

School of Health Sciences
CSJM University, Kanpur

Ordinance & Syllabus
for
Master of Physiotherapy (M.P.T.)
Academic Programme

Specialization/Discipline:

Orthopaedics
Neurology
Cardiopulmonary
Sports

Ordinance according to
NEP-2020

Duration:
2 Years (04 Semesters)

M.P.T. (Master of Physiotherapy)

ORDINANCE

Chapter

"A"

Preamble:

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

Title of the Programme: The programme shall be called "**Master of Physiotherapy**"

Objectives of the Programme:

At the completion of this course, the student should be –

- Able to execute all routine physiotherapeutic procedures with evidence based practice.
- Able to be a prominent member of the multidisciplinary physiotherapy team and treat all the conditions which need physiotherapeutic procedures.
- Able to provide adequate knowledge about the treatment procedures and its benefit.
- Able to transfer knowledge and skills to students as well young professionals.
- Able to perform independent physiotherapy assessment and treatment for patients.
- Able to undertake independent research in the field of physiotherapy.
- Learn multidisciplinary practice skills.
- Able to practice and assess patient independently.
- On successful completion of M.P.T programme, the Physiotherapist professional will be able to take up physiotherapy teaching assignments independently for undergraduate teaching programme. He / She will be able to prepare project proposal with selected research design and interpret the evaluated outcome measures (using sound data processing techniques and statistical methods). He/she will be able to practice in his / her specialty area with advanced knowledge and skills.

Program outcomes

- Course work includes exercise physiology, principles of physiotherapy practice, electrophysiology and electives. The student will be skilled in treatment planning, management, administration of physiotherapy treatment and provision of patient support.
- Acquire in-depth knowledge of structure and function of human body related to the respective branch of specialty.
- Acquire the in-depth knowledge of movement dysfunction of human body, cause thereof principles underlying the use of physiotherapeutic interventions for restoring movement dysfunction towards normalcy.
- Demonstrate skill in Physical & Functional diagnosis pertaining to patient under his/her care.
- Demonstrate ability to critically appraise recent physiotherapeutic and related literature from journals & adopt diagnostic & therapeutic procedures based on it.
- The student will also perform independent research within the department and help the department and the team for treatment planning of the patient.
- PT post-graduate is encouraged to pursue further qualification to attain senior position in the professional field, also to keep abreast with the advance and new technology the professional should opt for continuous professional education credits offered by national and international institutes.
- Employment opportunities can be found in hospitals in both private and public sectors as well as in independent physiotherapy clinics and as well as teaching institutes.
- Demonstrate ability to make clinical decision (based on evaluation) regarding Physiotherapy strategy techniques and select appropriate outcome measures based on the comprehensive knowledge of specialty.
- Demonstrate an expertise in evidence-based skill in the management disorders including movement dysfunction in concerned specialty.

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Program Specific Outcomes

At the completion of this course, the student should be –

- Able to execute all routine physiotherapeutic procedures with evidence based practice.
- Able to be a prominent member of the multidisciplinary physiotherapy team and treat all the conditions which need physiotherapeutic procedures.
- Able to provide adequate knowledge about the treatment procedures and its benefit.
- Able to transfer knowledge and skills to students as well young professionals.
- Able to perform independent physiotherapy assessment and treatment for patients.
- Able to undertake independent research in the field of physiotherapy.
- Learn multidisciplinary practice skills.
- Able to practice and assess patient independently.
- On successful completion of M.P.T programme, the Physiotherapist professional will be able to take up physiotherapy teaching assignments independently for undergraduate teaching programme. He / She will be able to prepare project proposal with selected research design and interpret the evaluated outcome measures (using sound data processing techniques and statistical methods). He/she will be able to practice in his / her specialty area with advanced knowledge and skills.

M.P.T. (Master of Physiotherapy)

1. M.P.T. degree will be under the faculty of Medicine of C.S.J.M. University, Kanpur in the department of physiotherapy

2. Duration of Course:

- MPT course will be a full-time course.
- Duration will be two years (Four Semesters).
This course shall be divided into four semester examinations namely Master of Physiotherapy I & II Semester (First Academic Year) and III & IV Semester (Second Academic Year).

3. Specialization/Discipline

There shall be following specialization/discipline:

- **MPT in Orthopaedics**
- **MPT in Neurology**
- **MPT in Cardiopulmonary**
- **MPT in Sports**

4. Seats:

No. of Seats =60

Specialization/Discipline
MPT in Orthopaedics
MPT in Neurology
MPT in Cardiopulmonary
MPT in Sports

5. Admission.

Eligibility:

The students who have passed BPT (Bachelor of Physiotherapy) Course from any recognized Institutions/University with minimum of 50% marks (45% for SC/ST).

Mode of Admission:

As per the University Norms.

6. Medium of instruction:

English shall be the medium of instruction in the class and in the University examination.

7. Method of Teaching:

The method of teaching adopted shall be a combination of lectures, demonstrations and practicals by the full time faculty, visiting or part time or guest faculty.

8. Examination:

As per the University norms.

Duration of examination:

As per the University norms.

9. Attendance to appear in the end semester examination :

The permission to appear in end semester examination shall be granted to such candidate only who have fulfil the condition of 75% attendance in each subject separately in theory and practical as per the university rule.

Regarding attendance requirements students will have to fulfil the condition of 75% attendance. 15% relaxation in attendance, in exceptional circumstances can be made by the Vice Chancellor on the recommendation of the Director of the School.



CHHATRAPATI SHAHU JI MAHARAJ UNIVERSITY, KANPUR

STRUCTURE OF SYLLABUS FOR THE

PROGRAM: Masters of Physiotherapy (M.P.T.)

Syllabus Developed by

Name of BoS Convenors / BoS Members	Designation	Department	College/University
Prof. Sanjay Kala	Principal	Dean, Faculty of Medicine	GSVM. Medical College, Kanpur
Prof. Dolly Rastogi	Professor	Physiology	GSVM Medical College, Kanpur
Prof. Parvez Khan	Head	Ophthalmology	GSVM Medical College, Kanpur
Prof. Sanjay Kumar	Head	Orthopaedics	GSVM Medical College, Kanpur
Prof. MP Mishra	Ex. Director	JK Cancer Institute	GSVM Medical College, Kanpur
Dr. Chayanika Kala	Associate Professor	Pathology	GSVM Medical College, Kanpur
Dr. Ashok Verma	Head & Associate Professor	Radiology	GSVM Medical College, Kanpur
Dr. Digvijay Sharma	Director	School of Health Sciences	CSJM University, Kanpur
Dr. Munish Rastogi	Assistant Director	School of Health Sciences	CSJM University, Kanpur
Dr. Versha Prasad	Assistant Professor	School of Health Sciences	CSJM University, Kanpur
Dr. Ram Kishor	Assistant Professor	School of Health Sciences	CSJM University, Kanpur

M.P.T. Semester-I University Examination (Common to all specialization/ Discipline)

Subjects: Orthopaedics, Neurology, Cardiopulmonary, Sports

I YEAR / I SEM

COURSE CODE	TYPE	COURSE TITLE	CREDITS	CIA	ESE	MAX. MARKS
MPT25101	CORE	Review of Basic Physiotherapeutics	4	25	75	100
MPT25102	CORE	Advanced Physiotherapeutics-I	4	25	75	100
MPT25103	CORE	Research Methodology	4	25	75	100
MPT25104	PRACTICAL	Practical	8	25	75	100
	DISSERTATION	Dissertation	0			
		Clinical Practices*	2			
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	2			
		TOTAL	24			400

I YEAR / II SEM

MPT25201	CORE	Basics of Exercise Physiology and Nutrition	4	25	75	100
MPT25202	CORE	Advance Physiotherapeutics – II	4	25	75	100
MPT25203	CORE	Biostatistics	4	25	75	100
MPT25204	PRACTICAL	Practical	8	25	75	100
MPT25205	DISSERTATION	Dissertation	8	25	75	100
		Clinical Practices*	2			
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	2			
		TOTAL	32			500

Specialization: Orthopaedics

II YEAR / III SEM						
COURSE CODE	TYPE	COURSE TITLE	CREDITS	CIA	ESE	MAX. MARKS
MPT25301	CORE	Pedagogy in Physiotherapy Education	4	25	75	100
MPT25302	CORE	Administration, Management & Ethical Issues	4	25	75	100
MPT25303O	CORE	Orthopaedic Disorders & Management – I	6	25	75	100
MPT25304	PRACTICAL	Practical	8	25	75	100
	DISSERTATION	Dissertation	0			
		Clinical Practices*	2			
		Teaching Skills/ Seminars/Symposia/ Journal Club etc.*	2			
	TOTAL		26			400
II YEAR / IV SEM						
MPT25401	CORE	Applied Exercise Physiology	4	25	75	100
MPT25402O	CORE	Orthopaedic Disorders & Management – II	6	25	75	100
MPT25403	PRACTICAL	Practical	8	25	75	100
MPT25404	Dissertation	Dissertation	8	25	75	100
		Clinical Practices*	2			
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	2			
	TOTAL		30			400
	Grand Total		112			1700

Specialization: Neurology

II YEAR / III SEM						
COURSE CODE	TYPE	COURSE TITLE	CREDITS	CIA	ESE	MAX. MARKS
MPT25301	CORE	Pedagogy in Physiotherapy Education	4	25	75	100
MPT25302	CORE	Administration, Management & Ethical Issues	4	25	75	100
MPT25303N	CORE	Neurological Disorders & Management – I	6	25	75	100
MPT25304	PRACTICAL	Practical	8	25	75	100
	DISSERTATION	Dissertation	0			
		Clinical Practices*	2			
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	2			
	TOTAL		26			400
II YEAR / IV SEM						
MPT 25401	CORE	Applied Exercise Physiology	4	25	75	100
MPT25402N	CORE	Neurological Disorders & Management – II	6	25	75	100
MPT25403	PRACTICAL	Practical	8	25	75	100
MPT25404	DISSERTATION	Dissertation	8	25	75	100
		Clinical Practices*	2			
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	2			
	TOTAL		30			400
	Grand Total		112			1700

Specialization: Cardiopulmonary

II YEAR / III SEM						
COURSE CODE	TYPE	COURSE TITLE	CREDITS	CIA	ESE	MAX. MARKS
MPT25301	CORE	Pedagogy in Physiotherapy Education	4	25	75	100
MPT25302	CORE	Administration, Management & Ethical Issues	4	25	75	100
MPT25303C	CORE	Cardiopulmonary Disorders & Management – I	6	25	75	100
MPT25304	PRACTICAL	Practical	8	25	75	100
	DISSERTATION	Dissertation	0			
		Clinical Practices*	2			
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	2			
	TOTAL		26			400
II YEAR / IV SEM						
MPT25401	CORE	Applied Exercise Physiology	4	25	75	100
MPT25402C	CORE	Cardiopulmonary Disorders & Management – II	6	25	75	100
MPT25403	PRACTICAL	Practical	8	25	75	100
MPT25404	DISSERTATION	Dissertation	8	25	75	100
		Clinical Practices*	2			
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	2			
	TOTAL		30			400
	Grand Total		112			1700

Specialization: Sports

II YEAR / III SEM						
COURSE CODE	TYPE	COURSE TITLE	CREDITS	CIA	ESE	MAX. MARKS
MPT25301	CORE	Pedagogy in Physiotherapy Education	4	25	75	100
MPT25302	CORE	Administration, Management & Ethical Issues	4	25	75	100
MPT25303S	CORE	Sports Traumatology & Medical Conditions	6	25	75	100
MPT25304	PRACTICAL	Practical	8	25	75	100
	DISSERTATION	Dissertation	0			
		Clinical Practices*	2			
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	2			
	TOTAL		26			400
II YEAR / IV SEM						
MPT25401	CORE	Applied Exercise Physiology	4	25	75	100
MPT25402S	CORE	Fundamental in Sports & Rehabilitation	6	25	75	100
MPT25403	PRACTICAL	Practical	8	25	75	100
MPT25404	DISSERTATION	Dissertation	8	25	75	100
		Clinical Practices*	2			
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	2			
	TOTAL		30			400
	Grand Total		112			1700

* Not Included in University Exam

NOTE: Do not mark any Code/Information in Column-A, it will be endorsed by the University.

