MS word, Power Point, etc., Simple statistical Analysis using SPSS software.,</li> <li>4. Tabulate the data in a computer.</li> <li>5. Analyze the tabulated data by using various software.</li> </ol>	<b>Role of Computers in Research:</b> Basic of computers – Hardware and Software,  Basic of Computer Applications – Windows, MS word, Power Point, etc., Simple statistical Analysis using SPSS software., Tabulation, Calculation of central tendency and dispersion, Using software packages, Analysis,	3	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Chart demonstrations</li> <li>3. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short answer type questions</li> <li>2. Long answer type questions</li> <li>3. Assignments</li> </ol>

		Presentation of data in diagrammatic & Graphic form, Artificial Intelligence and its application in physiotherapy  Robotics and its application in physiotherapy, Information technology and its application in physiotherapy.			
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**MPT 102P GENERAL BIOMECHANICS**

This involves application of topics in PAPER MPT 102 via demonstrations, field visits and case presentations.

**MPT 103P EXERCISE PHYSIOLOGY**

The student will undergo laboratory and on-field training in Exercise physiology.

**MPT 105 CLINICS & SEMINARS**

These will serve as a platform for students to integrate various components of patient management. Students will give presentations on topics provided to them.

Students will engage in clinical Physiotherapy Department to enhance their clinical skills and apply theoretical knowledge gained during teaching sessions.

**Second semester**

**MPT 201 ELECTROPHYSIOLOGY (50 hrs)**

**Course description:** This course aims to deliver scientifically based standards on electrodiagnostic testing. It prepares students through the process of selecting and administering electrodiagnostic tests and electrotherapeutic agents, using guidelines to interpret results, and drafting an physiotherapy interventional prescription that is in line with guidelines and parameters.

**Course Objective:** This course should deliver the concepts in electrophysiology and prepare students to test and prescribe suitable electrodiagnostic tests and electrotherapeutic agents to different groups of the population and conditions.

**Course Outcome:** On completion of the study of this course the student should be able to select and administer electrodiagnostic tests, interpret results, and drafting an therapeutic plan and prescribe electrotherapeutic agents. The student shall learn the knowledge and skills on various electrotherapeutic agents, advanced techniques and physiological responses of nerve and muscle in diagnostic and therapeutic electro-agents.



S.N O	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	<ol style="list-style-type: none"> <li>Define diagnostic electrophysiology.</li> <li>Recall the anatomy and physiology of Motor unit, action potential, excitability of nerve and muscle, neuromuscular junction.</li> <li>Describe the technique of nerve conduction velocity and electromyography.</li> <li>Interpret the neuromuscular function and biofeedback technique by EMG.</li> <li>Describe about nerve conduction studies</li> <li>Differentiate the normal nerve conduction studies from abnormal responses.</li> <li>Describe the Concepts of electro physiological studies in neuromuscular diseases as a diagnostic and therapeutic tool.</li> <li>Describe the Electrical stimulation and its effects on various systems.</li> <li>Identify the Evoked potentials – VEP, SSEP, MEP, BAEP</li> </ol>	<p>Diagnostic Electrophysiology</p> <ol style="list-style-type: none"> <li>Anatomy and Physiology of: Motor unit, action potential, excitability of nerve and muscle, neuromuscular junction.</li> <li>Technique of nerve conduction velocity and electromyography: Instrument, techniques, interpretations in terms of neuromuscular function and bio-feedback technique.</li> <li>Nerve conduction studies, normal/abnormal nerve conduction, its relevance in muscle function.</li> <li>Concepts of normal &amp; abnormal EMG studies.</li> <li>Late responses</li> <li>Concepts of electro physiological studies in neuromuscular diseases as a diagnostic and therapeutic tool.</li> <li>Electrical stimulation and its effects on various systems.</li> <li>Evoked potentials – VEP, SSEP, MEP, BAEP</li> </ol>	25	<ol style="list-style-type: none"> <li>Lecture</li> <li>Power point presentations</li> <li>Practical demonstrations</li> <li>Seminars and journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>Short answer questions</li> <li>Long answer questions</li> <li>Assignments.</li> <li>Practical exam</li> <li>Viva-voce.</li> </ol>
2	<ol style="list-style-type: none"> <li>Recall the physiological mechanism of action and therapeutic effects of various electrotherapy equipments.</li> <li>Critically analyze the effects of various electrotherapy modalities in terms of their dose, dosages, therapeutic effects, physiological effects, indications and contraindications.</li> </ol>	<p>Therapeutic Electrophysiology</p> <p>Physiological mechanism of action of electrotherapeutic modalities,</p> <p>Critical Analysis of Electrotherapeutic Modalities-</p> <ol style="list-style-type: none"> <li>IFT,</li> <li>TENS,</li> <li>MS,</li> <li>SWD,</li> <li>LASER,</li> <li>MWD,</li> <li>Pulsed SWD,</li> <li>Mechanical Traction etc.</li> </ol> <p>Plasticity in response to Electrical stimulation.</p>	25	<ol style="list-style-type: none"> <li>Lecture</li> <li>Power point presentations</li> <li>Practical demonstrations</li> <li>Seminars and journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>Short answer questions</li> <li>Long answer questions</li> <li>Assignments.</li> <li>Practical exam</li> <li>Viva-voce.</li> </ol>

## MPT 202 ADVANCES IN PHYSIOTHERAPY ASSESSMENT (50 hrs)

**Course Description:** The course covers topics related to physiotherapy assessment, clinical diagnostic procedure, interpretation, measurement in diagnosing different disorders with physical dysfunction perspective.

**Course Objective:** The course should equip the student to acquire in-depth knowledge in different physiotherapy assessment and measurement procedures in different disorders.

**Course outcome:** The student should be able to:

1. To perform a comprehensive and complete Physiotherapy assessment of various patients.
2. To document systematic, meaningful, accurate written records of the patient.

S.N O	Learning Objective	Content	No. of Hrs.	Teaching- learning Activities	Assessment Methods
1	<ol style="list-style-type: none"> <li>1. Evaluate the patient on the basis of functional assessment.</li> <li>2. Diagnose the condition and plan out the treatment</li> <li>3. List out the problems based on evaluation of the patient.</li> </ol>	<p><b>BASIC CONCEPT OF PHYSIOTHERAPY ASSESSMENT</b></p> <ul style="list-style-type: none"> <li>● Examination, Assessment, Evaluation, Functional assessment, Diagnosis, PT diagnosis</li> <li>● Prognosis, Intervention, Outcome measures, Reassessment</li> <li>● Physical impression or problem of list on the basis of ICF model.</li> <li>● POMR and SOAP Notes, Documentation</li> </ul>	7	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions.</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>
2	<ol style="list-style-type: none"> <li>1. Discuss and describe various diagnostic procedures.</li> <li>2. Interpret the outcomes of the diagnostic procedures</li> <li>3. Correlate diagnostic findings with physical findings</li> </ol>	<p><b>DIAGNOSTIC PROCEDURE AND INTERPRETATION</b></p> <ul style="list-style-type: none"> <li>● Laboratory study, Imaging study</li> <li>● Electrodiagnosis</li> <li>● Diagnostic findings and correlation with physical findings</li> </ul>	7	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions.</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>
3	<ol style="list-style-type: none"> <li>1. Discuss and describe various diagnostic procedures, examination. Of Upper extremity</li> <li>2. Interpret the outcomes of the diagnostic</li> </ol>	<p><b>EXAMINATION OF THE UPPER QUADRANT:</b></p> <ul style="list-style-type: none"> <li>● The subject will include musculoskeletal examination, involving the shoulder, elbow, wrist and hand (Traumatic Non traumatic)</li> <li>● Neurological and Functional Screening</li> <li>● Classes will include</li> </ul>	7	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions.</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>

	<p>procedures and examination of upper extremity</p> <p>3. Correlate diagnostic findings with physical findings of the upper extremity</p>	<p>lecture, laboratory and clinical experiences</p>			
4	<p>1. Discuss and describe various diagnostic procedures, examination. Of lower extremity</p> <p>2. Interpret the outcomes of the diagnostic procedures and examination of lower extremity</p> <p>3. Correlate diagnostic findings with physical findings of the lower extremity</p>	<p><b>EXAMINATION OF LOWER QUADRANT:</b></p> <ul style="list-style-type: none"> <li>The subject will include musculoskeletal examination, involving the Hip, Knee, ankle and foot (Traumatic Non traumatic)</li> <li>Neurological and Functional Screening</li> <li>Classes will include lecture, laboratory and clinical experiences</li> </ul>	7	<p>1. Lecture</p> <p>2. Discussion</p> <p>3. Tutorial</p> <p>4. Practical</p>	<p>1. Short essay questions.</p> <p>2. Long essay questions</p> <p>3. Practical examination</p> <p>4. Viva-voce</p> <p>5. Case presentation.</p>
5	<p>1. Discuss and describe various diagnostic procedures, examination. Of pelvis &amp; spine</p> <p>2. Interpret the outcomes of the diagnostic procedures and examination of pelvis&amp; spine</p> <p>3. Correlate diagnostic findings with physical findings of the pelvis &amp; spine</p>	<p><b>EXAMINATION OF PELVIC AND SPINE:</b></p> <ul style="list-style-type: none"> <li>The subject will include musculoskeletal examination, Cervical , Thoraco lumbar, Lumbo sacral and Pelvis (Traumatic Non traumatic)</li> <li>Neurological and Functional Screening</li> <li>Classes will include lecture, laboratory and clinical experiences</li> </ul>	7	<p>1. Lecture</p> <p>2. Discussion</p> <p>3. Tutorial</p> <p>4. Practical</p>	<p>1. Short essay questions.</p> <p>2. Long essay questions</p> <p>3. Practical examination</p> <p>4. Viva-voce</p> <p>5. Case presentation.</p>
6	<p>1. Describe the pain physiology.</p> <p>2. Explain about various</p>	<p><b>PAIN AND MUSCLE PERFORMANCE ASSESSMENT</b></p> <p>Pain Physiology, Theories of pain, Pain pathways, Causes of clinical</p>	7	<p>1. Lecture</p> <p>2. Discussion</p> <p>3. Tutorial</p> <p>4. Practical</p>	<p>1. Short essay questions.</p> <p>2. Long essay questions</p> <p>3. Practical</p>

	3. theories of pain Assess the muscle power, endurance and flexibility	pain, Sensitization, Plasticity, Pain analysis. Muscle Power, Muscle Strength and Muscle endurance assessment Muscle flexibility assessment			examination 4. Viva-voce 5. Case presentation.
6	1. Explain about various scales of measurement used in physiotherapy for evidence based practice. 2. Convert the scales into the vernacular languages. 3. Identify the validity and reliability of the scales.	<b>MEASUREMENT SCALES:</b> Scales used for Musculoskeletal Examination:VAS, NPRS, DASH, SPADI, WOMAC, Michigan Hand Outcome Questionnaire, Arthritis Impact Measure, NDI and others. Scales used for Neurological examination: ASWORTH, BERG BALANCE Scale, MMSE, SCI Scales, GCS and others. Infant neural developmental scale, MOPS, Multiple sclerosis impact scale, Berg balance, Ashworth, Barthel index, Glasgow coma, MMS and other reliable and valid neurological scale, Scales used in Parkinsonism, Vertigo, Illingworth scale, MAS, HAAD, GPS. Scales used for Cardio Physiotherapy examination: Scales used for Sports Injury assessment. Functional scale of upper limb and lower limb. Conversion of Scales in vernacular languages.	8	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.
7	1. Describe various models of Disability evaluation.	<b>DISABILITY EVALUATION.</b> Disablement and Enablement Concepts for Physiotherapy Research and Practice, Traditional model, Consequences of disease model, NAGI model. International Classification of Impairments Disability and Handicap Model (ICIDH – 1), International Classification of Functioning, Disability and Health (ICF / ICIDH - 2), ICF Coding, History and development of the ICF, The ICF and the WHO family of international classifications, Components of the ICF, ICF coding, Benefits of Using ICF	7	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.

