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BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT
ORDINANCES GOVERNING

MASTER OF PHYSIOTHERAPY (MPT) COURSE
2009 Onwards

MASTER OF PHYSIOTHERAPY (MPT) COURSE 125-

CONTENTS

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1. Duration of course

The duration of Masters in Physiotherapy course shall be two academic years:

a) First Professional M.P.T. 1 year

b) Second Professional M.P.T. II year

2. Admission criteria and qualifications

The admission to the M.P.T. course shall be made on the terms & conditions prescribed in the Notification issued by the Government of Punjab from time to time. Applicants must possess the following criteria:

Bachelor of Physiotherapy Degree with not less than 4 ½ years duration (including Six months of Internship) from any university within India or equivalent degree from any other recognized university with **50%** aggregate marks in University examination

3. Medium of Instructions

English shall be the medium of instructions for study and examination of the Masters in Physiotherapy degree course.

4. MPT Specialties

The MPT Course can be pursued in the following specialties:

1. MPT in Orthopedics
2. MPT in Neurology
3. MPT in Cardiopulmonary
4. MPT in Sports
5. MPT in Pediatrics
6. MPT in Community Based Rehabilitation
7. MPT in Obstetrics and Gynecology

5. Examinations

5.1 Each examination shall be held twice a year in the months of May/June and November / December or on such dates as may be fixed by the University from time to time.

5.2 Every candidate shall pay examination fee to the University as may be prescribed by the Board of Management from time to time unless otherwise notified

by the University. The last dates for receipt of examination form and Fee in the University Office shall be as under:

Examinations M.P.T.	Without Late fee	With late fee of Rs. 200/-	With late fee of Rs 500/-	With Late fee of Rs. 1500/-
May / June	March 1	March 15	March 31	April 15
Nov / Dec	Sept. 15	Sept. 30	Oct. 15	Oct. 31

The Vice Chancellor may permit acceptance of admission form and fee ten days before the commencement of examination with a late fee of Rs. 2000/-

6. First Year M.P.T. Examination

The First Year M.P.T. Examination shall be open to a person who

a) Has been enrolled for one academic year preceding the examination in a Physiotherapy College affiliated to the University.

b) Has his/her name submitted to the Registrar by the Principal of the college with the following certificates.

i) Of having attended separately in theory and practical / clinical not less than 75 percent of the lectures delivered and practicals conducted in each of the subjects prescribed for the examination provided that deficiency in the number of lectures delivered and practicals conducted may be condoned by the Principal to the extent of 10% of the lectures delivered.

ii) Of having secured at least 35% marks of the total marks fixed for internal assessment in each subject, separately, in order to be eligible to appear in all University examinations

iii) Of good moral character.

Note: Internal Assessment should be submitted to the University at least two weeks before the commencement of theory examinations. All the colleges shall adopt uniform criteria for Internal Assessment for which a record of each student shall be maintained in each department, which should be made available for inspection by

the student concerned as well as University authorities. The re-appear/ fail students will be re-assessed every time for the purpose of Internal assessment and their previous score of assessment will be carried forward. If a candidate fulfils the condition laid down in clause 6 above for one or more subject (s) He/she may be allowed to take the examination in such subject (s) in which he/she fulfils the requirements.

c) The First Year M.P.T. Annual Examination shall be held in May/June and the supplementary within six months of the annual examinations.

I) There shall be a provision of internal assessment of 20% marks in each subject of M.P.T. course in theory and practical, separately.

ii) Each theory paper shall be of three hours duration.

iii) The minimum number of marks to pass the examination shall be 50% in theory Including Internal Assessment and 50% in practical / clinical including internal assessment in each subject.

iv) A candidate securing 75% or above marks in any of the subjects shall be declared to have passed with distinction in that subject provided he has passed the examination in first attempt.

v) A candidate who fails in one or more subjects in his/her Fist attempt shall be permitted to attend classes in 2nd Year M.P.T. course. However, he/she must pass First Year M.P.T. examinations course at least 6 months before he/she is allowed to appear in the Second Year M.P.T. examination.

vi) A candidate who passes in one or more subjects shall be exempted from appearing in these subjects at a subsequent examination, but the candidate must pass the examination in a maximum of four attempts after having fulfilled basic eligibility criteria which includes attendance, assessment etc.and, failing which he/she shall have to appear in all the subjects of the examination.

vii) A candidate shall have to qualify in all papers prescribed for the MPT course within a period of four years from the date he joined the course for the award of MPT degree.