1. **CIA** in Column-E stands for '**Continuous Internal Assessment**' and depicts the maximum internal marks. Respective examination will be conducted by subject teacher. **ESE** in Column F stands for '**End Sem Examination/Evaluation**' and depicts the maximum external marks. Respective examination will be conducted by the University.
2. Column-B defines the nature of course/paper. The word **CORE** herein stands for **Compulsory Subject Paper**.
3. Column-D depicts the credits assigned for the corresponding course/paper.
4. **Elective:** It will be a Subject Elective. Students may accordingly select one or more subject papers under this category.
5. **Amongst the electives, one or two electives may be declared as Open (Generic) electives that shall be open as Minor Elective to students of other faculty in 1st or 2nd semester of a PG program.**
6. In both years of PG program, there will be a Research Project or equivalently a research-oriented Dissertation as per guidelines issued earlier.
7. Research project can be done in form of Internship/Survey/Field work/Research project/ Industrial training, for which report/dissertation shall have to be submitted. The evaluation for the same shall be done at the end of each year in form of seminar/presentation and viva voce.
8. The student straight away will be awarded 05 credits if he publishes a research paper on the topic of Research Project or Dissertation.

Internal Assessment

- It will be for theory and practical both.
- It will be done through the whole semester
- Candidate must obtain at least 40% marks in theory and practicals separately in internal assessment to be eligible for the semester university examination.

- Internal assessment (Theory) will be done as follows:

a)	Seminars/Symposia/Journal club/Assignment/ Clinical presentation	= 10 marks
b)	Mid-term examination	= 10 marks
c)	Attendance/Teaching Skills	= 05 marks
Total		= 25 marks

- Internal assessment (Practical) will be done as follows:

a)	Lab work Presentation /Clinical Lab Practices/Clinical Training	= 10 marks
b)	Practical Training Skills/ Continuous evaluation	= 10 marks
c)	Laboratory Manual/Attendance	= 05 marks
Total		= 25 marks

- Internal assessment of subjects without practical will be done as:

a)	Assignments/ Projects/ class test/ Presentations	= 10 marks
b)	Mid Term examination	= 10 marks
c)	Attendance/Teaching Skills	= 05 marks
Total		= 25 marks

Criteria for Passing

- As per University norms.

Maximum duration for completion for course

- A candidate shall complete the course within four years from date of admission failing which the candidate will be discharged.

Division:

- As per the University norms.

Degree:

- The degree of M.P.T. course of the University shall be conferred according to specialization/discipline on the candidates who have pursued the prescribed course of study for not less than two academic years and have passed examinations as prescribed under the relevant scheme.

Monitoring Progress of Studies

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular internal assessment. It not only also helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the faculty members of the department based on participation of students in various teaching / learning activities.

(a) Seminar

- Seminars /recent advance presentation will be held every week, however, its timings are subject to clinical schedule. Topics must be well researched and must include common knowledge, recent advances, analysis and references.
- PG students should present minimum of two seminars in a semester (One in general and one in elective area) and Internal Assessment marks will depend on better topic selection and presentation.

(b) Case Presentation

- PG students are expected to do at least one case presentation per month. They can choose the patient depending on the availability of cases. However, appropriateness should be confirmed with concern teacher.
- If the first presentation is unsatisfactory, students can do one more case presentation in the same posting for the improvement of the internal assessment.

(c) Clinical Practices

Post graduate students must do:

- Assessment, evaluation and diagnosis.
- Practice and application of physiotherapeutic system in hospital/institution.
- Application of advance physiotherapeutic maneuvers like manipulation and various neurological interventional concepts.
- Clinical reasoning, decision making, evidence based practice and recording system.

(d) Teaching Skills

Candidates should be encouraged to teach undergraduate students if any. This performance will be based on assessment by the faculty members of the department and from feedback from the undergraduate students.

(e) Journal Review Meeting (Journal Club):

The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting.

(f) Work diary / Log Book

Every student shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical practice, if any conducted by the student.

(g) Mid Term Examination/Class Test/Assignments

There will be mid-term examination/class tests/ assignments in every semester. Various class test may be taken by the department and assignments may be given to students on various topics. Marks of these will be included in every semester.

(h) Records

Records, log books and marks obtained in mid-term examination/class tests/ assignments will be maintained by the Head of the Department/Teacher of the concerned subject.

Dissertation

Every candidate pursuing MPT degree course is required to carry out research work on a selected research project under the guidance of a recognized postgraduate teacher. The results of such a work shall be submitted in the form of dissertation. Topic for dissertation shall be assigned by the guide.

If the subject of Thesis entails collaboration with other departments or specialties, the collaborative portion of the work will be supervised by Co-Guide, designated by the School of Health Sciences in consultation with the Guide. Where a Co-Guide is involved, the Thesis will be certified jointly by the Guide & Co-guide.

Every candidate shall submit synopsis to the University in the prescribed Performa containing particulars of proposed dissertation work, within 6 months from the date of commencement of the course on or before the dates notified by the university. The synopsis shall be sent through the proper channel. Such synopsis will be reviewed and the university will register the dissertation topic.

No change in the dissertation topic or guide shall be made without prior approval of the university. Guide will be only a facilitator, advisor of the concept and hold responsible in correctly directing the candidate in the methodology and not responsible for the outcome and results.

The dissertation should be written under the following headings.

1. Introduction
2. Aims or objectives of study
3. Review of literature
4. Material and methods
5. Results
6. Discussion
7. Conclusion
8. References
9. Master and Chart & Table (If Applicable)
10. Annexure (If Applicable)

The written text of dissertation/ research project shall not be less than 50 pages and shall not exceed 120 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of bond paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. A declaration by the candidate for having done the work himself should also be included, and the guide, head of the department and Director/Coordinator of the institute shall certify the dissertation/ research project.

Every candidate is required to give power point presentation before final submission of dissertation. Four copies of Dissertation/research project shall be submitted to the university, through proper channel, along with a soft copy (CD), 2 months before the final examination. It shall be assessed by two examiners appointed by the university, one internal and one external. There will be a power point open presentation of the submitted dissertation as per the schedule given by the university. This presentation shall be jointly evaluated by external and internal examiner.

If the student failed to secure the minimum passing marks he will resubmit the dissertation.

Guide:

I. Eligibility for guide for each specialty

- (a) Full time faculty involved in teaching in the same department/institute.
- (b) Minimum MPT with 3 years teaching experience in related subject as a full time faculty.

The Director of the Institute can appoint a person as a guide whom he/she considers suitable.

II. Age of Guide

The age of guide should not exceed 62 years or as per university norms.

III. Guide student ratio

1: 10

A recognized guide shall supervise dissertation work of not more than 10 students per academic year.

IV. Change of Guide

In the event of registered guide leaving the department/institute or in the event of death of guide, guide may be change with prior permission from the university.

COURSE OF STUDY

M.P.T. Semester-I (Common to all specialization/ Discipline)

COURSE CODE	TYPE	COURSE TITLE	TEACHING HOURS
MPT25101	CORE	Review of Basic Physiotherapeutics	80
MPT25102	CORE	Advanced Physiotherapeutics-I	80
MPT25103	CORE	Research Methodology	80
MPT25104	PRACTICAL	Practical	160
	DISSERTATION	Dissertation	40
		Clinical Practices*	200
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	80
		TOTAL	720

M.P.T. Semester-II (Common to all specialization/ Discipline)

COURSE CODE	TYPE	COURSE TITLE	TEACHING HOURS
MPT25201	CORE	Basics of Exercise Physiology and Nutrition	80
MPT25202	CORE	Advance Physiotherapeutics – II	80
MPT25203	CORE	Biostatistics	80
MPT25204	PRACTICAL	Practical	160
MPT25205	DISSERTATION	Dissertation	120
		Clinical Practices*	200
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	80
		TOTAL	800

M.P.T. Semester-III (Orthopaedics)

COURSE CODE	TYPE	COURSE TITLE	TEACHING HOURS
MPT25301	CORE	Pedagogy in Physiotherapy Education	80
MPT25302	CORE	Administration, Management & Ethical Issues	80
MPT25303O	CORE	Orthopaedic Disorders & Management – I	120
MPT25304	PRACTICAL	Practical	160
	DISSERTATION	Dissertation	80
		Clinical Practices*	200
		Teaching Skills/ Seminars/Symposia/ Journal Club etc.*	80
		TOTAL	800

M.P.T. Semester-IV (Orthopaedics)

COURSE CODE	TYPE	COURSE TITLE	TEACHING HOURS
MPT25401	CORE	Applied Exercise Physiology	80
MPT25402O	CORE	Orthopaedic Disorders & Management – II	120
MPT25403	PRACTICAL	Practical	160
MPT25404	Dissertation	Dissertation	120
		Clinical Practices*	200
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	80
		TOTAL	760

**M.P.T. Semester-III
(Neurology)**

COURSE CODE	TYPE	COURSE TITLE	TEACHING HOURS
MPT25301	CORE	Pedagogy in Physiotherapy Education	80
MPT25302	CORE	Administration, Management & Ethical Issues	80
MPT25303N	CORE	Neurological Disorders & Management – I	120
MPT25304	PRACTICAL	Practical	160
	DISSERTATION	Dissertation	80
		Clinical Practices*	200
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	80
		TOTAL	800

**M.P.T. Semester-IV
(Neurology)**

COURSE CODE	TYPE	COURSE TITLE	Teaching Hours
MPT 25401	CORE	Applied Exercise Physiology	80
MPT25402N	CORE	Neurological Disorders & Management – II	120
MPT25403	PRACTICAL	Practical	160
MPT25404	DISSERTATION	Dissertation	120
		Clinical Practices*	200
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	80
		TOTAL	760

**M.P.T. Semester-III
(Cardiopulmonary)**

COURSE CODE	TYPE	COURSE TITLE	TEACHING HOURS
MPT25301	CORE	Pedagogy in Physiotherapy Education	80
MPT25302	CORE	Administration, Management & Ethical Issues	80
MPT25303C	CORE	Cardiopulmonary Disorders & Management – I	120
MPT25304	PRACTICAL	Practical	160
	DISSERTATION	Dissertation	80
		Clinical Practices*	200
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	80
		TOTAL	800

**M.P.T. Semester-IV
(Cardiopulmonary)**

COURSE CODE	TYPE	COURSE TITLE	Teaching Hours
MPT25401	CORE	Applied Exercise Physiology	80
MPT25402C	CORE	Cardiopulmonary Disorders & Management – II	120
MPT25403	PRACTICAL	Practical	160
MPT25404	DISSERTATION	Dissertation	120
		Clinical Practices*	200
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	80
		TOTAL	760

**M.P.T. Semester-III
(Sports)**

COURSE CODE	TYPE	COURSE TITLE	Teaching Hours
MPT25301	CORE	Pedagogy in Physiotherapy Education	80
MPT25302	CORE	Administration, Management & Ethical Issues	80
MPT25303S	CORE	Sports Traumatology & Medical Conditions	120
MPT25304	PRACTICAL	Practical	160
	DISSERTATION	Dissertation	80
		Clinical Practices*	200
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	80
		TOTAL	800

**M.P.T. Semester-IV
(Sports)**

COURSE CODE	TYPE	COURSE TITLE	TEACHING HOURS
MPT25401	CORE	Applied Exercise Physiology	80
MPT25402S	CORE	Fundamental in Sports & Rehabilitation	120
MPT25403	PRACTICAL	Practical	160
MPT25404	DISSERTATION	Dissertation	120
		Clinical Practices*	200
		Teaching Skills/ Seminars/Symposia/Journal Club etc.*	80
		TOTAL	760

*** Not Included in University Exam.**

Master in Physiotherapy (MPT) Semester-I
Review of Basic Physiotherapeutics
Subject Code : MPT25101
Min. Hrs :- 80 Hrs.