**MPT 203 ADVANCES IN PHYSIOTHERAPY TECHNIQUES (50 hrs)**

**Course Description:**

The course covers topics on various school of thoughts of joint, muscle and neural tissue manual therapy techniques and physiotherapy intervention in various types of disorders. The course aims to provide a more functional and comprehensive approach based on physiotherapy techniques to manage a range of conditions. Emphasis will be made on clinical decision making and integrating manual therapy skills within the overall plan of care for the patient. Class will include lecture, laboratory and clinical

experiences.

**Course Objective:** The course should enable the student to acquire in-depth understanding and skill in managing various clinical conditions by using various types of physiotherapeutic and allied health techniques.

**Course Outcome:** The student should be able to compare & contrast the outcome of various physiotherapy approaches.

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	Describe the principles, therapeutic effects, indications, contraindications and dosimetry of Isometric, Isotonic, Isokinetic Concentric, Eccentric CKC, OKC Flexibility, ROM exercises Proprioceptive, Postural exercises	<p><b>Therapeutic Exercise</b> Principles Types of following exercises with reference to their therapeutic effects, indications and contraindications and the specific uses, Dosimetry in specific disorders and traumatic condition</p> <ul style="list-style-type: none"> <li>● Isometric, Isotonic, Isokinetic</li> <li>● Concentric, Eccentric</li> <li>● CKC, OKC</li> <li>● Flexibility, ROM exercises</li> </ul> <p>Proprioceptive, Postural exercises</p>	2	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> <li>5. Journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>
2	1. Describe the types, therapeutic effects, indications, contraindications, uses and dosimetry of various manual therapy techniques.	<p><b>Manual Therapy techniques</b> Principles Types of manual therapy with reference to their therapeutic effects, indications and contraindications and the specific uses, Dosimetry in specific disorders and traumatic condition</p>	3	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> <li>5. Journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>

3	<ol style="list-style-type: none"> <li>1. Define mobilization, manipulation.</li> <li>2. Describe various schools of thoughts of manual therapy</li> <li>3. Describe the principles, therapeutic effects, indications and contraindications of Maitland, Mulligan and McKenzie, Kaltenborn, Cyriax joint mobilization and manipulation techniques. Pilates-school of thought, Chiropractic school of thought, Osteopathic school of thought.</li> </ol>	<p><b>Manipulation and Mobilization Techniques</b> Principles of various schools of thought in manual therapy – Definition – Mobilization, Manipulation, indications, limitations, contraindications and precautions, applications of Mobilization technique to various joints. Principles of Maitland, Mulligan and McKenzie, Kaltenborn, Cyriax joint mobilization and manipulation techniques. Pilates-school of thought, Chiropractic school of thought, Osteopathic school of thought.</p>	2	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> <li>5. Journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>
4	<ol style="list-style-type: none"> <li>1. Describe and perform various soft tissue techniques.</li> <li>2. List out the therapeutic effects, indications and contraindications of various soft tissue techniques..</li> </ol>	<p><b>Soft tissue techniques</b> a) Butler b) Positional release c) MET d) Myofascial release</p>	2	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> <li>5. Journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>
5	<ol style="list-style-type: none"> <li>1. Describe the and perform stretching of various muscles.</li> </ol>	<p><b>Stretching</b> 1. Concept &amp; Types 2. Advantages &amp; disadvantages 3. Various techniques 4. Muscle specific technique</p>	2	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> <li>5. Journal</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions</li> <li>2. Long</li> </ol>

	2. Describe the principles, therapeutic effects, indications and contraindications of stretching..			presentations	essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.
6	1. Describe the role of robotics in physiotherapy	<b>Stretching</b> 1. Concept & Types 2. Advantages & disadvantages 3. Various techniques 4. Muscle specific technique	2	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.
7	1. Recall the techniques of soft tissue mobilization 2. Explain the principles of various techniques of soft tissue mobilization	<b>Soft Tissue Mobilization</b> 1) General overview of Soft Tissue Mobilization 2) Principles of various techniques of Soft tissue mobilization	2	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.
8	1. Apply the skills gained on taping techniques 2. Describe the technique of taping for various Orthopaedic, Neurologic, Cardiothoracic, Sports and Obs & Gynae Conditions	<b>Taping Techniques</b> Kinesio-taping and Rigid Taping techniques in Orthopaedic, Neurologic, Cardiothoracic, Sports and Obs & Gynae Conditions	2	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.

9	<ol style="list-style-type: none"> <li>1. Apply the technique of dry needling for various conditions</li> <li>2. Describe the physiological effects, indications and contraindications of dry needling.</li> </ol>	<p><b>Dry Needling: Concept,</b> Physiological action, indications &amp; contraindications, methods.</p>	2	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> <li>5. Journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>
10	<ol style="list-style-type: none"> <li>1. Apply the technique of cupping for various conditions</li> <li>2. Describe the physiological effects, indications and contraindications of cupping therapy</li> </ol>	<p><b>Cupping Therapy: Concept,</b> Physiological action, indications &amp; contraindications, methods</p>	2	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> <li>5. Journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>
11	<ol style="list-style-type: none"> <li>1. Describe the therapeutic effects, physiological effects, indications, contraindications, precautions and dosimetry of various therapeutic modalities.</li> </ol>	<p><b>TREATMENT INSTRUMENTS</b></p> <p><b>Therapeutic modalities</b> Dosimetry in specific disorders and traumatic condition</p> <ul style="list-style-type: none"> <li>● Superficial and deep heat therapy</li> <li>● Low high and medium frequency currents</li> <li>● SWD and MWD</li> <li>● Cryotherapy</li> <li>● Pneumatic compression devices</li> <li>● LASER</li> <li>● Shockwave Therapy</li> <li>● Recent advancement in therapeutic modalities</li> </ul>	9	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> <li>5. Journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>



12	<ol style="list-style-type: none"> <li>1. Describe the philosophy , techniques, indications, contraindications of muscle activation.</li> <li>2. Exemplify the techniques on women fitness regimes.</li> </ol>	<p><b>Special and integrated techniques use in physiotherapy</b> Philosophy, Techniques, Indications, Contraindications, Selection, Muscle activation and special considerations in the following types of Women Fitness regimes</p>	2	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> <li>5. Journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions .</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>
13	<ol style="list-style-type: none"> <li>1. Describe how to prescribe, indications, contraindications and effects of indoor and outdoor aerobics.</li> </ol>	<p><b>Aerobic fitness exercises:</b> Outdoor aerobic exercises-walking, cycling, running, jogging, biking, hiking, skiing, nordic walking, skateboarding. Indoor Aerobic exercises- swimming, dancing, water aerobics, dance aerobics, low-impact dance classes, climbing steps, kick-boxing, cardio workout machines (treadmill, elliptical, bike, rower, x-c skiing, stair-climber), skipping rope.</p>	2	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> <li>5. Journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions .</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>
14	<ol style="list-style-type: none"> <li>1. Describe about circuit training.</li> <li>2. Describe how to train the patient for these exercises.</li> </ol>	<p><b>Circuit training:</b> Upper-body-Push ups, Bench dips, Back extensions, Medicine ball chest pass, Bench press, Inclined press up. Core &amp; trunk-Sit ups (lower abdominal), Stomach crunch (upper abdominal), Back extension chest raise. Lower-body- Squat jumps, Compass jumps, Astride jumps, Step ups, Shuttle runs, Hopping shuttles, Bench squats. Total-body-Burpees, Treadmills, Squat thrusts, Skipping, Jogging.</p>	2	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Practical</li> <li>5. Journal presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions .</li> <li>2. Long essay questions</li> <li>3. Practical examination</li> <li>4. Viva-voce</li> <li>5. Case presentation.</li> </ol>

15	1. Describe various techniques of strength training.	<b>Strength training:</b> Bodyweight exercises/Calisthenics, Equipment based strength training- barbells, dumbbells, weight machines and other exercise machines, weighted clothing, resistance bands, gymnastics apparatus, Swiss balls, indian clubs, pneumatic exercise equipment, hydraulic exercise equipment.	2	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.
16	1. Describe how to perform, indications and contraindications of various core exercises	<b>Core exercises:</b> Sit Ups With Towel, Hip Lifts, Flutter Kicks, Scissor Kicks, V-sits, V-ups, Leg Lifts, Hollow Body Hold, Hip Dips, Toe Touches, Plank, Side-plank, Deadbug, Vertical Leg Crunch, Plank Rolls, Reverse Crunch, Glute Bridge March, Inchworm, Bird Dog, Cat Camel, Bear Crawl.	2	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.
17	1. Describe how to train the patient for various swiss ball activities.	<b>Swiss Ball/Stability Ball/Gym Ball exercises:</b> swiss ball hamstring curl, swiss ball single leg glute rais, swiss ball hamstring floor tap, swiss ball squat, swiss ball preacher curl, swiss ball chest press locomotive, swiss ball seated shoulder press, swiss ball push up, swiss ball pike, swiss ball v-up, swiss ball ab rollout, swiss ball bicycles, swiss ball stir the pot, swiss ball mountain climber, swiss ball sprinter, swiss ball crunch, swiss ball reverse crunch, swiss ball lateral crunch, swiss ball crunch twist, swiss ball pec squeeze, swiss ball incline plank, swiss ball side plank, swiss ball russian twist, swiss ball jackknife, swiss ball scorpions.	2	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.

18	1. Describe the technique of balance training of patients.	<b>Balance training:</b> Stand on one leg, Lateral thigh lift, Single-leg squat, Catch and hold, Tree Pose, High Lunge, Warrior III, Balancing half moon, Tightrope walk, Rock the boat, Flamingo stand, Heel-toe walking.	2	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.
19	1. Describe the yogaasana for prenatal and postnatal women. 2. Describe the physiological effects of meditation. 3. Apply the skills gained on various meditation techniques over the patients.	<b>Yoga:</b> Safe Yoga Asanas for prenatal and post natal period, pranayamas, precautions while performing yoga. <b>Meditation:</b> Physiological effect of meditation, Technique of Meditation, Different types of meditation.	2	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.
20	1. Describe use of physiotherapeutic stretching techniques in prenatal and post natal period, indications, contraindications.	<b>Flexibility and stretching:</b> use of physiotherapeutic stretching techniques in prenatal and post natal period, indications, contraindications	2	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.

21	1. Describe how to train the patients for Pilates exercises.	<b>Pilates:</b> Breathing, Shoulder bridge preparation, Leg lifts, Toe taps, Single leg stretch, One leg circle, Side bend preparation, Sidekick, Side leg lifts, Swan dive, Swimming preparation, Leg pull front prep (hovers), Leg pull front prep (hovers), Crisscross, Plank	2	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.
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FOR MPT (ORTHO) STUDENTS

**MPT 2040**

**ORTHOPAEDIC DISORDERS: MEDICAL & SURGICAL MANAGEMENT (50hrs)**

**Course Description:** The course covers topics related to etiology, clinical manifestation, medical and surgical management of orthopaedic disorders & trauma.

**Course Objective:** The course should enable the student to develop a detailed concept about different orthopaedic disorders and its medical and surgical management.

**Course Outcome:** The Students will be able to use this information in planning and tailoring effective, specific, safe Physiotherapy treatment programmes

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	1. Identify the clinical features of Metabolic Disorders of the Bone and Joints. Infections of the Bone and Joints. Congenital Disorders of the Bone and Joints. Inflammatory Disorders of the Bone and Joints. Myopathies. Neurological Disorders. Bone and Joint Tumours. Complex Regional Pain Syndromes  2. Describe the principles of diagnosis and management of	<b>GENERAL ORTHOPAEDICS</b> <ul style="list-style-type: none"> <li>● Metabolic Disorders of the Bone and Joints.</li> <li>● Infections of the Bone and Joints.</li> <li>● Congenital Disorders of the Bone and Joints.</li> <li>● Inflammatory Disorders of the Bone and Joints.</li> <li>● Myopathies.</li> <li>● Neurological Disorders.</li> <li>● Bone and Joint Tumours.</li> <li>● Complex Regional Pain Syndromes.</li> </ul>	15	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.

	Metabolic Disorders of the Bone and Joints. Infections of the Bone and Joints. Congenital Disorders of the Bone and Joints. Inflammatory Disorders of the Bone and Joints. Myopathies. Neurological Disorders. Bone and Joint Tumours. Complex Regional Pain Syndromes				
2	1. Describe the etiology, clinical features, investigations and management of various disorders of upper limb, lower limb and spine.	<b>REGIONAL ORTHOPAEDICS</b> <ul style="list-style-type: none"> <li>● Disorders of Upper Limb</li> <li>● Disorders of Lower Limb</li> <li>● Disorders of the Spine</li> </ul>	15	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.
3	1. Describe the etiology, clinical features, investigations and management of various traumatic conditions of upper limb, lower limb and spine.	<b>TRAUMATOLOGY</b> <ul style="list-style-type: none"> <li>● Trauma of the Upper Limb</li> <li>● Trauma of the Lower Limb</li> <li>● Trauma of the Spine</li> <li>● Trauma of the Peripheral Nerves</li> </ul>	10	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.
4	1. Describe the etiology, clinical features, diagnosis and management of various myopathies.  2. Identify the levels of amputation	<b>MISCELLANEOUS:</b> <ul style="list-style-type: none"> <li>● Myopathies</li> <li>● Amputation</li> </ul>	10	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Practical examination 4. Viva-voce 5. Case presentation.

	3. Discuss the management of stump.				
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**FOR M.PT NEURO STUDENTS**

**MPT 204N – NEUROLOGICAL DISORDERS: MEDICAL & SURGICAL MANAGEMENT (50 hrs)**

**Course Description:** The course covers topics related to etiology, clinical manifestation, medical and surgical management of neurological diseases, disorders.

**Course Objective:** The course should enable the student to develop a detailed concept about different neurological diseases & disorders and its medical and surgical management.

**Course Outcome:** The Students will be able to use this information in planning and tailoring effective, specific, safe Physiotherapy treatment programmes

S.NO	Learning Objective	Content	No. of Hrs	Teaching-learning Activities	Assessment Methods
1	1. Recall the skills on history taking for a neurological case.  2. Identify the various neurological symptoms and their causes like dizziness, paresthesias, pain and headache.	APPROACH TO SIGNS AND SYMPTOMS a) The neurologic history and examination b) Dizziness c) Paresthesias d) Pain, Headache	2	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.
2	1. Describe the clinical features, etiology, incidence, prevalence, diagnosis and management of various Neurovascular disorders.	NEUROVASCULAR DISORDERS a) Stroke, Stroke in pregnancy (including pre-eclampsia and eclampsia) b) Arteriovenous malformations c) Spinal cord disease and stroke	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.
3	1. Describe the clinical features, etiology, incidence, prevalence, diagnosis and	Dementia and amnesic disorders a. Alzheimer’s disease, Overview of dementia (epidemiology, differential diagnosis, diagnostic testing), b. Multi-infarct dementia and Subcortical dementias	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.

	management of various dementia and amnesic disorders..	c. Transient global amnesia and other amnesic disorders			
4	1. Describe the clinical features, etiology, incidence, prevalence, diagnosis and management of various movement disorders.	Movement disorders a) Parkinson's disease, Parkinson plus syndromes b) Dystonia, Choroathetosis, Tremors and Hemibalissmus c) Ataxia d) Multiple sclerosis and other demyelinating diseases	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.
5	1. Describe the causes, clinical features, diagnostic interventions and management of traumatic head injuries and spinal cord injuries.	Trauma a) Traumatic brain injury. b) Subdural and epidural hematomas. c) Traumatic spinal cord injury.	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.
6	1. Describe the etiology, types, clinical manifestations of epilepsy.  2. Define status epilepticus. And describe its management.	Epilepsy a) Etiology, types and manifestations. b) Status epilepticus and treatment.	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.
7	1. Describe the clinical features, etiology, incidence, prevalence, diagnosis and management of various infectious disorders of nervous system	Infectious disorders a) Meningitis b) Encephalitis b) Brain abscess d) Transverse myelitis e) TBM f) Poliomyelitis & PPRP	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.

8	1. Describe the clinical features, etiology, incidence, prevalence, diagnosis and management of various neuromuscular disorders	Neuromuscular disorders a) Myasthenia gravis b) Motor neuron diseases	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.
9	1. Describe the clinical features, etiology, incidence, prevalence, diagnosis and management of various peripheral neuropathies and cranial neuropathies.	Peripheral neuropathies & Cranial neuropathies a) Guillain-Barre syndrome & other acute neuropathies b) Diabetic neuropathies c) Mononeuritis Multiplex d) Mononeuropathies and plexopathies (Brachial and Lumbar) e) Bell's palsy and other involvements of facial nerve	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.
10	1. Describe the clinical features, etiology, incidence, prevalence, diagnosis and management of various developmental disorders.	Developmental disorders a) Spina bifida b) Chiari malformation c) Hydrocephalus d) CP e) Autistic disorders; ADHD.	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.
11	1. Describe the clinical features, etiology, incidence, prevalence, diagnosis and management of various Hereditary disorders Disorders of Peripheral Nerves Disorders of Muscle Cerebellar disorders Disorders of the Vestibular system Extrapyramidal disorders	Miscellaneous disorders Hereditary disorders Disorders of Peripheral Nerves Disorders of Muscle Cerebellar disorders Disorders of the Vestibular system Extrapyramidal disorders	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.



	the Vestibular system Extrapyramidal disorders				
12	Describe the Surgical Management indications, contra-indications for surgery, precautions after Surgery	<b>NEURO SURGERY</b> Surgical Management indications, contra-indications for surgery, precautions after Surgery. Also included: <ul style="list-style-type: none"> <li>● General Principles of neurosurgery</li> <li>● Tumours</li> <li>● Intracranial abscess</li> <li>● Hydrocephalus</li> <li>● Stereotactic surgery</li> <li>● Cerebral Malformations</li> <li>● Operations on the discs-cervical Or Lumbar disc operation</li> <li>● Malformation of the spine and spinal cord</li> <li>● Lumbar and cisternal puncture technique and complications</li> <li>● Peripheral nerve surgery</li> <li>● ICU Management of the neurologically impaired patients</li> </ul>	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.
13	Describe the basics of various imaging and laboratory techniques used in Neurological conditions 2. Interpret the various imaging and laboratory findings.	<b>RADIOLOGY</b> Basics of Imaging and laboratory Techniques in Neurological conditions <ol style="list-style-type: none"> <li>1. Lumbar puncture</li> <li>2. EMG and NCV</li> <li>3. Electroencephalography</li> <li>4. C.T, MRI and PET</li> <li>5. Evoked Potentials</li> <li>6. Nerve and muscle biopsy</li> </ol>	4	1. Lecture 2. Discussion 3. Tutorial 4. Practical 5. Journal presentations	1. Short essay questions. 2. Long essay questions 3. Case presentation.

## PRACTICALS

### MPT 201P ELECTROPHYSIOLOGY

The student will undergo laboratory training in Electrophysiology .

### MPT 202P ADVANCES IN PHYSIOTHERAPY ASSESSMENT

This involves application of topics in PAPER MPT 202 via demonstrations, field visits and case presentations.

### MPT 203P ADVANCES IN PHYSIOTHERAPY TECHNIQUES

This involves application of topics in PAPER MPT 203 via demonstrations, field visits and case presentations.

### MPT 205 CLINICS & SEMINARS

These will serve as a platform for students to integrate various components of patient management. Students will give presentations on topics provided to them.

Students will engage in clinical Physiotherapy Department to enhance their clinical skills and apply theoretical knowledge gained during teaching sessions.

### THIRD SEMESTER

#### MPT 301 GENERAL PRINCIPLES OF PEDAGOGY (50HRS)

**Course Description:** The course covers topics related to education theory.

**Course Objective:** On completion of the course the student should be able to understand the dynamics of teaching & learning.

**Course Outcome:** The student should be able to demonstrate adequate knowledge in pedagogy and educational philosophy.

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	<ol style="list-style-type: none"> <li>1. Describe the Philosophy of education and emerging issues in Education meaning, functions and aims of education.</li> <li>2. Differentiate between formal and non-formal education.</li> <li>3. list out the agencies of education</li> <li>4. Describe the current issues and trends in higher education.</li> <li>5. Describe the personality of teachers in respect to education for people with disabilities.</li> <li>6. Describe about Idealism Naturalism, Pragmatism and their implications for Education.</li> </ol>	<p>Philosophy of education and emerging issues in Education meaning, functions and aims of education.</p> <ul style="list-style-type: none"> <li>● Formal, informal and non- formal education.</li> <li>● Agencies of education</li> <li>● Current issues and trends in higher education</li> <li>● Issues of quality in higher education, autonomy and accountability, privatization, professional development of teachers, education of persons with disabilities.</li> <li>● Need for education philosophy</li> <li>● Some major philosophies, Idealism Naturalism, Pragmatism and their implications for Education.</li> </ul>	20	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions.</li> <li>2. Long essay questions</li> <li>3. Assignments</li> </ol>

2	<ol style="list-style-type: none"> <li>1. Define educational psychology and give its scope.</li> <li>2. identify the relation between teaching and learning.</li> <li>3. Enumerate the theories of learning</li> <li>4. Explain the dynamics of behavior.</li> <li>5. Explain the individual differences in learning.</li> </ol>	<ol style="list-style-type: none"> <li>2. Concept of teaching and learning <ul style="list-style-type: none"> <li>• Meaning scope of educational psychology</li> <li>• Meaning and relationship between teaching and learning</li> <li>• Learning theories</li> <li>• Dynamics of behavior</li> <li>• Individual differences</li> </ul> </li> </ol>	15	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions.</li> <li>2. Long essay questions</li> <li>3. Assignments</li> </ol>
3	<ol style="list-style-type: none"> <li>1. Define curriculum.</li> <li>2. Explain the basis of curriculum formulation development</li> <li>3. List out the factors affecting curriculum development.</li> <li>4. Describe the process of evaluation of curriculum.</li> </ol>	<p>Curriculum</p> <ul style="list-style-type: none"> <li>• Meaning and concept</li> <li>• Basis of curriculum formulation development</li> <li>• Framing objectives for curriculum</li> <li>• Process of curriculum development</li> <li>• Factors affecting curriculum development</li> <li>• Evaluation of curriculum</li> </ul>	15	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions.</li> <li>2. Long essay questions</li> <li>3. Assignments</li> </ol>