COURSE OBJECTIVES:

- a) To have a thorough understanding of Exercise therapy, electrotherapy, kinematics and kinetics in motion.
- b) To have an understanding of structure and function of biological tissues involve in the human motion.
- c) To evaluate movement and estimate force on human structure during exercise.
- d) To understand the functioning operating physiological mechanism and uses of biomechanical instruments.

COURSE OUTCOMES:

- a) Students will be able to understand and apply concepts and terminology with in the area of Exercise therapy, electrotherapy and biomechanics.
- b) Students will be able to describe how biomechanical factors influence motion in exercise.
- c) Demonstrate and understanding of statics, kinematics and kinetics in human motion.
- d) Apply a broad and coherent knowledge of the underlying principles and concepts of biomechanics particularly in the field of kinematics and kinetics as applied to human and projectile motion.
- e) Safely and effectively use biomechanics instrumentation and equipment to record and assess human and object motion.
- f) Record, extract and analyze key information about human and object.

THEORY

EXERCISE THERAPY

- General Exercise therapy and principles
- Assessment Methods & Techniques (like MMT, Anthropometry & Goniometry etc.).
- Functional diagnosis measures: Functional activity specific assessment-FIM, ADL Scales, Assessment of health wellness: SF-36.
- Responses and adaptations of various systems to exercise and training.
- Physiology of movements
- Strengthening exercise
- Stretching and soft tissue mobilization and manipulation
- Relaxation, traction
- Hydro therapy, Balance and co-ordination.
- Recent advances in exercise therapy

ELECTROTHERAPY

- General electrotherapy and principles.
- Low, medium and high frequency current and modalities
- Di-dynamic, Russian and High volt currents
- Cryotherapy
- Electro Physiological assessment devices.
- Muscle plasticity in response to electrical stimulation
- Electrical stimulation and its effect on various systems.
- Recent advances in electrotherapy

BIOMECHANICS, KINESIOLOGY AND PATHO-MECHANICS

- General Biomechanics, Kinesiology and principles.
- Bone, Joint, articular cartilage, various soft tissue and nerve.
- Biomechanics and pathomechanics
- Biomechanics, kinesiology and pathomechanics and all joints and muscles.
- Evaluation and assessment of postures, abnormal postures, gait and abnormal gaits.
- Evaluation and assessment of joint motions and muscle function.

REHABILITATION

- General Principles of rehabilitation
- Types and uses (orthotics and prosthetics)
- Application related to various disorders.

Text Books:

1. Dena Gardiner, Principles of Exercise therapy, Bell and Hymes, 4th Ed, 1981.
2. Kendall, manual Muscle Testing, ELBS, 2Ed, 1997.
3. Clayton's Electrotherapy – Therapy and practice – Angela Forster, All India Traveler Book seller.9th Ed, 2012.
4. Edward BellisClayton , Nigel Palastanga, Claytons Electrotherpy:Theory and practice, 9th Ed, 1985

Reference Books:

1. Carolyn Kisner, Therapeutic Exercise, Jaypee Brothers, 6th Ed, 2012.
2. Margeret Hollis, Practical Exercise therapy, ELBS, 4 Ed, 2004.
3. Sebastian, Principles of Manual Therapy, Jaypee Brothers , 2nd Ed, 2013.
4. Basanta Kumar Nanda, Electrotherpy explained, Jaypee Brothers, 1st Ed, 2006.
5. Cynthia C Norkins, Joint Structure and Function – a Comprehensive Analysis, Jaypee Brothers, 4th Edition, 2012.
6. I.A. Kapandji, Physiology of joint structure- Churchill Livingston pub, 3rd Edition, 2005

Master in Physiotherapy (MPT) Semester-I
Advanced Physiotherapeutics-I
Subject Code : MPT25102
Min. Hrs -: 80 Hrs.

COURSE OBJECTIVES:

- a) To have a thorough understanding of Advance manual therapy approaches.
- b) To have an understanding of structure and function of biological tissues involve in the human motion.
- c) To evaluate movement and estimate force on human structure during exercise.
- d) To understand the functioning operating physiological mechanism and uses of biomechanical instruments.

COURSE OUTCOMES:

- a) Students will be able to understand and apply concepts and terminology with in the area of manual therapy.
- b) Students will be able to describe how manual therapy.
- c) Apply a broad and coherent knowledge of the underlying principles and concepts of biomechanics particularly in the field of kinematics and kinetics as applied to human and projectile motion.
- d) Safely and effectively use biomechanics instrumentation and equipment to record and asses human and object motion.
- e) Record, extract and analyze key information about human and object.

MANUAL THERAPY

Part-I: Foundational concepts in Manual therapy Unit

1. History of manual therapy
2. Biomechanical principles in manual therapy
 - Concave-Convex rule
 - Close pack and Loose pack Positions
 - Resting positions
 - Joint status
 - Barrier concepts
 - Fryette's Laws
 - Articular neurology
4. Pain

Part-II: Joints Mobilization Techniques

(Terminology, Principles, Indications, Contra-indications, Assessment and method of application of the following techniques)

1. Kalten born
2. Maitland
3. Mulligan
4. McKenzie
5. Cyriax
6. Butler neural mobilization

Nerve Conduction studies, EMG and Biofeed Back Theory

- Physiology and nerve conduction
- Electrical activities of muscles
- Different type of EMG recording in normal and abnormal muscles.
- MNCV, SNCV, 'H' reflex, F, wave & blink reflex.
- Procedure and recording methods mechanisms
- Physiology and mechanisms bio feed, procedure and application of various disorders.

Text Books:

1. Cyriax, J. H., & Cyriax, P. (1993). Cyriax's Illustrated Manual of Orthopaedic Medicine.
2. Cynthia C Norkins, Joint Structure and Function – a Comprehensive Analysis, Jaypee Brothers, 4th Edition, 2012.
3. Kinesiology of the musculoskeletal system foundations for rehabilitation, Donald A. Neumann. Third edition.

Reference Books:

1. Hing, W., Hall, T., Rivett, D. A., Vicenzino, B., & Mulligan, B. (2015b). The Mulligan Concept of Manual Therapy - eBook: Textbook of Techniques. Elsevier Health Sciences.
2. Gary I Soderberg, Kinesiology – Application to Pathological Motion – (especially for patho-biomechanics) Williams & Wilkins, 2nd Edition, 2007.
3. I.A. Kapandji, Physiology of joint structure- Churchill Livingstone pub, 3rd Edition, 2005
4. Zeevi Dvir, Clinical Biomechanics, Churchill Livingstone, 2000

Master in Physiotherapy (MPT) Semester-I
Research Methodology
Subject Code : MPT25103
Min. Hrs -: 80 Hrs.

COURSE OBJECTIVE:

- a) To have a thorough understanding of presenting supporting evidences and how to conduct research.
- b) To have an understanding of model of research and biostatistics.
- c) To evaluate every procedure on the basis of evidences.
- d) To understand the data analysis procedure and their significance in research.

COURSE OUTCOMES:

- a) Students will be able to understand and apply concepts and terminology with in the area of Research.
- b) Students will be able to describe research design and application of different methods to analyze the data collected to conduct and complete the research.

RESEARCH METHODOLOGY

1. Research in physiotherapy

- Introduction
- Research for Physiotherapist: Why? How? And When?
- Research – Definition, concept, purpose, approaches
- Internet sites for Physiotherapist

2. Research Fundamentals

- Define measurement
- Measurement framework
- Scales of measurement
- Pilot Study
- Types of variables
- Reliability & Validity
- Drawing Tables, graphs, master chart etc

3. Writing a Research Proposal, Critiquing a research article

- Defining a problem
- Review of Literature
- Formulating a question, Operational Definition
- Inclusion & Exclusion criteria
- Forming groups
- Data collection & analysis
- Results, Interpretation, conclusion, discussion
- Informed Consent
- Limitations

4. Research Design

- Principle of Designing
- Design, instrumentation & analysis for qualitative research
- Design, instrumentation & analysis for quantitative research
- Design, instrumentation & analysis for quasi-experimental research
- Design models utilized in Physiotherapy

5. Research Ethics

- 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

Text Book:

1. B.L Agarwal, Basic statistics , New Age International Publication.2012.

Reference Books:

1. Sundarrao, Introduction to biostatistics and Research Methodology, CBS, 1Ed, 2002.
2. C.R Kothari, Research methodology, New Age international publication, 3Ed, 2014.

Master in Physiotherapy (MPT) Semester-I
Practical
Subject Code : MPT25104
Min. Hrs :- 160 Hrs.

COURSE OUTCOME:

It should be aimed for assessing competence and skills of physiotherapeutic intervention and procedures as well as testing students ability to make relevant and valid observations, diagnostic & prognostic interpretations and inference, clinical, laboratory or experimental work relating to this her subject.

1. Assessment, evaluation and diagnosis
2. Practice and application of physiotherapeutic system in hospital/centre/ institution.
3. Application of advance physiotherapeutic maneuvers like manipulation (maitland, cyriax, mulligan etc.) and various neurological interventional concepts (bobath, NDT etc.).
4. Clinical reasoning, decision making, evidence based practice and recording system.
5. Short case from area of elective to assess investigative and diagnostic skills
6. Short case from area of elective to assess patient management skills

MPT –Semester-I for all Specialization
DISSERTATION
Min. Hrs -: 40 Hrs.

- Every candidate pursuing MPT degree programme is required to carry out research work on a selected research project under the guidance of a recognized postgraduate teacher. The results of such a work shall be submitted in the form of dissertation. Topic for dissertation shall be assigned by the guide.
- If the subject of thesis requires collaboration with other departments or specialties, the collaborative portion of the work will be supervised by Co-Guide, designated by the School of Health Sciences in consultation with the Guide. Where a Co-Guide is involved, the dissertation will be certified jointly by the Guide & Co-guide.
- The students will select various topics concerned with day to day recent trends in Physiotherapy and their various outcomes.
- Before selection of the topic the student must go through various medical journals and study them elaborately to understand the recent trends and scientific research.
- A minimum of atleast 5 topics must be scrolled by each students and out of this the most appropriate topic may be selected for his further synopsis preparation with the consent of guide.
- After selection of topic the student has to discuss the various aspects of the selected topic with their guide and strategically plan how he/she will proceed in their research work.
- Importance should be given to legitimate data collection and handling, sample size and the recent trends in the field of Physiotherapy.

Master in Physiotherapy (MPT) Semester-II
Basics of Exercise Physiology & Nutrition
Subject Code : MPT25201
Min. Hrs -: 80 Hrs.

COURSE OBJECTIVES: On completion of the subject, students will have the opportunity to develop the skills of intellect decision making. It also provides an extension of their communication skills to articulate the evidence based acquaintance and clinical knowledge for assessment and diagnosis of patients. It is a prospect to the students for the application of the research and professional information to novel situations.

COURSE OUTCOME: On completion of this subject students should have the opportunity to:

- a) Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
- b) Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
- c) Acquire a thorough understanding of basic exercise physiology which can be applied in clinical practice.

1. Bioenergetics of exercise :

- a) High energy phosphates,
- b) Anaerobic and aerobic ATP synthesis,
- c) Bioenergetics Control, exercise intensity & substrate utilization, Protecting CHO stores,
- d) Muscle adaptation to endurance training, processes that potentially limit the rate of fat oxidation,
- e) Regulation of substrate utilization, training - induced increase in FFA oxidization: Basal metabolic and resting metabolic rates and factors affecting them,
- f) Classification of Physical Activities by energy expenditure,. Concept of MET , measurement of energy cost of exercise

2. Nutrition

- a) Metabolism of Carbohydrate , fats and proteins , vitamin, mineral and water

3. Nutrition in exercise

- a) Optimum nutrition for exercise
- b) Nutrition for physical performance
- c) Pre-game meal
- d) Carbohydrate loading
- e) Food for various athletic events
- f) Fluid and energy replacement in prolonged exercise

4. Respiratory responses to exercise

- a) Ventilation at Rest and during Exercise.
- b) Ventilation and the Anaerobic Threshold, static and dynamic lung volume.
- c) Gas diffusion
- d) Oxygen and carbon dioxide transport, second wind
- e) Control of pulmonary ventilation during exercise
- f) Adaptive changes in the respiratory systems due to regular physical activities.

5. Cardiovascular responses to exercise

- a) Cardiovascular system and exercise, acute vascular effects of exercise.
- b) Circulatory responses to various types of exercise regulation of cardiovascular system during exercise.
- c) Pattern of redistribution of blood flow during exercise.
- d) Adaptive responses of cardiovascular system to aerobic and anaerobic training.
- e) Athlete heart

6. Exercise and Acid Base Balance

- a) Acid and Bases
- b) Buffers
- c) pH
- d) Respiratory Regulation of pH
- e) Alkali Reserve
- f) The kidneys and Acid base balance
- g) Alkalosis and Acidosis
- h) Acid base balance following heavy exercise.

7. Hormonal responses to exercise with respect to

- a) Growth Hormone (GH),
- b) Thyroid and Parathyroid Hormones.
- c) Anti-diuretic Hormone (ADH) and Aldosterone,
- d) Insulin and Glucagon,
- e) The catecholamine; epinephrine and norepinephrine.
- f) The sex hormones.
- g) The glucocorticoids (Cortisol) and Adrenocorticotrophic Hormones (ACTH).
- h) Prostaglandins and Endorphins:

Text Books

1. Essentials of Exercise Physiology: McArdle, WD, Katch, FI, and Katch, VL. 2nd edn, Lippincott Williams and Wilkins (2000).
2. Fundamentals of Exercise Physiology: For Fitness Performance and Health, Robergs RA, and Roberts, S.O. McGraw Hill (2000)
3. Exercise Physiology: Powers, SK and Howley ET. 4th edn; Mc Graw Hill (2001)
4. Nutrition for sport and exercise (2nd ed.) by Berning and Steen

Reference Books

1. Physiology of Sport and Exercise: Wilmore, JH and Costil, DL. Human Kinetics (1994)
2. Exercise Physiology- Human Bioenergetics and its Application: Brooks, GA, Fahey, TD, White, TP. Mayfield Publishing Company (1996)
3. Perspectives in Nutrition (6th ed.) by Wardlaw

Master in Physiotherapy (MPT) Second Semester
Advanced Physiotherapeutics-II
Subject Code : MPT25202
Min. Hrs :- 80 Hrs.

COURSE OBJECTIVES: On completion of the subject, students will have the opportunity to develop the skills of intellect decision making. It also provides an extension of their communication skills to articulate the evidence based acquaintance and clinical knowledge for assessment and diagnosis of patients. It is a prospect to the students for the application of the research and professional information to novel situations.

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

1. Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
2. Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
3. Acquire a thorough understanding of advance concepts of Physiotherapy including Manual therapy and electrotherapy which can be applied in clinical practice.

1. Soft Tissue Techniques and Recent Advances in Manual therapy

(Terminology, Principles, Indications, Contra indications, Assessment and method of Application of the following techniques)

Unit

1. Myofascial release techniques
2. Muscle energy techniques
3. Trigger point release
4. High velocity thrust techniques
5. Positional release techniques
6. Lymphatic manipulations
7. Kinesio Taping

2. Ergonomics

1. History of ergonomics
2. Worker care spectrum
3. Postural examination
4. Job analysis
5. Work hardening programme
6. Exit assessment
7. Pre-employment screening
 - Job analysis
 - Job task analysis
 - Job site analysis
8. Work capacity analysis
9. Role of Physiotherapy in industrial set up
10. Workers functional capacity assessment
11. Industrial therapy
12. Adult education
13. Injury prevention and ergonomics

3. Radiology, Pathology and Diagnostic Studies

1. General studies
2. Principle of reading radiological reports
3. X-Ray, CT Scan and MRI scan in relation with various disorders/diseases
4. Routine examination of sputum, and analysis of the report.
5. Clinical co-relation with various disorders.
6. EEG, evoke potential etc.

Text Books:

1. Johnson, J. C. (2019). Soft Tissue and Trigger Point Release. Human Kinetics.
2. Hendrickson, T. (2020). Massage and Manual Therapy for Orthopedic Conditions. Jones & Bartlett Learning.
3. Duncan, R. (2014). *Myofascial Release*. Human Kinetics.

Reference Books:

1. Chaitow, L., & Crenshaw, K. (2006). Muscle Energy Techniques. Elsevier Health Sciences.
2. Langendoen, J., & Sertel, K. (2014). Kinesiology Taping the Essential Step-by-step Guide: Taping for Sports, Fitness & Daily Life : 160 Conditions & Ailments. Robert Rose.

Master in Physiotherapy (MPT) Second Semester
Biostatistics
Subject Code : MPT25203
Min. Hrs :- 80 Hrs.

COURSE OBJECTIVES:

- a) To have a thorough understanding of presenting supporting evidences and how to conduct statistical analysis.
- b) To have an understanding of model of biostatistics.
- c) To evaluate every procedure on the basis of evidences.
- d) To understand the data analysis procedure and their significance in research.

COURSE OUTCOMES:

- a) Students will be able to understand and apply concepts and terminology with in the area of biostatistics.
- b) Students will be able to describe research design and application of different methods to analyze the data collected to conduct and complete the research. .
- c) Record, extract and analyze key information about human and object.

BIOSTATISTICS

1. Biostatistics

- Introduction
- Definition
- Types
- Application in Physiotherapy

2. Data

- Definition
- Types
- Presentation
- Collection methods

3. Measures of central value

- Arithmetic mean, median, mode. Relationship between them
- Partitioned values- Quartiles, Deciles, Percentiles
- Graphical determination

4. Measures of Dispersion

- Range
- Mean Deviation
- Standard Deviation

5. Normal Distribution Curve

- Properties of normal distribution
- Standard normal distribution
- Transformation of normal random variables.
- Inverse transformation
- Normal approximation of Bioaxial distribution.

6. Correlation analysis

- Bivariate distribution:
- Scatter Diagram
- Coefficient of correlation
- Calculation & interpretation of correlational coefficient
- T-test, Z-test, P-value

7. Regression analysis

- Lines of regression
- Calculation of Regression coefficient
- Sampling distribution
- Standard error
- Types I & II error

9. Probability (in Brief)

10. Hypothesis Testing

- Null Hypothesis
- Alternative hypothesis
- Acceptance & rejection of null Hypothesis
- Level of significance

11. Parametric & non parametric tests

- Chi square test
- Mann-Whitney U test
- Wilcoxon Signed test
- Kruskal-Wallis test
- Friedman test
- T-test/student T test
- Analysis of variance

Text Book:

1. B.L Agarwal, Basic statistics , New Age International Publication.2012.

Reference Books:

1. Sundarrao, Introduction to biostatistics and Research Methodology, CBS, 1Ed, 2002.
2. C.R Kothari, Research methodology, New Age international publication, 3Ed, 2014.

Master in Physiotherapy (MPT) Semester-II
Practical
Subject Code : MPT25204
Min. Hrs :- 160 Hrs.

COURSE OUTCOME:

It should be aimed for assessing competence and skills of physiotherapeutic intervention and procedures as well as testing students ability to make relevant and valid observations, diagnostic & prognostic interpretations and inference, clinical, laboratory or experimental work relating to this her subject.

1. Assessment, evaluation and diagnosis
2. Practice and application of physiotherapeutic system in hospital/centre/ institution.
3. Application of advance physiotherapeutic maneuvers like manipulation (maitland, cyriax, mulligan etc.) and various neurological interventional concepts (bobath, NDT etc.).
4. Clinical reasoning, decision making, evidence based practice and recording system.
5. Short case from area of elective to assess investigative and diagnostic skills
6. Short case from area of elective to assess patient management skills

MPT –Semester-II for all Specialization
DISSERTATION
Course Code: MPT25205
Min. Hrs -: 120 Hrs.

- Every candidate shall submit synopsis to the University in the prescribed Performa containing particulars of proposed dissertation work, within 6 months from the date of commencement of the course on or before the dates notified by the university.
- The synopsis shall be sent through the proper channel. Such synopsis will be reviewed and the university will register the dissertation topic.

Students will prepare their synopsis for dissertation in consultation with their guides.

Performa for synopsis:

1. Introduction
2. Aims and Objectives
3. Review of Literature
4. Methodology or Material and Methods
5. References

Note:

1. The copies of synopsis must be in bound properly.
2. The candidate have to submit 4 copies of synopsis.
3. Colour scheme for synopsis will be white.
4. Text writing
Paper to be used – A4 size (Bond Paper)
Printing – One side
Font - Title – 18 Pt. Bold
Heading – 16 Pt. Bold.
Sub Heading – 14 Pt. Bold
Running text (English) -12 Pt. – Times New Roman
Running Text (Hindi) 14 Pt. (CG12, Krutidev 10)
Spacing : Double
Margin : Left – 4 Cm, Top, Bottom, Right – 2.5 Cm.
Page Numbering– Properly numbered

5. Writing Reference

Should be numbered consecutively in the order in which they are first mentioned in the text (not in alphabetic order). Identify references in text, tables and legends by Arabic numerals in superscript. References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure.

Journal Articles

Shashi A, Jain SK and Pandey M: *In-vitro* evaluation of antilthiatic activity of seeds of *Dolichos biflorus* and roots of *Asparagus racemosus* . International Journal of Plant Sciences 2008; 1:67-71.

A Book

Kalia AN: A Text Book of Industrial Pharmacognosy. CBS Publishers & Distributors, First Edition 2005.

A Chapter in a Book

Nadkarni KM: Indian Materia Medica. Popular Prakashan, Mumbai, Edition 3, Vol. I, 2000: 242-246.



Master in Physiotherapy (MPT) Semester-I & II
Clinical Practices
(Common to all specialization/discipline)
Min. Hrs :- 200 Hrs. (Sem-I) + 200 Hrs. (Sem.-II)

Post graduate students must know:

- Assessment, evaluation and diagnosis.
- Practice and application of physiotherapeutic system in hospital/ institution.
- Application of advance physiotherapeutic maneuvers like manipulation and various neurological interventional concepts.
- Clinical reasoning, decision making, evidence based practice and recording system.

Master in Physiotherapy (MPT) Semester-I & II
Teaching Skills/ Seminars/Symposia/Journal Club etc.*
(Common to all specialization/discipline)
Min. Hrs -: 80 Hrs. (Sem-I) + 80 Hrs. (Sem.-II)

(a) Teaching Skills

Candidates should be encouraged to teach undergraduate students if any. This performance will be based on assessment by the faculty members of the department and from feedback from the undergraduate students.