**MPT 302 CLINIC MANAGEMENT, ADMINISTRATION (50 hrs)**

**Course Description:** The course covers topics related to physiotherapy clinic and department management.

**Course Objective:** On completion of the course the student should be able to understand the basic issues of physiotherapy management & administration

**Course Outcome:** The student should be able to demonstrate adequate knowledge and skill in physiotherapy clinic and department management. This course deals with issues of management to assist the practitioner in efficiently addressing issues related to the organization and administration of a Physiotherapy Department following are the topics to be included but limited to:

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	<ol style="list-style-type: none"> <li>1. Define management.</li> <li>2. Evaluate management through scientific methods.</li> <li>3. Explain the management process.</li> </ol>	<p><b>MANAGEMENT</b></p> <ol style="list-style-type: none"> <li>1. Functions of management,</li> <li>2. Evaluation of management through scientific management theory, Classical theory System approach Contingency approach</li> <li>3. Management process</li> </ol>	30	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Discussion</li> <li>3. Tutorial</li> </ol>	<ol style="list-style-type: none"> <li>1. Short essay questions.</li> <li>2. Long essay questions</li> <li>3. Assignments</li> </ol>

	<p>4. Describe the process of recruitment. Performance appraisal and job satisfaction.</p> <p>5. List out the quantitative methods of management.</p> <p>6. list out the principles of marketing.</p> <p>7. Describe briefly about quality management.</p>	<p>Planning, Organization, direction, controlling (decision making)</p> <p>4. Introduction to personnel management Staffing recruitment selection, performance appraisal, collective bargaining, discipline, job satisfaction.</p> <p>5. Quantitative methods of management .Relevance of statistical and/or techniques in management.</p> <p>6. Marketing :Market segmentation, marketing research production planning pricing, channels of distribution, promotion, consumer behavior, licenser.</p> <p>7. Total quality management Basis of quality management – acid for quality control quality assurance program in hospitals, medical audit, and international quality system.</p>			
2	<p>1. Describe the functions of a hospital</p> <p>2. List out various departments in a hospital.</p> <p>3. Describe various roles of physiotherapist as Director, Supervisor, assistant</p>	<p><b>ADMINISTRATION</b></p> <p>1. <b>Hospital as an organization</b> Functions and types of hospitals selected clinical supportive ancillary services of a hospital, emergency department, nursing, physical medicine &amp; rehabilitation, clinical supportive and ancillary services of a hospital, emergency department nursing physical medicine &amp; rehabilitation, clinical laboratory, pharmacy and dietary dept.</p> <p>2. Roles of Physiotherapist, Physiotherapy Director, Physiotherapy supervisor, Physiotherapy assistant, Physiotherapy aide, Occupational Therapist, Home health side, Volunteer. Directed care and referral relationship and confidentially.</p>	20	<p>1. Lecture</p> <p>2. Discussion</p> <p>3. Tutorial</p>	<p>1. Short essay questions.</p> <p>2. Long essay questions</p> <p>3. Assignments</p>

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**MPT 303 ELECTIVE -2**

**FOR MPT (ORTHO) STUDENTS –ORTHOPAEDIC BIOMECHANICS (50 hrs)**

**Course Description:** the course covers the understanding of Biomechanics and kinesiology of body movement related to orthopedic conditions.

**Course Objective:** the course should enable the student to acquire in depth knowledge in understanding the biomechanics and kinesiology related to orthopedic conditions.

**Course Outcome:** On completion of the study of this Course the student should be able to identify and apply the principles of biomechanics and kinesiology in understanding patho-mechanics of various orthopedic conditions. To use these principles in managing various orthopedic conditions.

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	<ol style="list-style-type: none"> <li>Describe in detail about the bone mechanics</li> <li>Define stress, strain, modulus, rigidity, elasticity and poisson's effect.</li> <li>Describe various sense organs and explain about the electrical and chemical events in sensory receptors.</li> <li>Describe the sensory pathways for touch, temperature, pain, proprioception.</li> <li>Explain the process of control of tone and posture.</li> <li>Describe the motor pathways including pyramidal and extra pyramidal</li> </ol>	<p><b>BONE MECHANICS</b></p> <p>Structure &amp; composition of bone Stress Strain Modulus of rigidity &amp; modulus of elasticity Poisson's effect Strain energy Static &amp; cyclic load behaviors Load Mechanical properties of trabecular bone Mechanical properties of cortical bone Bone remodeling Response of the bone to aging &amp; exercise &amp; immobilization Mechanisms to prevent fracture present in bone Fracture prediction Behavior of bone under load. Use of Universal testing machine to study bone behaviour under load. Clinical applications Failure criteria.</p>	20	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Demonstrations through charts and models</li> <li>Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>Assignments</li> <li>Short answer type questions</li> <li>Long answer type questions</li> </ol>

	<p>pathways</p> <p>7. Describe the transaction and hemisection of spinal cord.</p> <p>8. Explain the features and actions of autonomic nervous system.</p> <p>9. Describe the functions of hypothalamus</p> <p>10. Enumerate the higher functions of nervous system and their control.</p> <p>11. Explain the various special senses along with their pathways and applied aspects.</p>				
2	<p>1. Describe the joint design.</p> <p>2. Classify joints with examples in human body.</p> <p>3. Describe the arthrokinematics and osteokinematics of various joints</p> <p>4. Explain the forces distribution over joints and maintenance of equilibrium</p> <p>5. Describe articular cartilage mechanics</p> <p>6. Apply the knowledge gained on joint mechanics over clinical conditions</p>	<p>JOINT MECHANICS :</p> <p>Joint Design Joint categories Joint functions Arthrokinematics Osteokinematics Kinematics chains Joint forces, equilibrium &amp; distribution of these forces Joint stability &amp; its mechanism Articular Cartilage Mechanics. Testing of articular cartilage under load. Clinical applications</p>	10	<p>1. Lecture</p> <p>2. Tutorial</p> <p>3. Demonstrations through charts and models</p> <p>4. Power point presentations</p>	<p>1. Assignments</p> <p>2. Short answer type questions</p> <p>3. Long answer type questions</p>
3	<p>1. Describe the load sharing</p>	APPLICATION OF BONE	10	<p>1. Lecture</p> <p>2. Tutorial</p>	<p>1. Assignments</p> <p>2. Short answer</p>

	<p>and load transfer after amputation.</p> <ol style="list-style-type: none"> <li>2. Explain the criteria for prosthetic designs</li> <li>3. Analyze biomechanically the metallic implants</li> <li>4. Explain how compensatory mechanisms act in weight bearing joints in degenerative changes.</li> </ol>	<p>AND JOINT MECHANICS</p> <p>Load sharing &amp; load transfer after Amputation. Prosthetic design criteria Bio-mechanical analysis of implants internal fixations Degenerative changes in weight bearing joints &amp; compensatory actions.</p>		<ol style="list-style-type: none"> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>3. Long answer type questions</li> </ol>
4	<ol style="list-style-type: none"> <li>1. Analyze biomechanically various orthopedic conditions.</li> </ol>	<p>BIOMECHANICAL ANALYSIS IN VARIOUS ORTHOPAEDIC CONDITIONS</p> <p>Osteoarthritis, Rheumatoid Arthritis, Post polio residual paralysis, low back pain, knee injuries, foot disorders, hand injuries, tendon transfers, amputation, Changes in gait following various orthopaedic surgeries/ diseases/ disorders etc.</p>	10	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and models</li> <li>4. Power point presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer type questions</li> </ol>

#### FOR MPT (NEURO) STUDENTS –

#### MPT 303N- NEURO BIOMECHANICS (50 hrs)

**Course Description:** the course covers the understanding of Biomechanics and kinesiology of body movement related to neurological conditions.

**Course Objective:** the course should enable the student to acquire in depth knowledge in understanding the biomechanics and kinesiology related to neurological conditions.

**Course Outcome:** On completion of the study of this Course the student should be able to identify and apply the principles of biomechanics and kinesiology in understanding patho-mechanics of various neurological conditions. To use these principles in managing various neurological conditions.

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	1. Recall the knowledge gained on the Neuroanatomy	<p>REVIEW OF NEURO ANATOMY</p> <p>Introduction to Nervous system and its subdivisions,</p>	5	<ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Tutorial</li> <li>3. Demonstrations through charts and</li> </ol>	<ol style="list-style-type: none"> <li>1. Assignments</li> <li>2. Short answer type questions</li> <li>3. Long answer</li> </ol>

		Anatomy of the Neuron, Anatomy of the Reflex Arc, structure of spinal cord with a detailed study of ascending and descending Tracts, Anatomy of cerebrum and Brodman's classification, Blood Supply of the Brain, Anatomy of Cerebellum, Brainstem and Basal Ganglia, Limbic system		models 4. Power point presentations	type questions
2	1. Recall the knowledge gained on the Neurophysiology	REVIEW OF NEUROPHYSIOLOGY Synapse and its transmission, sensory Receptors and Their Basic Mechanisms of Action, Physiology of Muscle tone and study of spasticity, Physiology of Muscle contraction, Neural Plasticity, Neural transmitters and their functions	5	1. Lecture 2. Tutorial 3. Demonstrations through charts and models 4. Power point presentations	1. Assignments 2. Short answer type questions 3. Long answer type questions
3	1. Analyze biomechanically various Neurological disorders. 2. Describe the biomechanics of stair climbing, fall, trip and stumble. 3. Describe the gait changes after neurological disorders.	BIOMECHANICAL ANALYSIS IN VARIOUS NEUROLOGICAL CONDITIONS 1. Biomechanical analysis in Stroke 2. Biomechanical analysis in Cerebral Palsy 3. Biomechanical analysis in Parkinsonism 4. Biomechanical analysis in Spinal Cord Injury 5. Biomechanical analysis in Post-Polio Residual Paralysis 6. Biomechanical analysis in Head Injury 7. Biomechanical analysis in Motor Neuron Disease 8. Biomechanical analysis in Muscular Dystrophies	40	1. Lecture 2. Tutorial 3. Demonstrations through charts and models 4. Power point presentations	1. Assignments 2. Short answer type questions 3. Long answer type questions



		<ul style="list-style-type: none"> <li>9. Biomechanical analysis in other Pathological gaits</li> <li>10. Biomechanics of Stair climbing</li> <li>11. Biomechanics of Fall, Trip, Stumble.</li> <li>12. Changes in gait following various neuro surgeries/ diseases/ disorders</li> </ul>			
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**FOR MPT (ORTHO) STUDENTS**

**MPT 3040- ADVANCES IN ORTHOPAEDIC PHYSIOTHERAPY ASSESSMENT & MANAGEMENT-I (50 hrs)**

**Course Description:**

The course covers topics on various school of thoughts of assessment and management in various types of orthopaedic disease and disorders. Emphasis will be made on clinical decision making and integrating skills within the overall plan of care for the patient. Class will include lecture, laboratory and clinical experiences.