(b) Seminar/Symposia

- Seminars /recent advance presentation will be held every week, however, its timings are subject to clinical schedule. Topics must be well researched and must include common knowledge, recent advances, analysis and references.
- PG students should present minimum of two seminars (One in general and one in elective area) and Internal Assessment marks will depend on better topic selection and presentation.

(c) Journal Review Meeting (Journal Club):

The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting.

(d) Work diary / Log Book

Every student shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical practice, if any conducted by the candidate by the student.

Master in Physiotherapy (MPT) Semester-III
Pedagogy in Physiotherapy Education
(Common to all specialization/discipline)
Subject Code : MPT25301
Min. Hrs :- 80 Hrs.

COURSE OBJECTIVES: On completion of the study of this subject the student should be able to understand the dynamics of teaching & learning. Plan effective teaching sessions in Physiotherapy

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

- a) Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
- b) Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
- c) Acquire a thorough understanding of management and educational methodology in physiotherapy which can be applied in clinical practice.

Following are the topics to be included but not limited to:

1. Education

- Introduction
- Educational Philosophy- Idealism Naturalism, Pragmatism
- Aims of Education
- Functions of Education
- Formal, informal and non-formal Education
- Agencies of Education
- Current issues and Trends in Higher Education
- Issue of quality in Higher Education
- Autonomy and Accountability
- Privatization of Education

2. Concept of Teaching and Learning

- Meaning and scope of Educational Psychology
- Meaning and Relationship between teaching and learning
- Learning Theories
- Dynamics of behavior
- Individual differences

3. Curriculum

- Meaning and concept
- Basis of curriculum formulation
- Framing objectives for curriculum
- Process of curriculum development and factors involved.
- Evaluation of curriculum

4. Method and techniques of teaching

- Lecture
- Demonstration
- Discussion
- Seminar
- Assignment
- Project
- Case Study

5. Planning for teaching

- Bloom's taxonomy of instructional objectives
- Writing instructional objectives in behavioural terms
- Unit planning
- Lesson planning

6. Teaching aids

- Types of teaching aids
- Principles of selection, preparation and use of audio-visual aides

7. Measurement and Evaluation

- Nature of educational measurement: meaning, process, types of tests
- Construction of an achievement test and its analysis
- Standardized test
- Introduction of some standardized tools, important tests of intelligence, aptitude, and personality.
- Continuous and comprehensive evaluation

8. Guidance and counseling

- Meaning & concepts of guidance and counseling
- Principles of guidance and counseling

9. Awareness PROGRAMME

- Awareness and guidance to the common people about health and disease

Text Books

1. Armour, K. (2014). Pedagogical Cases in Physical Education and Youth Sport. Routledge
2. Higgs, J., Smith, M., Webb, G., & Skinner, M. (2017). Contexts of Physiotherapy Practice. Churchill Livingstone.

Reference Books

1. Shepard, K. F., & Jensen, G. M. (2011). Handbook of Teaching for Physical Therapists: Pageburst Retail. Butterworth-Heinemann Medical.
2. Perselli, V. (2016). Education, Theory and Pedagogies of Change in a Global Landscape: Interdisciplinary Perspectives on the Role of Theory in Doctoral Research. Springer.

Master in Physiotherapy (MPT) Semester-III
Administration Management & Ethical Issues
(Common to all specialization/discipline)
Subject Code : MPT25302
Min. Hrs -: 80 Hrs.

COURSE OBJECTIVE: On completion of the study of this subject the student should be able to understand the basic issues of Management & Administration. Practice as an informed professional on Legal & ethical issues

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

- a) Strengthen the basic fundamental basis of management and administration and legal and ethical issues.
- b) Acquire a thorough understanding of management and educational methodology in physiotherapy which can be applied in clinical practice.

SECTION-I

1. Management:

- Introduction
- Evolution of management
- Functions of management
- Management process – planning, organization, direction, controlling
- Decision-making.

2. Personnel management:

- Staffing
- Recruitment selection
- Performance appraisal
- Collective bargaining
- Job satisfaction

3. Marketing:

- Market segmentation
- Channels of distribution
- Promotion
- Consumer behavior

4. Total Quality Management:

- Basics of quality management
- Quality control
- Quality assurance PROGRAMME in hospitals & medical audit
- International quality system.

SECTION II

1. Administration, Legal Ethical Issues

- Hospital as an organization - Functions and types of hospitals
- Roles of Physical therapist, Physical therapy Director, Physiotherapy supervisor, Physiotherapy assistant, Physiotherapy aide, Home health aide, Volunteer.
- Rules of Professional Conduct.
- Legal responsibility
- Code of ethics
- Functions of Physiotherapy associations
- Role of the International Health Agencies
- Standards of practice for physiotherapists
- Liability and obligations in the case of medical legal action
- Law of disability & discrimination
- Confidentiality of the Patient's status
- Consumer protection law, health law, MCI, DC

Text Book

1. Elaine Lynne, Management in Health Care, Macmillan Publisher, 3rd Edition, 2000.

Reference Books

1. William A. Reinke, Health Planning for Effective Management, Oxford University Press, 1st Edition, 1996
2. Madhavan Nair, Education Methods, Jaypee, 4th Edition, 2009

Master in Physiotherapy (MPT) Semester-III
Orthopaedic Disorders and Management-I
Subject Code : MPT25303O
Min. Hrs :- 120 Hrs.

COURSE OBJECTIVE: On completion of the subject, students will have the opportunity to develop the skills of intellect decision making. It also provides an extension of their communication skills to articulate the evidence based acquaintance and clinical knowledge for assessment and diagnosis of patients. It is a prospect to the students for the application of the research and professional information to novel situations. Correlate the clinical manifestations to the organ of dysfunction of the musculoskeletal system. To understand the Conservative & Surgical management of the musculoskeletal conditions as relevant to physiotherapy.

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

1. Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
2. Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
3. Acquire a thorough understanding of musculoskeletal conditions which can be applied in clinical practice.

A. Musculoskeletal disorders

- Introduction, epidemiology of disease pattern, Path physiology, Clinical presentation, conservative management & complications of the following clinical conditions:

B. General Musculoskeletal Disorders

1. Congenital Malformation

- **Upper Limb-** Sprangel's shoulder, Radio ulnar synostosis, Madelung's deformity, Radial club hand, Contracted fingers, syndactyly, Polydactyly, Ectrodactyly.
- **Lower Limb-** Congenital dislocation CDH, Congenital Coxa vara, Congenital short femur, Congenital talipes equino varus, Congenital flat foot
- **Spine and Trunk** –Torticollis, Cervical rib, Scoliosis, Klipel-Feil Syndrome, Spina bifida

2. Rheumatic disorders

- Rheumatoid arthritis
- Ankylosis Spondylosis
- Reiter's disease
- Polymyalgia rheumatica
- Psoriasis

3. Infections of musculoskeletal system

- Acute
- Chronic

4. Metabolic and endocrine disorders

- Calcium metabolism
- Osteoporosis
- Osteomalacia and ricket

5. Tumors of the musculoskeletal system

- Classification
- Benign
- Malignant

6. Neuromuscular disorders

- Poliomyelitis.
- Cerebral palsy
- Arthrogryposis multiplex Congenita
- Muscular dystrophy

7. Osteoarthritis

- Hip & Knee

8. crystal deposition diseases

- Gout, Calcium pyrophosphate deposition disease (CPPD)

C. Musculoskeletal Disorders

Orientation and General principles of Orthopaedic surgery-

1. Arthrodesis
2. Osteotomy
3. Arthroplasty
4. Bone grafting
5. Internal and external fixations
6. Distraction and limb reconstruction
7. Correction of bone deformities and joint contractures.
8. Tendon transfers
9. Nerve suturing and grafting.

D. Physiotherapy Assessment

1. Review of General assessment – patients history, observation, palpation, examination
2. Pain assessment and scales for evaluation in acute and chronic pain
3. Sensory assessment
4. Motor assessment
5. Balance assessment and scales for assessment. Balance Outcome measures and there administration.
6. Assessment of Tone, flexibility, tightness of musculoskeletal tissues
7. Muscle Length Testing and special tests for the same
8. Reflex testing
9. Limb length measurement recent methods for assessment and its clinical applications
10. Postural assessment methods and common deviations from the normal
11. Examination of movements, Range of Motion
12. Clinical Gait assessment (observational methods and EMG gait analysis)
13. Functional assessment
14. X-Ray, MRI, CT report reading and analysis
15. Physical Disability evaluation in detail .ICF classification

E. Physiotherapy Management

Review of Basic Techniques:

1. Stretching (principals and methods)
2. Strengthening (principals and methods)
3. Passive movements testing and end feel assessment
4. Active exercise training , its benefits and various methods
5. Assisted resisted exercise training
6. Resisted exercise training. Its uses and disadvantages in comparison with other forms of exercise training
7. Postural Re-education (methods and techniques)
8. Electrotherapy Modalities(principal off application and properties along with various indications and contraindications)

Advanced Physiotherapy Treatment approaches:

1. Mobilization techniques like Mc Kenzie.
2. Pain management with emphasis on pain of peripheral origin and central origin
3. Gait Training
4. Biofeedback
5. Hydrotherapy
6. Patient & family education
7. Role of splints in Physiotherapy
8. Relaxation Techniques
9. Massage therapy
10. Wheel chair skills-basic

Text Books:

1. Mayil vahanan Natrajan, Text book of orthopaedics and trumatology, Lippincott, 7th Ed, 2011
2. Jayant Joshi, Essentials of Orthopaedics and applied physiotherapy, Elsevier, 2nd ed, 2011.

Reference Books:

1. John Crawford Adams, Outline of Orthopaedics, Churchill Livingstone, 2007.
2. Turek's orthopaedics, Mosby, 4Ed, 2004.
3. John Crawford Adams, Outline of orthopaedics, Churchill Livingstone, 13th Edition, 2001.
4. William A Mc Ardle, Exercise physiology, Lippincott, 7th ed, 2010.

Master in Physiotherapy (MPT) Semester-III
Neurological Disorders & Management-I
Subject Code : MPT25303N
Min. Hrs :- 120 Hrs.

COURSE OBJECTIVE: On completion of the subject, students will have the opportunity to develop the skills of intellect decision making. It also provides an extension of their communication skills to articulate the evidence based acquaintance and clinical knowledge for assessment and diagnosis of patients. It is a prospect to the students for the application of the research and professional information to novel situations.

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

- a) Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
- b) Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
- c) Acquire a thorough understanding of factors influencing learning including the learner and the environment, and how these factors can be applied in clinical practice.

NEUROLOGICAL DISORDERS

Introduction, etiology, Path physiology, Clinical presentation, conservative management & complications of the following clinical conditions:

- Congenital & hereditary Disorders
- Disorders of cerebral circulation
- Head Injury
- Spinal Cord Injury
- Disorders of Peripheral nerves
- Disorders of cranial nerves
- Disorders of muscles

Investigations

Orientation and Introduction, Physical basis, normal result & common abnormal responses, (in brief)

- Skull X ray
- Computerized Tomography
- Magnetic Resonance Imaging
- Intracranial Pressure monitoring
- Evoked Potentials
- EMG/ NCV
- Lumbar puncture
- Common Laboratory tests in Neurological disorders

NEUROSURGICAL DISORDERS

1. General Principles of neurosurgery
2. Disorders of CSF Fluid & circulation
3. Cerebral malformations
4. Spasticity management
5. Surgical repair of peripheral Nerves
6. Muscle lengthening/ Release
7. Management of an unconscious Patient
8. ICU management of a neurologically ill patient

PHYSIOTHERAPY ASSESSMENT

Perform thorough Physiotherapy assessment & list deficiencies

- Design individualized goals for the patient
- Rationalize the outcome of the assessment
- Document systematic, meaningful, accurate written records of the patient

1. Review of General assessment
2. Assessment of Higher mental functions
3. Neurodevelopment assessment
4. Pain assessment
5. Sensory assessment
6. Assessment of Tone, flexibility, tightness
7. Motor Control assessment
8. Muscle Length Testing
9. Postural assessment

10. Limb length measurement
11. Range of Motion
12. Balance assessment
13. Coordination assessment
14. Reflex Testing
15. Cranial nerve testing
16. Nerve Tension testing
17. EMG/ NCV report reading & analysis
18. Clinical Gait assessment
19. Functional assessment
20. Physical disability evaluation (in brief)

PHYSIOTHERAPY MANAGEMENT

Review of Basic Techniques:

1. Stretching
2. Strengthening
3. Passive movements
4. Active exercise training
5. Assisted Resisted Exercise training
6. Resisted exercise training
7. Postural Re-education
8. Electrotherapy Modalities

Advanced Physiotherapy Treatment approaches:

1. Neurodevelopment technique
2. Bobath
3. Vojta
4. Brunnstrom
5. PNF
6. Rood's Approach
7. Pain management
8. Gait Training
9. Wheelchair Prescription
10. Biofeedback
11. Hydrotherapy
12. Relaxation technique
13. Pediatric Neurophysiotherapy
14. Geriatric Neurophysiotherapy
15. Assistive Technologies and its role in Neurorehabilitation
16. Prosthetics and Orthotics in Neurorehabilitation
17. Wheelchair skills- Basic

Text Books:

1. Patricia. A. Downie, cash's text book of neurology for physiotherapist – Jaypee, 4th edition– 1993.
2. Susan B'O' Sullivan, physical rehabilitation, Jaypee, 6th edition. – 2014.
3. Neurological Rehabilitation VI Edition, Daray Umphered – 2006.
4. Sophie Levitt, treatment of cerebral palsy & motor delay, Wiley – Blackwell, 5th edition – 2013.

Reference Books:

1. Roberta B. Shepherd, Physiotherapy in Neurology, William Heinemann Medical books Limited, 2nd Edition, 1974.
2. Sophie Levitt, Cerebral Palsy – Treatment of cerebral palsy and motor delay, Blackwell sciences, 5Ed, 2013.
3. Catherine A Trombly, Occupational Therapy for physical dysfunction, Williams & Wilkins, 4Ed, 1998.
4. Ida Bromley, Tetraplegia and paraplegia, a guide for physiotherapist, Churchill Livingstone, 5th Edition, 1998.
5. Jan Stephen Tecklin, Pediatric Physical Therapy, Lippincott Williams & Wilkins, 3rd Edition, 1999.





Master in Physiotherapy (MPT) Semester-III
Cardiopulmonary Disorders & Management-1
Subject Code: MPT25303C
Min. Hrs -: 120 Hrs.

COURSE OBJECTIVE: On completion of the subject, students will have the opportunity to develop the skills of intellect decision making. It also provides an extension of their communication skills to articulate the evidence based acquaintance and clinical knowledge for assessment and diagnosis of patients. It is a prospect to the students for the application of the research and professional information to novel situations.

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

1. Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
2. Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
3. Acquire a thorough understanding of cardiopulmonary conditions and their management, cardiopulmonary Pharmacology which can be applied in clinical practice.

CARDIOLOGY

Epidemiology, Pathomechanics, clinical presentation, relevant diagnostic test (ECG, Echo cardiography, cardiac catheterization, Radionuclide scanning, stress testing, ABG, Labs etc.) and medical management of disorders of the cardiac system.

1. Assessment of symptoms of heart disease
2. Disorder of cardiac rate, Rhythm and condition
3. Cardiac Arrest
4. Cardiac failure
5. Shock
6. Rheumatic fever
7. Congenital heart disease
8. Disease of the heart valve
9. Infective Endocarditis
10. Ischemic heart disease
11. Hypertension
12. Orthostatic hypotension
13. CPR
14. Pericarditis
15. Heart disease in pregnancy
16. Degenerative arterial disease
17. Inflammatory arterial disease
18. Raynaud's disease
19. Venous thrombosis
20. Peripheral Vascular disease
21. Cardio myopathy
22. Disease of the pericardium

PHYSIOTHERAPY ASSESSMENT & MANAGEMENT

This course provide student with the principal of physiotherapy management in disorder of the cardiopulmonary system and the application of these principal in specific disorders. Through lecture, case conferences, journal discussion and class discussions students will be able to set up a treatment programme tailored to the patient's needs.

GENERAL PRINCIPAL

1. P.T. Assessment
2. Mobilization and Exercises (Strengthening conditioning and endurance)
3. Body positioning
4. Airway Clearance Techniques
5. Postural Drainage
6. Forced Expiratory technique
7. Breathing Exercise
8. Percussion and vibration
9. Exercise training and Exercise testing
10. Bio feed back
11. Respiratory Muscle training
12. Ventilator
13. Humidification and Aerosol therapy
14. Applying and Evaluating Bronchial Hygiene therapy
15. outcomes of pulmonary Rehabilitation
16. Functional Adaptations
17. Prevention of Morbidity and Mortality with the use of physical aids

18. PT in ICU
19. Techniques for facilitating ventilatory pattern
20. Respiratory therapy equipment and adjuncts to Cardiopulmonary therapy
21. Principal and prescription of cardiac Rehabilitation
22. Principal and prescription of pulmonary Rehabilitation
23. PT in neonatal ICU
24. Diabetes and Exercise

Text Books:

1. "Hurst's The Heart" by Valentin Fuster and Robert A. O'Rourke
2. "Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine" by Douglas P. Zipes, Peter Libby, Robert O. Bonow, and Douglas L. Mann
3. "Cardiovascular Medicine" by Eric J. Topol
4. "Cardiopulmonary Physical Therapy: A Guide to Practice" by Jennifer A. Frownfelter and Dean R. Smith
5. "Physiotherapy for Respiratory and Cardiac Problems: Adults and Paediatrics" by Eleanor Main and Linda Denehy
6. "Cardiovascular and Pulmonary Physical Therapy: Essentials of Practice" by Sara L. Paz

Reference Books:

1. "Braunwald's Heart Disease" (Elsevier)
2. "Hurst's The Heart" (McGraw Hill Education)
3. "Cardiopulmonary Physical Therapy: A Guide to Practice" (Wolters Kluwer)

Master in Physiotherapy (MPT) Semester-III
Sports Traumatology and Medical Conditions
Subject Code : MPT25303S
Min. Hrs :- 120 Hrs.

COURSE OBJECTIVE: Analyze and interpret various sports injuries/pathomechanics and apply appropriate therapeutic techniques on and off the field. Devise/modify various exercises for sports personnel and prevent injuries by applying proper dynamic during play. Analyse the effect of therapeutic modalities, indicators and contraindications and precaution to ensure safety. Demonstrate skills of assessment and management in both acute and long standing injury conditions. Carry out research in a particular aspect /specific event based on biomechanical/ physiological and other variables.

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

1. Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
2. Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
3. Acquire a thorough understanding of traumatology and medical conditions and physiotherapy management which can be applied in clinical practice.

Unit 1: Assessment Principles

- Detailed physical assessment of spine, hip, knee, ankle, shoulder, elbow and wrist.

Unit 2: Pre-Participation Examination

- Purpose and objectives of pre-participation screening.
- Components of physical and medical assessments.
- Fitness evaluation, risk assessment, and clearance criteria.

Unit 3: Causes and Mechanism of Sports Injuries, Prevention Strategies

- Mechanisms of common sports injuries (traumatic and overuse).
- Intrinsic and extrinsic factors leading to injury.
- Strategies for injury prevention: conditioning, warm-up, protective equipment, and safety protocols.

Unit 4: Common Acute and Overuse Injuries

- **Upper Extremity Injuries:**
Shoulder Girdle and Shoulder Injuries, Arm, Elbow and Forearm Injuries, Wrist and Hand Injuries
- **Lower Extremity Injuries:**
Pelvis, Hip and Thigh, Knee, Leg, Ankle and Foot.

Unit 5: Common Acute and Overuse Injuries

- **Spine Injuries:**
Common conditions including spondylolysis, herniated discs, and spinal stenosis.
- **Head Injuries:**
Concussion management, prevention, and return-to-play protocols.

Unit 6: Sporting Emergencies and First Aid Management

- Identification and management of sporting emergencies.
- Techniques for splinting, stretcher use, handling, and transfer.
- Management of acute cardiac arrest, heat illness, shock, internal and external bleeding.

Unit 7: First Aid Techniques and Special Situations

- Cardiopulmonary Resuscitation (CPR) and Shock Management
- Emergency Care for Conditions:
 - Acute asthma, epilepsy, drowning, burns.
 - Medical management for mass participation events.

Unit 8: Sports-Specific Injuries and Prevention

- Individual Sports (Track & Field)
- Team Sports (Hockey, Cricket, Football)
- Contact vs. Non-Contact Sports
- Water Sports Injuries

Recommended Textbooks and References:

1. Brukner & Khan's *Clinical Sports Medicine*
2. *Orthopedic Sports Medicine* by Freddie H. Fu
3. *Essentials of Sports Medicine* by Robert Sallis
4. Relevant journals and research articles on sports traumatology and sports medicine

Master in Physiotherapy (MPT) Semester-III
Practical (Common to all specialization/discipline)
Subject Code : MPT25304
Min. Hrs :- 160 Hrs.

Practical - Clinical Examination

COURSE OUTCOME:

It should be aimed for assessing competence and skills of physiotherapeutic intervention and procedures as well as testing students ability to make relevant and valid observations, diagnostic & prognostic interpretations and inference, clinical, laboratory or experimental work relating to this her subject.

1. Assessment, evaluation and diagnosis
2. Practice and application of physiotherapeutic system in hospital/centre/ institution.
3. Application of advance physiotherapeutic maneuvers like manipulation (maitland, cyriax, mulligan etc.) and various neurological interventional concepts (bobath, NDT etc.).
4. Clinical reasoning, decision making, evidence based practice and recording system.
5. Major Elective long case aimed at examining clinical skills and competency of the candidate for undertaking independent work as specialist
6. Short case from area of Elective to assess patient management skills.

MPT –Semester-III for all Specialization
DISSERTATION
Min. Hrs -: 80 Hrs.

- Students will continue research work as per the synopsis.
- Data should be collected as per the ethical norms and the sample size.
- Day to day discussions and presentation of the collected data before the guide needs to be done periodically.
- After discussion the concerned changes may be made in the research work to improve its quality.
- Care should be taken to avoid plagiarism and the research work should be genuine.

  Digvijay

Master in Physiotherapy (MPT) Semester-III
Clinical Practices
(Common to all specialization/discipline)
Min. Hrs :- 200 Hrs.

Post graduate students must know :

- Assessment, evaluation and diagnosis.
- Practice and application of physiotherapeutic system in hospital/ institution.
- Application of advance physiotherapeutic maneuvers like manipulation and various neurological interventional concepts.
- Clinical reasoning, decision making, evidence based practice and recording system.

Master in Physiotherapy (MPT) Semester-III
Teaching Skills/ Seminars/Symposia/Journal Club etc.
(Common to all specialization/discipline)
Min. Hrs -: 80 Hrs.

(a) Teaching Skills

Candidates should be encouraged to teach undergraduate students if any. This performance will be based on assessment by the faculty members of the department and from feedback from the undergraduate students.

(b) Seminar/Symposia

- Seminars /recent advance presentation will be held every week, however, its timings are subject to clinical schedule. Topics must be well researched and must include common knowledge, recent advances, analysis and references.
- PG students should present minimum of two seminars (One in general and one in elective area) and Internal Assessment marks will depend on better topic selection and presentation.