**Course Objective:** The course should enable the student to acquire in-depth understanding and skill in managing musculoskeletal conditions by using various type of physiotherapeutic techniques in orthopaedic disease and disorders.

**Course Outcome:** The student should be able to compare & contrast the outcome of various physiotherapy approaches in orthopaedic disease and disorders.

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	<ul style="list-style-type: none"> <li>1. Assess the patient for various upper quadrant orthopedic conditions.</li> <li>2. Prepare SOAP notes</li> <li>3. List out the problems of the patient with upper quadrant orthopedic conditions.</li> <li>4. Plan out the</li> </ul>	<p><b>ASSESSMENT &amp; MANAGEMENT OF REGIONAL ORTHOPEDIC CONDITIONS OF UPPER QUADRANT:</b></p> <p>Treatment of the regional and traumatic, post surgical Orthopedics conditions of Upper quadrant. musculoskeletal conditions involving the shoulder complex, elbow, wrist and hand.</p>	10	<ul style="list-style-type: none"> <li>1. Lectures</li> <li>2. Tutorials</li> <li>3. Demonstrations</li> <li>4. Journal presentations</li> <li>5. Case discussions</li> </ul>	<ul style="list-style-type: none"> <li>1. Short answer questions</li> <li>2. Long answer questions</li> <li>3. Assignments</li> <li>4. Practical exam</li> <li>5. Viva-voce</li> </ul>

	treatment protocol for various upper quadrant orthopedic conditions.				
2	<p>1. Assess the patient for various lower quadrant orthopedic conditions.</p> <p>2. Prepare SOAP notes</p> <p>3. List out the problems of the patient with lower quadrant orthopedic conditions.</p> <p>4. Plan out the treatment protocol for various lower quadrant orthopedic conditions.</p>	<p><b>ASSESSMENT &amp; MANAGEMENT OF REGIONAL ORTHOPEDIC CONDITIONS OF LOWER QUADRANT:</b></p> <p>Treatment of the regional orthopedic and traumatic post surgical conditions of Lower quadrant musculoskeletal conditions involving the hip, knee, ankle and foot.</p>	10	<p>1. Lectures</p> <p>2. Tutorials</p> <p>3. Demonstrations</p> <p>4. Journal presentations</p> <p>5. Case discussions</p>	<p>1. Short answer questions</p> <p>2. Long answer questions</p> <p>3. Assignments</p> <p>4. Practical exam</p> <p>5. Viva -voce</p>
3	<p>1. Assess the patient for various cervical and thoracic spine orthopedic conditions.</p> <p>2. Prepare SOAP notes</p> <p>3. List out the problems of the patient with cervical and thoracic spine orthopedic conditions.</p> <p>4. Plan out the treatment protocol for various cervical and thoracic spine orthopedic conditions.</p>	<p><b>ASSESSMENT &amp; MANAGEMENT OF REGIONAL ORTHOPEDIC CONDITIONS OF CERVICAL AND THORACIC SPINE:</b></p> <p>Treatment of the regional and traumatic post surgical orthopedic conditions of cervical and thoracic spine musculoskeletal conditions involving the cervical spine, the thoracic spine and rib cage.</p>	10	<p>1. Lectures</p> <p>2. Tutorials</p> <p>3. Demonstrations</p> <p>4. Journal presentations</p> <p>5. Case discussions</p>	<p>1. Short answer questions</p> <p>2. Long answer questions</p> <p>3. Assignments</p> <p>4. Practical exam</p> <p>5. Viva -voce</p>
4	<p>1. Assess the patient for various lumbopelvic orthopedic conditions.</p> <p>2. Prepare SOAP notes</p>	<p><b>ASSESSMENT &amp; MANAGEMENT OF REGIONAL ORTHOPEDIC CONDITIONS OF LUMBOPELVIC SPINE:</b></p>	10	<p>1. Lectures</p> <p>2. Tutorials</p> <p>3. Demonstrations</p> <p>4. Journal presentations</p> <p>5. Case discussions</p>	<p>1. Short answer questions</p> <p>2. Long answer questions</p> <p>3. Practical exam</p> <p>4. Viva -voce</p>

	<p>3. List out the problems of the patient with lumbopelvic orthopedic conditions.</p> <p>4. Plan out the treatment protocol for various lumbopelvic orthopedic conditions.</p>	Treatment of the regional and traumatic, post surgical orthopedic conditions of lumbopelvic spine musculoskeletal conditions involving the lumbopelvic complex, including the hip joint.			
5	<p>1. Assess the patient for various Rheumatological orthopedic conditions.</p> <p>2. Prepare SOAP notes</p> <p>3. List out the problems of the patient with Rheumatological orthopedic conditions.</p> <p>4. Plan out the treatment protocol for various Rheumatological orthopedic conditions.</p>	<p><b>ASSESSMENT &amp; MANAGEMENT OF RHEUMATOLOGICAL CASES</b></p> <p>RA, AS, Gout, Psoriatic arthropathy, Spondyloarthropathy, Undifferentiated spondyloarthropathy. Nerve injury of Upper limb and lower limb. Entrapment neuropathy of upper and lower limb.</p>	10	<p>1. Lectures</p> <p>2. Tutorials</p> <p>3. Demonstrations</p> <p>4. Journal presentations</p> <p>5. Case discussions</p>	<p>1. Short answer questions</p> <p>2. Long answer questions</p> <p>3. Practical exam</p> <p>4. Viva -voce</p>

**FOR MPT(NEURO) STUDENTS**

**MPT 304N- ADVANCES IN NEUROLOGIC PHYSIOTHERAPY ASSESSMENT & MANAGEMENT-I (50 hrs)**

**Course Description:** The course covers topics on various school of thoughts of neurological therapy techniques and physiotherapy intervention in various types of neurologic disease disorders. The course aims to provide a more functional and comprehensive approach based on manual therapy to manage a range of neurological conditions.

**Course Objective:** The course should enable the student to acquire in-depth understanding and skill in managing neurological conditions by using Neurological therapy and various type of physiotherapeutic techniques.

**Course Outcome:** The student should be able to compare & contrast the outcome of various neurological therapy approaches.

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	<p>1. List out the foundations for clinical practice in Neurological conditions.</p> <p>2. Describe the limbic system</p>	<p><b>THEORETICAL FOUNDATIONS FOR CLINICAL PRACTICE</b></p> <p>Foundations for Clinical Practice, Movement Development across the LifeSpan, The Limbic</p>	3	<p>1. Lectures</p> <p>2. Tutorials</p> <p>3. Demonstrations</p> <p>4. Journal presentations</p> <p>5. Case discussions</p>	<p>1. Short answer questions</p> <p>2. Long answer questions</p> <p>3. Assignments</p> <p>4. Practical exam</p> <p>5. Viva -voce</p>

	<p>influence on motor control.</p> <p>3. Describe the Psycho-social aspects of Adaptation and Adjustment during various phases of neurological Disability, Interventions for Neurological Disabilities, Documentation of Neurological conditions</p>	<p>System: Influence over Motor Control and Learning, Psycho-social aspects of Adaptation and Adjustment during various phases of neurological Disability, Interventions for Neurological Disabilities, Documentation of Neurological conditions.</p>			
2	<p>1. Describe the issues and theories of motor learning and recovery of functions.</p> <p>2. Explain the physiology of Neuroplasticity.</p>	<p><b>THEORETICAL FRAMEWORK:</b></p> <p>Motor Control: Issues and Theories, Motor Learning and Recovery of Function, Physiology of Motor Control, Neuroplasticity: Physiological Basis of Motor Learning and Recovery of function, Constraints on Motor Control, A Conceptual Framework for Clinical Practice.</p>	5	<p>1. Lectures</p> <p>2. Tutorials</p> <p>3. Demonstrations</p> <p>4. Journal presentations</p> <p>5. Case discussions</p>	<p>1. Short answer questions</p> <p>2. Long answer questions</p> <p>3. Assignments</p> <p>4. Practical exam</p> <p>5. Viva -voce</p>
3	<p>1. Recall the development of normal postural control.</p> <p>2. Explain the effects of various factors influencing postural control.</p> <p>3. Assess the patient with abnormal postural control.</p> <p>4. Plan out the</p>	<p><b>POSTURAL CONTROL:</b></p> <p>Normal Postural Control, Development of Postural Control, Aging and Postural Control Abnormal Postural Control, Clinical Management of the Patient with a Postural Control Disorder</p>	5	<p>1. Lectures</p> <p>2. Tutorials</p> <p>3. Demonstrations</p> <p>4. Journal presentations</p> <p>5. Case discussions</p>	<p>1. Short answer questions</p> <p>2. Long answer questions</p> <p>3. Assignments</p> <p>4. Practical exam</p> <p>5. Viva -voce</p>

	management of a patient with postural control disorder				
4	<p>1. Describe the physiology behind normal mobility.</p> <p>2. demonstrate the knowledge gained on development of mobility and locomotor disorders</p> <p>3. Demonstrate the skills gained in management of a patient with mobility disorders</p>	<p><b>MOBILITY FUNCTION:</b></p> <p>Control of Normal Mobility, A Life Span Perspective of Mobility (a) Development of locomotion (b) Locomotion in Older Adults, Abnormal Mobility, Clinical Management of the Patient with a Mobility Disorder.</p>	5	<p>1. Lectures</p> <p>2. Tutorials</p> <p>3. Demonstrations</p> <p>4. Journal presentations</p> <p>5. Case discussions</p>	<p>1. Short answer questions</p> <p>2. Long answer questions</p> <p>3. Assignments</p> <p>4. Practical exam</p> <p>5. Viva -voce</p>
5	<p>1. Identify normal reach, grasp and manipulation.</p> <p>2. Explain about early development of reach, grasp and manipulation.</p> <p>3. Describe the management of the Patient With Reach, Grasp, and Manipulation Disorders</p>	<p><b>REACH, GRASP, AND MANIPULATION:</b></p> <p>Normal Reach, Grasp, and Manipulation, Reach, Grasp, and Manipulation: Changes Across the Life Span a. Early development of reach grasp and manipulation b. Changes in older adults, Abnormal Reach, Grasp, and Manipulation, Clinical Management of the Patient With Reach, Grasp, and Manipulation Disorders</p>	5	<p>1. Lectures</p> <p>2. Tutorials</p> <p>3. Demonstrations</p> <p>4. Journal presentations</p> <p>5. Case discussions</p>	<p>1. Short answer questions</p> <p>2. Long answer questions</p> <p>3. Assignments</p> <p>4. Practical exam</p> <p>5. Viva -voce</p>
6	<p>1. Describe the principles of fundamental therapeutic approaches.</p> <p>2. Demonstrate the skills gained on fundamental therapeutic approaches.</p>	<p><b>FUNDAMENTALS OF THERAPEUTIC APPROACHES</b></p> <p>1. Proprioceptive Neuromuscular Facilitation (PNF)</p> <p>2. Neurodevelopmental therapy (NDT)</p> <p>3. Sensory integration Technique (SIT)</p> <p>4. Motor Relearning Program (MRP)</p> <p>5. Constraint Induced Movement Therapy (CIMT)</p> <p>6. Roods approach</p>	5	<p>1. Lectures</p> <p>2. Tutorials</p> <p>3. Demonstrations</p> <p>4. Journal presentations</p> <p>5. Case discussions</p>	<p>1. Short answer questions</p> <p>2. Long answer questions</p> <p>3. Assignments</p> <p>4. Practical exam</p> <p>5. Viva -voce</p>

		7. Vojta Therapy 8. Mental imagery technique 8. Neural mobilization 9. Sexual rehabilitation techniques in Neurological disorders and disability.			
7	1. Describe the role of assistive technology in neurological disorders.	<b>ASSISTIVE TECHNOLOGY IN NEUROLOGICAL POPULATION:</b> Body weight support treadmill training (BWST), Biofeedback, Assistive Technology in neurological population with special focus on 1. Spinal cord injury. 2. Motor Neuron diseases. 3. Muscular dystrophies. 4. Hemiplegia. 5. Traumatic brain injury	4	1. Lectures 2. Tutorials 3. Demonstrations 4. Journal presentations 5. Case discussions	1. Short answer questions 2. Long answer questions 3. Assignments 4. Practical exam 5. Viva -voce
8	1. Describe the special settings and considerations for Neurological and Neurosurgical ICU.  2. Screen the Neurodevelopment of a child.	<b>SPECIAL SETTINGS AND SPECIAL CONSIDERATIONS</b> Neurological and neurosurgical ICUs, Early Intervention Services, Assistive Technology, The Special Care Nursery, Neuro – Development of a child, Neurodevelopmental Screening	4	1. Lectures 2. Tutorials 3. Demonstrations 4. Journal presentations 5. Case discussions	1. Short answer questions 2. Long answer questions 3. Assignments 4. Practical exam 5. Viva -voce
9	Assess the hand functions of the patient with neurological disorders with various equipments.	<b>HAND ASSESSMENT AND REHABILITATION:</b> condition wise assessment tools for hand like jamar dynamometer, pinch dynamometer, monofilament, assessment of power grip and pinch grip. Assessment and management of hand conditions	4	1. Lectures 2. Tutorials 3. Demonstrations 4. Journal presentations 5. Case discussions	1. Short answer questions 2. Long answer questions 3. Assignments 4. Practical exam 5. Viva -voce
10	1. Describe various traditional approaches in	<b>ALTERNATIVE AND COMPLEMENTARY THERAPIES:</b>	5	1. Lectures 2. Tutorials 3. Demonstrations	1. Short answer questions 2. Long answer

	management of patients with neurological disorders.	Beyond traditional approaches to intervention in neurological diseases, syndromes and disorders- Tai Chi, Cranio sacral therapy, Electroacupuncture, Biofeedback		4. Journal presentations 5. Case discussions	3. Assignments 4. Practical exam 5. Viva -voce
11	Develop a standardized protocol for management of Neurological and vestibular disorders	<b>Physiotherapy Management Of Neurological Disorders &amp; Vestibular Disorders.</b>	5	1. Lectures 2. Tutorials 3. Demonstrations 4. Journal presentations 5. Case discussions	1. Short answer questions 2. Long answer questions 3. Assignments 4. Practical exam 5. Viva -voce

### PRACTICALS

#### MPT 303P ELECTIVE- 3 - ADVANCES IN PHYSIOTHERAPY ASSESSMENT & MANAGEMENT – ORTHO/ NEURO/ CARDIO/ SPORTS/ OBS & GYN.

This involves application of topics in PAPER MPT 303 via demonstrations, field visits and case presentations.

#### MPT 304P DISSERTATION

As part of the requirement for the Master's degree the student is required to undertake a research study under the guidance of a guide. Oral Presentations at Conferences/Seminars. Students must publish/present at least one research paper at a National Level Conference/ International Level Journal. The student needs to publish at least one research paper in any indexed journal.

#### MPT 305 CLINICS & SEMINARS

These will serve as a platform for students to integrate various components of patient management. Students will give presentations on topics provided to them.

Students will engage in clinical Physiotherapy Department to enhance their clinical skills and apply theoretical knowledge gained during teaching sessions.

### FOURTH SEMESTER

#### MPT401- TEACHING METHODOLOGY IN PHYSIOTHERAPY (50 Hrs)

**Course Description:** The course covers topics related to teaching methodology and practical of teaching in physiotherapy.

**Course Objective:** On completion of the course the student should be able to understand the dynamics of teaching & learning, plan effective teaching sessions in physiotherapy.

**Course Outcome:** The student should be able to demonstrate adequate knowledge and skill in physiotherapy teaching and learn ways to effectively teach to physiotherapy undergraduate students.

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	1. Describe Various methods of teaching	Method and techniques of teaching i. Lecture, Demonstration ii. Discussion, Seminar, Assignment, Project and Case Study.	10	1. Lecture 2. Tutorial 3. Presentations 4. Group discussion 5. Mock classroom teaching	1. Short essay questions 2. long Essay questions 3. Assignments
2	1. Describe about the verbs used in Bloom's taxonomy. 2. Describe about learning objectives 3. Demonstrate the skills gained in lesson planning	Planning for Teaching a. Bloom's Taxonomy of Instructional Objectives, Writing Instructional Objectives in Behavioural terms, Unit Planning and Lesson Planning.	10	1. Lecture 2. Tutorial 3. Presentations 4. Group discussion 5. Mock classroom teaching	1. Short essay questions 2. long Essay questions 3. Assignments
3	1. Describe about various teaching aids used in classroom teaching 2. Describe the principles of selection, preparation and use of AV aids.	Teaching Aids a. Types of teaching aides b. Principles of selection, preparation, and Use of Audio – Visual aids.	10	1. Lecture 2. Tutorial 3. Presentations 4. Group discussion 5. Mock classroom teaching	1. Short essay questions 2. long Essay questions 3. Assignments
4	1. Explain the meaning of measurement and evaluation. 2. Demonstrate the skills gained on construction of a test and its analysis. 3. Differentiate between continuous and comprehensive evaluation	Measurement and evaluation a. Nature of Educational Measurement : Meaning, Process, Types of tests. b. Construction of an achievement test and analysis standardized test. c. Introduction of some standardized tools, important tests of intelligence, Aptitude, Personality. d. Continuous and Comprehensive Evaluation.	10	1. Lecture 2. Tutorial 3. Presentations 4. Group discussion 5. Mock classroom teaching	1. Short essay questions 2. long Essay questions 3. Assignments
5	1. Describe the principles of guidance and counseling. 2. Explain various methods for faculty	Guidance and Counseling a. Meaning and Concepts of Guidance and Counseling b. Principles c. Guidance and Counseling services of students and	5	1. Lecture 2. Tutorial 3. Presentations 4. Group discussion 5. Mock teaching	1. Short essay questions 2. long Essay questions 3. Assignments



	development and development of personnel for Physiotherapy services.	faculty members d. Faculty development and development of personnel for P.T. Services			
6	1. Explain how to bring awareness in common people about health and diseases.  2. Demonstrate the skills gained on patient education.  3. Explain the principles of education to the practioners.	Clinical Education a. Awareness and Guidance to the Common people about Health and Diseases and Available professional Services b. Patient Education c. Education of the Practitioners	5	1. Lecture 2. Tutorial 3. Presentations 4. Group discussion 5. Mock teaching	1. Short essay questions 2. long Essay questions 3. Assignments

#### MPT402- ETHICAL LEGAL AND PROFESSIONAL ISSUES (50 Hrs)

**Course Description:** The course covers topics related to physiotherapy ethics, medico-legal laws, professional laws and issues in India and abroad.

**Course Objective:** On completion of the course the student should be able to understand the basic issues of practice as an informed professional on Legal & ethical issues.

**Course Outcome:** The student should be able to demonstrate adequate knowledge of ethics, medico-legal laws, professional laws and issues in India and abroad and demonstrate ethical behaviors in practice.

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	1. Define Physiotherapy.  2. Describe the development of Physiotherapy profession  3. Differentiate the physiotherapy from medical mode of practice.  4. Describe the preferred physiotherapy practices.  5. Explain the health care model in Physiotherapy.	PHYSIOTHERAPY PROFESSION Physical therapy: Definition and development, Historical perspective, Physiotherapy verses medical model of practice, Various categories for movement dysfunction, Preferred practice patterns in Physiotherapy, Today's health care model	12	1. Lecture 2. Tutorial 3. Presentations 4. Group discussion	1. Short essay questions 2. long Essay questions 3. Assignments

2	<p>1. Describe various ethical considerations in physiotherapy practice.</p> <p>2. Explain Value-Laden situation in rehabilitation.</p> <p>3. Understand and implement the rules of professional conduct.</p>	<p><b>ETHICAL CONSIDERATIONS</b>  Values and valuing, The values of patient as a factor in care, The influence of the values on the primary goal of patient care, Value – Laden situation in rehabilitation, Code of ethics, Rules of professional conduct, Code of ethics: A wider knowledge of ethics relating to current social and medical policy in the provisions of health care.</p>	12	<p>1. Lecture  2. Tutorial  3. Presentations  4. Group discussion</p>	<p>1. Short essay questions  2. long Essay questions  3. Assignments</p>
3	<p>1. Describe the acts and statutes related to physiotherapy.</p> <p>2. Explain the legal responsibilities of the physiotherapist.</p> <p>3. Explain the role of physiotherapist in liability and obligations in the case of medical legal action.</p> <p>4. Describe the entire documentation process in physiotherapy.</p>	<p><b>LEGAL CONSIDERTAIONS</b>  Acts &amp; Statutes relating to Physiotherapy. Legal responsibility of Physiotherapists for their actions in the professional context and understanding the physiotherapist liability and obligations in the case of medical legal action. Guideline for Physiotherapy Documentation- Introduction, Documenting the examination, Documenting the evaluation, Documenting the plan of care, Application of documentation skills. Examples of Medico-legal cases related to physiotherapy.</p>	13	<p>1. Lecture  2. Tutorial  3. Presentations  4. Group discussion</p>	<p>1. Short essay questions  2. long Essay questions  3. Assignments</p>
4	<p>1. Describe the functions of the relevant professional associations of physiotherapy.</p> <p>2. Describe the role of international health agencies such as the world health organizations.</p> <p>3. Debate on the current issues on physiotherapy</p>	<p><b>PROFESSIONAL ISSUES</b>  Functions of the relevant professional associations, education body and trade union. The role of the international health agencies such as the world health organizations. Standards of practice for physical therapies. Current issues</p>	13	<p>1. Lecture  2. Tutorial  3. Presentations  4. Group discussion</p>	<p>1. Short essay questions  2. long Essay questions  3. Assignments</p>

**MPT 4030- ADVANCES IN ORTHOPAEDIC PHYSIOTHERAPY ASSESSMENT & MANAGEMENT-II (50 Hrs)**

**Course Description:** A study of the relationship of human behavior and ergonomics as applied to workplace safety.

**Course Objectives:** Upon completion of the course the student will be able to: 1. Explain the psychology of human behavior as it relates to workplace safety. 2. Identify ergonomic hazards; recommend appropriate controls. 3. Relate the human and workplace factors which contribute to ergonomic hazards.

**Course Outcomes:** Explain the psychology of human behavior as it relates to workplace safety; identify ergonomic hazards; recommend appropriate controls, and relate the human and workplace factors which contribute to ergonomic hazards.