(c) Journal Review Meeting (Journal Club):

The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting.

(d) Work diary / Log Book

Every student shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical practice, if any conducted by the candidate by the student.

Master in Physiotherapy (MPT) Semester-IV
Applied Exercise Physiology
Subject Code: MPT25401
(Common to all specialization/discipline)
Min. Hrs :- 80 Hrs.

COURSE OBJECTIVE: On completion of the subject, students will have the opportunity to develop the skills of intellect decision making. It also provides an extension of their communication skills to articulate the evidence based acquaintance and clinical knowledge for assessment and diagnosis of patients. It is a prospect to the students for the application of the research and professional information to novel situations.

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

- a) Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
 - b) Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
 - c) Acquire a thorough understanding of applied exercise physiology which can be applied in clinical practice.
1. **Training and conditioning:** Physiological basis of physical training, training principles, interval training, continues running concept of anaerobic threshold and vo2 max, physiological effects of various physical training methods, aerobic and anaerobic training, strength training factors influencing training effects: intensity, frequency, duration, detraining, process of recovery, post exercise oxygen consumption factors affecting recovery process, overtraining .
 - a) **Body temperature regulation during exercise:** Mechanism of regulation of body temperature, Body temperature responses during exercise, Physiological responses to exercise in the heat, Acclimatization to exercise in the heat, Effects of age and gender on body temperature regulation during exercise, Physical activity and heat illness [heat exhaustion, dehydration exhaustion heat cramps & heat stroke], Prevention of Heat Disorders.
 - b) **Exercise in the Cold:** Effects of exposure to cold and severe cold, Wind chill, Temperature receptors. Role of hypothalamus, shivering, Frost Bite and other problems, Clothing and Environment.
 2. **Exercise at Altitude:** Exercise at altitude immediate physiological responses at high altitude, physiological basis of altitude training, phases of altitude training and specific training effects, altitude acclimatization, oxygen dissociation curve at altitude, disorders associated with altitude training.
 3. **Exercise and body fluids:** Measurement and regulation of body fluids, Body fluid responses and adaptations to exercise, Effects of dehydration and fluid replenishment on physiological responses to exercise and performance Fluid/carbohydrate replacement beverages.
 4. **Physical activity, body composition, energy balance and weight control:** Significance and measurement of body composition, Body composition during growth and aging, Body composition and physical performance, Effect of diet and exercise on body composition, Physical activity, energy balance, nutrient balance and weight control, Physical activity, fat distribution and the metabolic syndrome , Healthy weight loss, Ways and methods of weight reduction , fluid maintenance, disordered eating, nutritional ergogenic aids, diet supplements in athletes and others involved in physical activity.
 5. **Exercise and Diabetes Mellitus:** Exercise in insulin, requiring diabetes and non-insulin dependent diabetes mellitus, Effect of physical training on glucose tolerance and insulin sensitivity, Management of diabetes by diet and insulin

Text Books

1. Essentials of Exercise Physiology: McArdle, WD, Katch, FI, and Katch, VL. 2nd edn, Lippincott Williams and Wilkins (2000).
2. Fundamentals of Exercise Physiology: For Fitness Performance and Health, Robergs RA, and Roberts, S.O. McGraw Hill (2000).
3. Exercise Physiology: Powers, SK and Howley ET. 4th edn; Mc Graw Hill (2001)

Reference Books

1. Physiology of Sport and Exercise: Wilmore, JH and Costil, DL. Human Kinetics (1994)
2. Exercise Physiology- Human Bioenergetics and its Application: Brooks, GA, Fahey, TD, White, TP. Mayfield Publishing Company (1996)
3. Komi, P. (Ed.) (1992) Strength and power in sport. Blackwell Scientific Publications.



Master in Physiotherapy (MPT) Semester-IV
Orthopaedic Disorder & Management-II
Subject Code : MPT25402O
Min. Hrs :- 120 Hrs.

COURSE OBJECTIVE: On completion of the subject, students will have the opportunity to develop the skills of intellect decision making. It also provides an extension of their communication skills to articulate the evidence based acquaintance and clinical knowledge for assessment and diagnosis of patients. It is a prospect to the students for the application of the research and professional information to novel situations.

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

1. Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
2. Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
3. Acquire a thorough understanding of advance concepts of Physiotherapy including Manual therapy and electrotherapy which can be applied in clinical practice.

MUSCULOSKELETAL DISORDERS

Introduction, epidemiology of disease pattern, Path physiology, Clinical presentation, complication and physiotherapy management of the following clinical conditions:

Regional Orthopaedics

1. The shoulder

- Rotator cuff lesions
- Instability
- Rheumatoid disease of shoulder.
- Tuberculosis

2. The Elbow

- Tennis elbow
- Golfer's elbow
- Myositis ossificans

3. The Wrist

- Carpal tunnel syndrome
- Ganglion
- Wrist instabilities and special tests

4. The Hand

- Peripheral nerve injuries
- Tendon lesions and transfer surgeries
- Deformity in rheumatoid arthritis, peripheral nerve injuries, Hemiplegia
- SCI and leprosy

5. Cervical Spine

- Discogenic pain
- Whiplash injuries
- Thoracic outlet syndrome
- Brachial plexus injury and plexopathies
- Torticollis and wry neck in pathologies of cervical spine

6. Back

- Invertebral disc.
- Discogenic pain
- Spondylolysis & listhesis
- Scoliosis & kyphosis
- Tuberculosis
- Musculoskeletal causes of low back pain

7. The Hip

- Avascular necrosis of femoral head.
- Osteoarthritis
- Principles of Total Hip Replacement (THR)

8. Knee

- Osteoarthritis
- Meniscal / ligament injuries
- Genu valgum / varum
- Principles of Total Knee Replacement (TKR)

9. Ankle and foot

- Metatarsalgia
- Flat foot
- Carus foot
- Hallux valgus

- CTEV
- Ankle sprains

10. Fractures and joint injuries

- Principles of acute fracture care
- Conservative management of the following:
- Pediatric fractures
- Injuries of shoulder, upper arm and elbow
- Injuries of forearm and wrist
- Neurosurgery
- Injuries of Spine
- Injuries of Pelvis
- Injuries of Hip and Femur
- Injuries of Knee.
- Leg Injuries
- Injuries of ankle and foot

MUSCULOSKELETAL SURGERIES

General Principal and Orientation –

1. Operations on joints
2. Menisectomy, laminectomy, patellectomy, total knee and hip replacement
3. Malformations of spine & spinal cord
4. Surgeries for disc disorders
5. Amputations for upper and lower extremities.
6. Surgical management of fractures & other injuries
7. Orthopaedic implants- designs, materials, indications, post-operative assessment

PHYSIOTHERAPY ASSESSMENT

Review of General assessment – patients history, observation, palpation, examination

- Pain assessment
- Sensory and motor assessment
- Balance assessment
- Assessment of tone, flexibility and tightness
- Muscle Length Testing
- Reflex testing
- Limb length measurement
- Postural assessment
- Examination of movements, Range of Motion
- Clinical Gait assessment
- Functional assessment and outcome scales and questionnaires
- X-Ray, MRI, CT report reading & analysis
- Physical Disability evaluation and ICF classification. (in brief)
- Clinical Orthopaedic testing

Advanced physiotherapy Treatment approaches

- Mobilization techniques: Mulligan Cyriax, Maitland
- Combined movement therapy
- Muscle energy techniques and its applications
- Positional release techniques
- Myofascial release
- Trigger point therapy
- Group exercises
- Physiotherapy in home setting and use of assistive aids
- External aids, appliances, and adaptive self-help devices:
- Prescription, biomechanics, checkout and training.
- Community based rehabilitation in musculoskeletal disorders.
- Wheelchair prescription and advanced skills
- Transfer techniques.

Text Books:

1. Mayil vahanan Natrajan, Text book of orthopaedics and trumatology, Lippincott, 7th Ed, 2011
2. Jayant Joshi, Essentials of Orthopaedics and applied physiotherapy, Elsevier, 2nd ed, 2011.

Reference Books:

1. John Crawford Adams, Outline of Orthopaedics, Churchill Livingstone, 2007.
2. Turek's orthopaedics, Mosby, 4Ed, 2004.
3. John Crawford Adams, Outline of orthopaedics, Churchill Livingston, 13th Edition, 2001.
4. William A Mc Ardle, Exercise physiology, Lippincott, 7th ed, 2010.

Master in Physiotherapy (MPT) Semester-IV
Neurological Disorders & Management-II
Subject Code : MPT25402N
Min. Hrs :- 120 Hrs.

COURSE OBJECTIVE: On completion of the subject, students will have the opportunity to develop the skills of intellect decision making. It also provides an extension of their communication skills to articulate the evidence based acquaintance and clinical knowledge for assessment and diagnosis of patients. It is a prospect to the students for the application of the research and professional information to novel situations.

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

- a) Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
- b) Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
- c) Acquire a thorough understanding neurological disorders related to Central Nervous system can be applied in clinical practice situations. To understand the conservative & surgical management of the Neurological conditions as relevant to physiotherapy.

NEUROLOGICAL DISORDERS

Introduction, epidemiology of disease pattern, Path physiology, Clinical presentation, conservative management & complications of the following clinical conditions:

1. Degenerative disorders
2. Movement disorders
3. Autoimmune disorders
4. Infectious disorders of nervous system
5. Balance disorders
6. Disorders of spine & spinal cord
7. Metabolic & Nutritional disorders
8. Disorders of nervous system due to drugs & chemical agents
9. Tumors
10. Epilepsy
11. RSD
12. Brief outline on Psychiatric disorders

NEUROSURGICAL DISORDERS

Orientation and General principles of Neuro surgery

1. Intracranial abscess
2. Malformations of spine & spinal cord
3. Surgeries for disc disorders
4. Decompression surgeries for tumors
5. Stereotactic surgery
6. Image guided frameless stereotaxy
7. Psychosurgery

PHYSIOTHERAPY ASSESSMENT

1. Review of General assessment
2. Pain assessment
3. Sensory and motor assessment
4. Assessment of Tone, flexibility, tightness
5. Muscle Length Testing
6. Postural assessment
7. Limb length measurement
8. Range of Motion
9. Balance assessment
10. Coordination assessment
11. Reflex Testing
12. Cranial nerve testing
13. Nerve Tension testing
14. EMG/ NCV report reading & analysis
15. Clinical Gait assessment
16. Functional assessment
17. Environmental assessment

PHYSIOTHERAPY MANAGEMENT

Advanced Treatment approaches

- Neural mobilization technique
- Balance & Coordination training
- Vestibular training
- Cognitive and Perceptual disorders
- Environmental modifications
- Muscle energy techniques
- Group exercises
- Wheelchair skills- Advance

Text Books:

1. Susan B'O' Sullivan, physical rehabilitation, Jaypee, 6th edition. – 2014.
2. Neurological Rehabilitation VI Edition, Daray Umphered – 2006.
3. Patricia. A. Downie, cash's text book of neurology for physiotherapist – Jaypee, 4th edition– 1993.
4. Sophie Levitt, treatment of cerebral palsy & motor delay, Wiley – Blackwell, 5th edition – 2013.

Reference Books:

1. Sophie Levitt, Cerebral Palsy – Treatment of cerebral palsy and motor delay, Blackwell sciences, 5Ed, 2013.
2. Catherine A Trombly, Occupational Therapy for physical dysfunction, Williams & Wilkins, 4Ed, 1998.
3. Roberta B. Shepherd, Physiotherapy in Neurology, William Heinemann Medical books Limited, 2nd Edition, 1974.
4. Ida Bromley, Tetraplegia and paraplegia, a guide for physiotherapist, Churchill Livingstone, 5th Edition, 1998.
5. Jan Stephen Tecklin, Pediatric Physical Therapy, Lippincott Williams & Wilkins, 3rd Edition, 1999.