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	1. Define Ergonomics. 2. Explain the human factors that influence the ergonomics. 3. Apply the skills and knowledge gained on Ergonomics	<b>INTRODUCTION</b> 1. What is Ergonomics? Human Factors and Ergonomics 3. Application of Ergonomics 4. Brief History of Ergonomics 5. Effectiveness and Cost-Effectiveness of Ergonomics	6	1. Lecture 2. Tutorial 3. Presentations 4. Group discussion 5. Case presentation 6. Journal presentation	1. Short essay questions 2. long Essay questions 3. Assignments 4. Practical exam 5. Viva-voce.
2	1. Recall the anatomical knowledge gained on various musculoskeletal system factors. 2. Apply the skills gained on ergonomics on the various musculoskeletal disorders.	<b>SYSTEMS OF THE HUMAN BODY</b> 1. Anatomy of Spine and Pelvis Related to Posture 2. Biomechanics 3. Muscular System 4. Ergonomics and the Musculoskeletal System 5. Costs of Back Injuries	6	1. Lecture 2. Tutorial 3. Presentations 4. Group discussion 5. Case presentation 6. Journal presentation	1. Short essay questions 2. long Essay questions 3. Assignments 4. Practical exam 5. Viva-voce.
3	1. Describe various muscle work. 2. Explain the physiology behind muscle fatigue. 3. List out the types of muscle contractions	<b>MUSCULAR WORK AND NERVOUS CONTROL OF MOVEMENTS</b> 1. Types of Muscular Work 2. Muscular Fatigue 3. Types of Muscle Contractions 4. Measurement of Muscular Strength 5. End of chapter exercises	6	1. Lecture 2. Tutorial 3. Presentations 4. Group discussion 5. Case presentation 6. Journal presentation	1. Short essay questions 2. long Essay questions 3. Assignments 4. Practical exam 5. Viva-voce.
4	1. Define Anthropometry. 2. Describe the principles of universal design. 3. Apply the skills gained in measuring Anthropometric Measurements	<b>ANTHROPOMETRY</b> 1. What is Anthropometry? 2. Terminology 3. Myth of the Average Human 4. Principles of Universal Design 5. Anthropometric Measurements	8	1. Lecture 2. Tutorial 3. Presentations 4. Group discussion 5. Case presentation 6. Journal presentation	1. Short essay questions 2. long Essay questions 3. Assignments 4. Practical exam 5. Viva-voce.

5	<ol style="list-style-type: none"> <li>Analyze the work design.</li> <li>Explain the designing for hand use.</li> <li>List out the various injuries and disorders at work place.</li> <li>Design Ergonomic Program for WMSD's</li> </ol>	<b>DESIGN OF WORKPLACES AND HAND TOOLS</b> <ol style="list-style-type: none"> <li>Work Design Analysis</li> <li>Designing for Hand Use</li> <li>Types of Injuries and Disorders</li> </ol> <b>WORK-RELATED MUSCULOSKELETAL DISORDERS</b> <ol style="list-style-type: none"> <li>Types of Work-Related MSD's</li> <li>Task-related Factors</li> <li>Personal Risk Factors</li> <li>Impact on Industry</li> <li>Ergonomic Program for WMSD's</li> </ol>	6	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Presentations</li> <li>Group discussion</li> <li>Case presentation</li> <li>Journal presentation</li> </ol>	<ol style="list-style-type: none"> <li>Short essay questions</li> <li>long Essay questions</li> <li>Assignments</li> <li>Practical exam</li> <li>Viva-voce.</li> </ol>
6	<ol style="list-style-type: none"> <li>Define heavy work.</li> <li>Explain how to lift weights</li> <li>Describe the risks and categories of heavy work.</li> <li>List out NIOSH lifting guidelines.</li> <li>Explain about work related stress.</li> </ol>	<b>HEAVY WORK AND EVALUATING PHYSICAL WORKLOADS AND LIFTING</b> <ol style="list-style-type: none"> <li>Heavy Work</li> <li>Manual Material Handling &amp; Lifting</li> <li>Classification and Risks</li> </ol> <b>NIOSH Lifting Guidelines</b> <ol style="list-style-type: none"> <li>Job Demands and Workplace Stress</li> <li>Mental Fatigue/Shift work Fatigue</li> </ol>	6	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Presentations</li> <li>Group discussion</li> <li>Case presentation</li> <li>Journal presentation</li> </ol>	<ol style="list-style-type: none"> <li>Short essay questions</li> <li>long Essay questions</li> <li>Assignments</li> <li>Practical exam</li> <li>Viva-voce.</li> </ol>
7	<ol style="list-style-type: none"> <li>Analyze mental work load.</li> <li>Explain about primary and secondary task performance.</li> <li>List out the types of controls and displays.</li> </ol>	<b>INFORMATION ERGONOMICS, CONTROLS, AND DISPLAYS</b> <ol style="list-style-type: none"> <li>Mental Workload Measurement</li> <li>Primary and Secondary Task Performance</li> <li>Controls and Displays (Types)</li> <li>Control Layout and Design</li> </ol>	6	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Presentations</li> <li>Group discussion</li> <li>Case presentation</li> <li>Journal presentation</li> </ol>	<ol style="list-style-type: none"> <li>Short essay questions</li> <li>long Essay questions</li> <li>Assignments</li> <li>Practical exam</li> <li>Viva-voce.</li> </ol>
8	<ol style="list-style-type: none"> <li>Describe the management and employee involvement in implementation of ergonomic program at a work place.</li> <li>Identify the work related problems at a work place.</li> <li>Take necessary precautions to prevent hazards and control.</li> <li>Explain how to train the work force for hazard prevention and control.</li> </ol>	<b>HOW TO IMPLEMENT AN ERGONOMIC PROGRAM</b> <ol style="list-style-type: none"> <li>Management and Employee Involvement</li> <li>Setting Up the Ergonomics Program</li> <li>Problem Identification</li> <li>Hazard Prevention and Control</li> <li>Training</li> </ol>	6	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Presentations</li> <li>Group discussion</li> <li>Case presentation</li> <li>Journal presentation</li> </ol>	<ol style="list-style-type: none"> <li>Short essay questions</li> <li>long Essay questions</li> <li>Assignments</li> <li>Practical exam</li> <li>Viva-voce.</li> </ol>

**MPT 403N- ADVANCES IN NEURO PHYSIOTHERAPY ASSESSMENT & MANAGEMENT-II (50 Hrs)**

**Course Description:** The course covers topics on various schools of thoughts of neurological therapy techniques and physiotherapy intervention in various types of pediatric neurologic diseases and mental health disorders. The course aims to provide a more functional and comprehensive approach to manage a range of neurological conditions.

**Course Objective:** The course should enable the student to acquire in-depth understanding and skill in managing pediatric neurological diseases and mental health conditions by using various type of physiotherapeutic techniques and alternatives.

**Course Outcome:** The student should be able to compare & contrast the outcome of various neurological therapy approaches in pediatric and mental health conditions.

S.NO	Learning Objective	Content	No. of Hours	Teaching-learning Activities	Assessment Methods
1	<ol style="list-style-type: none"> <li>Describe the normal growth and development of the child.</li> <li>Screen the child for early intervention of neurological problems.</li> <li>Assess for balance and fitness of a child.</li> <li>Enumerate various general scales of evaluation of pediatric conditions.</li> <li>Explain the process of disability assessment of various pediatric neurological pathologies.</li> <li>Identify the recent advances in the assessment and scales in pediatrics</li> </ol>	<p><b>NEURO PHYSIOTHERAPY IN PAEDIATRICS</b></p> <p>Assessment and evaluation</p> <ol style="list-style-type: none"> <li>Growth and Development of the child</li> <li>Examination and evaluation:</li> <li>Neurodevelopmental screening (Pediatric neurological assessment, including reflex assessment and Milestones )</li> <li>Assessment and evaluation of balance and fitness</li> <li>General Scales and assessment of pediatric conditions: APGAR score, functional reach test, Gross motor function measure, Infant developmental screening scale, Infant motor screen, leg length discrepancy tape measure, neonatal oral motor assessment scale, six minutes walk test, oral motor feeding rating scale, timed up and go, visual analog scale.</li> <li>Pediatric scale specific assessment of various neurological conditions.</li> <li>Disability evaluation of the child</li> <li>Recent advances in the assessment and scales in pediatrics</li> </ol>	20	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Presentations</li> <li>Group discussion</li> <li>Case presentation</li> <li>Journal presentation</li> </ol>	<ol style="list-style-type: none"> <li>Short essay questions</li> <li>long Essay questions</li> <li>Assignments</li> <li>Practical exam</li> <li>Viva-voce.</li> </ol>
2	<ol style="list-style-type: none"> <li>Describe the etiology, pathophysiology, clinical features,</li> </ol>	<p><b>PEDIATRIC CONDITIONS</b></p> <p>Congenital and acquired neurological problems in children and its medical and surgical</p>	20	<ol style="list-style-type: none"> <li>Lecture</li> <li>Tutorial</li> <li>Presentations</li> <li>Group</li> </ol>	<ol style="list-style-type: none"> <li>Short essay questions</li> <li>long Essay questions</li> <li>Assignments</li> <li>Practical exam</li> </ol>

	investigations and Physiotherapy assessment and management of various Pediatric conditions	management: Cerebral palsy, Spina bifida, Muscular dystrophy, Head injury, Brachial plexus injury, Developmental disorders, Peripheral nerve injury, Mental Retardation, Poliomyelitis, Brain tumors, Spinal cord injury, Hydrocephalus, Neuromuscular disorders, Encephalitis, Meningitis, Guillain-Barré syndrome (GBS) , Acute hemiplegia of childhood, Ataxia, Developmental coordination Disorder		discussion 5. Case presentation 6. Journal presentation	5. Viva-voce.
3	<p>1. Explain about Recommendation for mental health care of the World Health Organisation adapted by the IOPTMH</p> <p>2. Describe the scope of physiotherapy in mental health.</p> <p>3. Describe and apply the various approaches in the management of Mental health.</p>	<p><b>MENTAL HEALTH AND PHYSIOTHERAPY</b></p> <p>Recommendation for mental health care of the World Health Organisation adapted by the IOPTMH</p> <p>The scope of physiotherapy in mental health.</p> <p>Physical health related approach.</p> <p>Psychosocial related and psychophysiological approaches.</p> <p>Psychotherapeutic oriented physiotherapy approach.</p> <p>The content of physiotherapy in mental health.</p> <p>Psychomotor therapy with children and adolescents.</p> <p>Norwegian psychomotor physiotherapy.</p> <p>Relaxation therapy and mind body related approaches.</p> <p>Psychomotor physiotherapy for severe mental health problems.</p> <p>Basic body awareness methodology.</p> <p>Psychosomatic physiotherapy approach.</p> <p>Exercise and physical activity in mental health.</p> <p>Physiotherapy with the elderly in old age psychiatry</p>	10	<p>1. Lecture</p> <p>2. Tutorial</p> <p>3. Presentations</p> <p>4. Group discussion</p> <p>5. Case presentation</p> <p>6. Journal presentation</p>	<p>1. Short essay questions</p> <p>2. long Essay questions</p> <p>3. Assignments</p> <p>4. Practical exam</p> <p>5. Viva-voce.</p>

## PRACTICALS

**MPT 403P ELECTIVE- 4 - ADVANCES IN PHYSIOTHERAPY ASSESSMENT & MANAGEMENT – II (ORTHO/ NEURO/ CARDIO/ SPORTS/ OBS & GYN).**

This involves application of topics in PAPER MPT 303 via demonstrations, field visits and case presentations.