Master in Physiotherapy (MPT) Semester-IV
Cardiopulmonary Disorders & Management-II
Subject Code : MPT25402C
Min. Hrs :- 120 Hrs.

COURSE OBJECTIVE: On completion of the subject, students will have the opportunity to develop the skills of intellect decision making. It also provides an extension of their communication skills to articulate the evidence based acquaintance and clinical knowledge for assessment and diagnosis of patients. It is a prospect to the students for the application of the research and professional information to novel situations.

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

1. Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
2. Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
3. Acquire a thorough understanding of surgical cardiopulmonary conditions and physiotherapy management which can be applied in clinical practice.

PULMONOLOGY

Epidemiology, pathomechanics, clinical presentation, relevant diagnostic tests (PFT, Labs etc.) and medical management of disorders of the pulmonary system.

1. Obstructive pulmonary disease
2. Infection of the Respiratory system
3. Interstitial and infiltrative pulmonary disorders
4. Pulmonary disorders due to exposure to Organic and inorganic pollutants.
5. Pulmonary disorders due to systemic inflammatory disease
6. Pulmonary vascular disease
7. Disease of pleura
8. Respiratory failure
9. Supplemental Oxygen and Oxygen delivery devices in Chronic Respiratory Disease.
10. Neuromuscular and Skeletal disorders leading to Global Alveolar Hypoventilation
 - Myopathies
 - Spinal muscular Atrophies
 - Poliomyelitis
 - Motor Neuron Disease
 - HSMN
 - Kyphoscoliosis
 - Pectus Carinatum
 - Pectus Excavatum
11. Pathophysiology of paralytic – Restrictive pulmonary syndromes
12. Conventional Approaches to managing n-M-Ventilatory failure
13. Mechanical ventilation: Concept, Physiological effect and complications

CARDIOTHORACIC SURGERY

Surgical management of the above conditions, indication, contraindications for surgery, precautions after surgery. Also included:

1. Close v/s open heart surgery
2. Incisions
3. Preoperative Assessment of Patient
4. Pre and post op blood gas exchange
5. Haemodynamic performance of CTVS Patients
6. Emergencies in CTVS
7. A-V Shunt
8. Heart Transplant
9. Left Ventricular Assistive devices
10. Procedure on Sternum, Chest wall, diaphragm, mediastinum, oesophagus
11. Cardiopulmonary Bypass
12. Maintaining and Removing Artificial Airways

PHYSIOTHERAPY ASSESSMENT & MANAGEMENT

This course provide student with the principal of physiotherapy management in disorder of the cardiopulmonary system and the application of these principal in specific disorders. Through lecture, case conferences, journal discussion and class discussions students will be able to set up a treatment programme tailored to the patient's needs.

GENERAL PRINCIPAL

1. P.T. Assessment
2. Mobilization and Exercises (Strengthening conditioning and endurance)



3. Body positioning
4. Airway Clearance Techniques
5. Postural Drainage
6. Forced Expiratory technique
7. Breathing Exercise
8. Percussion and vibration
9. Exercise training and Exercise testing
10. Bio feed back
11. Respiratory Muscle training
12. Ventilator
13. Humidification and Aerosol therapy
14. Applying and Evaluating Bronchial Hygiene therapy
15. outcomes of pulmonary Rehabilitation
16. Functional Adaptations
17. Prevention of Morbidity and Mortality with the use of physical aids
18. PT in ICU
19. Techniques for facilitating ventilatory pattern
20. Respiratory therapy equipment and adjuncts to Cardiopulmonary therapy
21. Principal and prescription of cardiac Rehabilitation
22. Principal and prescription of pulmonary Rehabilitation
23. PT in neonatal ICU
24. Diabetes and Exercise

Text Books:

1. Crofton & Doogles Respiratory Diseases Vol – I & II, SEATON, 1 Ed, 2003.
2. Downie, Cash text book of chest, Heart & Vascular disorders –ELBS, 1 Ed, 2005.
3. Berne, Cardio Vascular Physiology ,Mosby, 4Ed, 2012.

Reference Books:

1. Nelson, ECG interpretation, Jaypee, 1st ed, 2011.
2. Bhalrao, Essentials of clinical cardiology, Jaypee, 1st ed , 2013.
3. Chatterjee, Cariology an illustrated Text book , Jaypee, 1st ed, 2012.
4. Beachey, Respiratory care- Anatomy and physiology :foundation, CBS ,3rd ed, 2013.
5. George Mathew & Praveen Aggarwal – Manual for UG, Medicine ed, 2015.

Master in Physiotherapy (MPT) Semester-IV
Fundamental in sports & Rehabilitation
Subject Code : MPT25402S
Min. Hrs :- 120 Hrs.

COURSE OBJECTIVE: On completion of the subject, students will have the opportunity to develop the skills of intellect decision-making. It also provides an extension of their communication skills to articulate the evidence based acquaintance and clinical knowledge for assessment and diagnosis of patients. It is a prospect to the students for the application of the research and professional information to novel situations.

COURSE OUTCOMES: On completion of this subject students should have the opportunity to:

1. Strengthen the basic fundamental basis of assessment and diagnosis and postulate this knowledge in clinical practice.
2. Analyses critical evaluate the patient conditions and formulation of accurate diagnosis.
3. A thorough understanding of on field and off field assessment criteria, which can be applied in clinical practice.

Unit-I : Brief idea about some common sports: Terminology, methodology, rules, equipments and infrastructure.

Cricket, football, hockey, tennis, badminton, table tennis, wrestling, boxing, track and field, gymnastic volleyball, basketball and aquatic sports.

Unit-II : Physics in sports : Type of motion, distance, speed, velocity, angular motion, acceleration, inertia, mass, newtons law of motion, force and its characteristics, classification, of force system couple composition and resolution of force system, function, projectile motion, levers and fluid mechanics.

Unit-III : Physiological response to exercise, Nutrition in sports.

Unit-IV: Biomechanics :

Biomechanics of running
Biomechanics throwing
Biomechanics jumping
Introduction to analysis equipment

Unit-V: Ergogenic Aids & Doping

Doping
Types of Doping
TUEC
Blood Dopping

Unit-VI: Miscellaneous

Kianthropometry in Sports
Psychological aspect in sports.
Spirit and moral values, dropping in sports and performance enhancing drugs.
Special aids in performance
Body composition, its analysis and effects of sports.
Protective equipment used in sports.

Text Book:

1. Mayil vahanan Natrajan, Text book of orthopaedics and trumatology, Lippincott, 7th Ed, 2011
2. William A Mc Ardle, Exercise physiology, Lippincott, 7th ed, 2010.
3. "Kinantropometry and Exercise Physiology Laboratory Manual" by Roger W. Earle and David L. Nelms
4. "Anti-Doping in Sports: Principles, Practices, and Challenges" by Verner Møller, Ivan Waddington, and John M. Hoberman

Reference Books:

1. John Crawford Adams, Outline of Orthopaedics, Churchill Livingstone, 2007.
2. John Crawford Adams, Outline of orthopaedics, Churchill Livingston, 13th Edition, 2001.

Master in Physiotherapy (MPT) Semester-IV
Practical
Subject Code : MPT25403
(Common to all specialization/discipline)
Min. Hrs -: 160 Hrs.

Practical - Clinical Examination

COURSE OUTCOME:

It should be aimed for assessing competence and skills of physiotherapeutic intervention and procedures as well as testing students ability to make relevant and valid observations, diagnostic & prognostic interpretations and inference, clinical, laboratory or experimental work relating to this her subject.

1. Assessment, evaluation and diagnosis
2. Practice and application of physiotherapeutic system in hospital/centre/ institution.
3. Application of advance physiotherapeutic maneuvers like manipulation (maitland, cyriax, mulligan etc.) and various neurological interventional concepts (bobath, NDT etc.).
4. Clinical reasoning, decision making, evidence based practice and recording system.
5. Major Elective long case aimed at examining clinical skills and competency of the candidate for undertaking independent work as specialist
6. Short case from area of Elective to assess patient management skills.

Master in Physiotherapy (MPT) Semester-IV
Dissertation
Subject Code : MPT25404
(Common to all specialization/discipline)
Min. Hrs -: 120 Hrs.

Every candidate pursuing MPT degree course is required to carry out research work on a selected research project under the guidance of a recognized postgraduate teacher. The results of such a work shall be submitted in the form of dissertation. Topic for dissertation shall be assigned by the guide.

If the subject of Thesis entails collaboration with other departments or specialties, the collaborative portion of the work will be supervised by Co-Guide, designated by the School of Health Sciences in consultation with the Guide. Where a Co-Guide is involved, the Thesis will be certified jointly by the Guide & Co-guide.

Every candidate shall submit synopsis to the University in the prescribed Performa containing particulars of proposed dissertation work, within 6 months from the date of commencement of the course on or before the dates notified by the university. The synopsis shall be sent through the proper channel. Such synopsis will be reviewed and the university will register the dissertation topic.

No change in the dissertation topic or guide shall be made without prior approval of the university. Guide will be only a facilitator, advisor of the concept and hold responsible in correctly directing the candidate in the methodology and not responsible for the outcome and results.

The dissertation should be written under the following headings.

1. Introduction
2. Aims or objectives of study
3. Review of literature
4. Material and methods
5. Results
6. Discussion
7. Conclusion
8. References
9. Master and Chart & Table (If Applicable)
10. Annexure (If Applicable)

The written text of dissertation/ research project shall not be less than 50 pages and shall not exceed 120 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of bond paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. A declaration by the candidate for having done the work himself should also be included, and the guide, head of the department and Director/Coordinator of the institute shall certify the dissertation/ research project.

Every candidate is required to give power point presentation before final submission of dissertation. Four copies of Dissertation/research project shall be submitted to the university, through proper channel, along with a soft copy (CD), 2 months before the final examination. It shall be assessed by two examiners appointed by the university, one internal and one external. There will be a power point open presentation of the submitted dissertation as per the schedule given by the university. This presentation shall be jointly evaluated by external and internal examiner.

If the student failed to secure the minimum passing marks he will resubmit the dissertation.

The bottom right corner of the page contains three handwritten elements in blue ink. From left to right: a large checkmark, a stylized signature that appears to be 'N', and a more elaborate signature that reads 'Durgin'.

Master in Physiotherapy (MPT) Semester-IV
Clinical Practices
(Common to all specialization/discipline)
Min. Hrs -: 200 Hrs.

Post graduate students must know :

- Assessment, evaluation and diagnosis.
- Practice and application of physiotherapeutic system in hospital/ institution.
- Application of advance physiotherapeutic maneuvers like manipulation and various neurological interventional concepts.
- Clinical reasoning, decision making, evidence based practice and recording system.

Master in Physiotherapy (MPT) Semester-IV
Teaching Skills/ Seminars/Symposia/Journal Club etc.
(Common to all specialization/discipline)
Min. Hrs -: 80 Hrs.

(e) Teaching Skills

Candidates should be encouraged to teach undergraduate students if any. This performance will be based on assessment by the faculty members of the department and from feedback from the undergraduate students.

(f) Seminar/Symposia

- Seminars /recent advance presentation will be held every week, however, its timings are subject to clinical schedule. Topics must be well researched and must include common knowledge, recent advances, analysis and references.
- PG students should present minimum of two seminars (One in general and one in elective area) and Internal Assessment marks will depend on better topic selection and presentation.

(g) Journal Review Meeting (Journal Club):

The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting.

(h) Work diary / Log Book

Every student shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical practice, if any conducted by the candidate by the student.