**MPT 404P DISSERTATION**

As part of the requirement for the Master's degree the student is required to undertake a research study under the guidance of a guide. Oral Presentations at Conferences/Seminars. Students must publish/present at least one research paper at a National Level Conference/ International Level Journal. The student needs to publish at least one research paper in any indexed journal.

**MPT 405P CLINICS & SEMINARS**

These will serve as a platform for students to integrate various components of patient management. Students will give presentations on topics provided to them.

Students will engage in clinical Physiotherapy Department to enhance their clinical skills and apply theoretical knowledge gained during teaching sessions

### **LIST OF RECOMMENDED BOOKS- M PT**

<b>Exercise Physiology and Electrophysiology</b>		
S.N	Author	Title
1	Katch	Exercise Physiology
2	Skinner,J.S	Exercise Testing & Exercise Prescription For Special Cases
3	Khandpur, R.S	Hand book of Biomedical Instrumentation
4	Glaser,Roland	Biophysics
5	Prentice William	Therapeutic Modalities in Rehabilitation
6	Robinson,A.J	Clinical Electrophysiology
7	Gersh,M.R	Electrotherapy in Rehabilitation
8	Robertson Val	Electrotherapy Explained principle and practice
9	Nelson ,Roger M	Clinical Electrotherapy
10	Kimura, Jun	Electrodiagnosis in Diseases of Nerve & Muscle: Principles & Practice
11	Stokes, Maria	Physical Management in Neurological Rehabilitation
12	Michlovitz,S.L	Modalities for Therapeutic Intervention



<b>Biomechanics</b>		
S.N	Author	Title
1	Ackland Timolthy	Applied Anatomy and Biomechanics in Sports
2	Bell, Frank	Principles of Mechanics & Biomechanics
3	Raj Kumar, R.V	Biomechanics the Nucleus of Physiotherapy
4	Koley, S	Textbook of Biomechanics
5	Nordin, Margareta	Basic Biomechanics of the Musculoskeletal system
6	Griffith's IW	Principles of Biomechanics & Motion Analysis
7	Hall, Susan J	Basic Biomechanics
8	Smith, Laura K.	Brunnstrom's Clinical Kinesiology
9	Thompson, D.L	Hands Heal Communication, Documentation
10	Kapandji, I.A	The Physiology of The Joint Vol-1
11	Kapandji, I.A	The Physiology of The Joint Vol-2
12	Kapandji, I.A	The Physiology of The Joint Vol-3
13	Norkin C.C	Joint Structure and Function
14	Mathur, D.S	Elements of Properties of Matter
15	Mow, V.C	Basic Orthopaedic Biomechanics
16	Lennox Hoyte, Margot Damaser	Biomechanics of the Pelvic Floor
<b>Management Administration and Ethics</b>		
S.N	Author	Title
1	Bhardwaj, Pradeep	Opportunities in Hospital & Health care Administration
2	Gupta, Jaydeep Das	Hospital Administration & Management A Comprehensive Guide

3	Francis,C.M	Hospital Administration
4	George,M.A	The Hospital Administration
5	Gupta,Shakti	Hospital store Management
6	Gupta,Shakti	Hospital and Health care Administration
7	Joshi,D.C	Hospital Administration
8	Kulkarni,G.R	Financial Management for Hospital Administration
9	Sakharkar,B.M	Principles of Hospital Administration & Planning
10	Jand,SS	Sphy The Beginning Ignite Yourself for Success
11	Joshi,S.K	Quality Management in Hospitals
12	Wolpert, Lewis	Health care Administration
13	Khan,S.M	Sana's Guidelines for Hospital infection control
14	Tabish,Syed	Hospital and Nurshing Homes Planning Organisations and Management
15	Dave,P.K	Emergency Medical Services & Disaster Management
16	Golwalia, Aspi F.	Medical Informatic 20/20
17	Bhuiyan, S.P	The Art of Teaching Medical Students
18	Franil, P	People Manipulation A Positive Pppracah
19	Mogli,G.D	Medical records organization and Management
20	Raja, Kavitha	Ethical Issues : Perspectives for the Physiotherapists

21	Levoy,BOB	222 Secrets of Hiring Managing and Retaining Great Employees in Healthcare Practices
22	Thompson,D.L	Hands Heal Communication,Documentation
23	Dimiond,Bridgit	Legal Aspects of Physiotherapy
24	Wolfe, Brent D	Team Building Activities for the Digital Age
25	Francis,C.M	Medical Ethics
26	Wood, David	Communication for Doctors
27	Gupta,Shakti	Modern trend in Planning and Designing of Hospitals
<b>Research Methodology, Biostatistics, Evidence Based Practice</b>		
1	Kothari, C.R.	Research Methodology Methods and Techniques
2	Singh, Sunita	Synopsis of Biostatistics
3	Prasad,S	Elements of Biostatistics
4	Pitney W.A	Qualitative Research in Physical Activity
5	Jewell,D.V	Guide to Evidence Based Physical Therapists Practice
6	Herbert,Rob	Practical Evidence Based Physiotherapy
7	Bhandri,Mohit	Clinical Research made Easy
8	Verma, B.L	Biostatistics
9	Campbell,M.J	Medical statistics
<b>Pedagogy &amp; Teaching Methodology</b>		
S.N	Author	Title

1	Ram,C.S	Pedagogy Physiotherapy Education
2	Grechus, Marilyn	Innovative Tools for Health Education
3	Mohanty S	Golden 1000 MCQ for Physiotherapy Vol-1

### **Electrotherapy**

S.N	Author	Title
1	Khandpur, R.S	Hand book of Biomedical Instrumentation
2	Glaser,Roland	Biophysics
3	Prentice William	Therapeutic Modalities in Rehabilitation
4	Robinson,A.J	Clinical Electrophysiology
5	Gersh,M.R	Electrotherapy in Rehabilitation
6	Robertson Val	Electrotherapy Explained principle and practice
7	Nelson ,Roger M	Clinical Electrotherapy
8	Kimura, Jun	Electrodiagnosis in Diseases of Nerve & Muscle: Principles & Practice
9	Stokes, Maria	Physical Management in Neurological Rehabilitation
10	Michlovitz,S.L	Modalities for Therapeutic Intervention

### **List of Recommended Books for MPT (ORTHOPAEDICS)**

S.N	Author	Title
1	Brotzman,S. Brent	Clinical Orthopaedic Rehabilitation
2	Mckee,PAT	Orthotics in rehabilitation
3	Kotwal,Orakash	Text book of Orthopaedics
4	Maitland,Geoff	Maitland's Vertebral Manipulation
5	Lett, Ann	Reflex zone therapy for health

6	Dixon,M.W	Myofascial Massage
7	Edmond,Susan J	Joint Mobilization Manipulation
8	Ebnezar,John	Essential of orthopaedics for physiotherapists
9	Magee,D.J	Orthopedic physical assessment
10	Dutton,Mark	Orthopaedic Examination Evaluation
11	Joshi,Jayant	Essentials Of Orthopaedics
12	Weinsrein,S.L	Turek's Orthopaedic principles
13	Hoppenfeld,S	Orthopaedic Neurology
14	Golyakovsky V	Operative Manual of Ilizarov Technique
15	Natarajan, Mayil Vahanan	Textbook of Orthopaedics & Traumatology
16	Jiri Dvorak	Manual medicine Therapy
17	Tidswell	Cash's T.B of Orthopaedic Physiotherapy
18	Fortunato, N	Plastic and reconstructive surgery
19	Kulkarni,G.S	Recent Advanced Orthopaedics 2
20	Chaitow,Leon	Muscle Energy Techniques
21	Moore,Keith L	Clinical Oriented Anatomy
22	Donatelli,R.A	Orthopaedic Physical Therapy
23	Downie,P.A	Cash's text book of orthopaedics and rheumatology for physiotherapists
24	Chaitow,Leon	Positional Release Techniques
25	Duthie,R.B	Mercer's Orthopaedic Surgery
26	Ebnezar,John	Step by Step Injection techniques in orthopaedics
27	Starkey Chand	Examination of Orthopedic and Athletic Injuries

28	Wright,John M	Review Questions in orthopaedics
29	Singh, Parminder J	100 Cases in Orthopaedics and Rheumatology
30	Imhof, H	Direct Diagnosis in Radiology Spinal Imaging
31	Boyling,J.D	Grieve's Modern Manual Therapy
32	Culloch,J.M	Macnab's Backache
33	Demeter,S.L	Disability Evaluation
34	Hamblen,David L	Adams's Outline of Fractures
35	Kelly,M.J	Orthopedic Therapy of the Shoulder
36	Donatelli,R.A	Physical Therapy of the Shoulder
37	Kitchen,Sheila	Electrotherapy Evidence Based
38	Aggarwal,A.L	Clinical practice of acupuncture
39	Hopwood Val	Acupuncture in Physiotherapy
40	Jull	Segmental Stabilization of Spine

**List of Recommended Books MPT (Neurology)**

S.N	Author	Title
1	Adler S.S	PNF in Practice an Illustrated
2	Campbell,M	Rehabilitation for Traumatic Brain Injury
3	Bobath,Berta	Adult Hemiplegia
4	Burns,Yvonne	Physiotherapy and the Growing Child
5	Campbell,WW	Dejongs the Neurologic Examination
6	Shumway,Anne	Motrol Control Translating Research into Clinical Practice
7	Downie,P.A	Cash's text book of Neurology for physiotherapists
8	Levitt	Treatment of Cerebral,Palsy and Motor delay

9	Raj,G.S	Physiotherapy in Neuro-Conditions
10	Herdman, S.J	Vestibular, Rehabilitation
11	Snell, Richards	Clinical Neuroanatomy for Medical Students
12	Webers,David O	Hand book of stroke
13	Jain, Shalu	Text book of Neuro Physiotherapy
14	Harvey, Lisa	Management of Spinal Cord Injuries: A Guide for Physiotherapists
15	Kliegman,R.M	Nelson Essential of Pediatrics
16	Mardsen,CD	Movement disorders vol-3
17	Pitt-Brooke	Rehabilitation of movement
18	Misra U.K	Clinical Neurophysiology
19	Bromley, Ida	Tetraplkegia and Paraplegia: A Guide for Physiotherapists
20	Cole,Beverley	Physical Rehabilitation outcome measure
21	Pierson,F.M	Principles andTechniques of Practice
22	Davies,P.M	Right in the Middle
23	Mehrotra,T.N	Parkinson's Disease and Movement Disorders
24	Patten,John	Neurological Differential Diagnosis
25	Taly,A.B	Neurorehabilitation Princilpes & Practice
26	Weiss,Susan	Hand Rehabilitation
27	Bertoti,D.B	Functional Neurorehabilitation
28	Umphrea,D.A	Neurological Rehabilitation
29	Carr, J	Neurological Rehabilitation
30	Edwards,Susan	Neurological physiotherapy
31	Cooper, RA	Whellchair Selection & Configuration

32	Mardsen,CD	Movement disorders vol-1&2
33	Potturi GS	Physiotherapy in Neurological Conditions