7. Second Year M.P.T. Examination

The Second Year M.P.T. Examination shall be open to a person who –

a) Has been enrolled for one academic year preceding the examination in a Physiotherapy College affiliated to this University.

b) Has previously passed the First Year M.P.T. examination of this University or an examination of any other recognized University / Institution in India considered equivalent for the purpose of the University.

c) Has his/her name submitted to the Registrar by the Principal of the College with the following certificates?

i) of having attended separately in theory and practical / clinical not less than 75 percent of the lectures delivered and practicals conducted in each of the subjects of Second Year M.P.T. course prescribed for the examination provided that deficiency in the number of lectures delivered and practical conducted may be condoned by the Principal to the extent of 10% of the lectures delivered.

ii) Of having secured at least 35% marks of the total marks fixed for internal assessment in each subject, separately, in order to be eligible to appear in all University examinations.

iii) Of good moral character.

Note: 1) Internal Assessment should be submitted to the University at least two weeks before the commencement of theory examinations. All the colleges shall adopt uniform criteria for Internal Assessment for which a record of such student shall be maintained in each department, which should be made available for inspection by the student concerned as well as University authorities. The re-appear / failed students will be re-assessed every time for the purpose of Internal Assessment and their previous score of assessment will be carried forward.

2) If a candidate fulfils the condition laid down in clause 7 above for one or more subject (s) he/she may be allowed to take the examination in such subject (s) in which he/she fulfils the requirements.

3) The 2nd M.P.T. course shall be of one year duration and examination shall ordinarily be held in May/June. The Supplementary examination shall be held within six months of the annual examination

i) There shall be a provision of internal assessment of 20% marks in each subject of M.P.T. course in theory and practical, separately.

ii) Each theory paper shall be of three hours duration.

iii) The minimum number of marks to pass the examination shall be 50% in theory including Internal Assessment and 50% in practical / clinical including Internal Assessment and 50% in practical / clinical including Internal Assessment in each Subject.

iv) A candidate securing 75% or above marks in any of the subjects shall be declared to have passed with Distinction in that subject provided he / she has passed the examination in first attempt.

v) A candidate who passes in one or more subjects shall be exempted from appearing in these subjects at the subsequent examinations but the candidate must pass the examination in a maximum of 4 attempts, failing which he / she shall have to appear in all the subjects of the examination.

8. Methods of training

The training of postgraduate for MPT degree shall be on a full time pattern with graded responsibilities in the management and treatment of patients entrusted to his / her care. Training should include involvement in laboratory, experimental work and research studies. The participation of the students in all facets of educational process is essential.

Every Candidate should take part in seminars, group discussions, clinical rounds, case demonstrations, clinics, journal review meetings and other continuing physiotherapy education (CPE) activities. Every candidate shall be required to participate in the teaching & training programs of undergraduate students.

9. Monitoring progress of studies (internal monitoring)

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring shall be done by the staff of the department based on participation of the students in various teaching / learning activities. It must be structured and assessment be done using checklists that assess various aspects. Model checklists are given in Table I to VII in section 18 which may be copied & used.

Work diary: Every candidate shall maintain a work dairy and record his/ her participation in the training programs 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 or laboratory procedures, if any, conducted by

the candidate. The work diary shall be, certified by the Head of the Department and Head of the Institution after proper securitization by the concerned teacher before presenting in the university examination.

Periodic Tests: The College must conduct two tests, one of them be mid term and other pre final test at the end of the first year and similarly in the second year. The test may include written theory papers, practical, viva voce and clinical in the pattern of university examination. Records and marks obtained in such tests shall be used for internal assessment and be maintained by the Head of the Department under supervision of the Principal.

10. Attendance

A candidate is required to attend a minimum of 75% of clinical training & of the total classes conducted during each academic year of the MPT course. Any student who fails to complete the course in this manner shall not be permitted to appear for the University examinations. Report has to be sent to the university at every six months.

11.

A. Teaching & learning experience

Minimum requirements for each Candidate

(a) Journal Review meetings -- Five in one year

(b) Seminars -- Five in first year and three in second year

(c) Clinical presentation -- 10 cases in each year

(d) Special Clinics (Desirable) -- 5 in each year

(e) Inter departmental meetings -- 5 in two years

(f) Community work, camps / field visits -- Four in two years

(g) Clinical rounds -- 250 hours in two years

(h) Dissertation work -- 200 hours in two years

(I) Participation in conferences -- 2 in two years

(j) Presentation of paper (Desirable) -- 1 in two years

(k) Publication of paper (Desirable) -- 1 in two years

(i) Teaching Activities – UG Teaching

(m) Learning Activities: Self learning, use of computers & Library

(n) Any other – Specify (e.g.: CPE, workshops, symposium, hands on) -- 1 in 2 years.

B. Graded responsibility in care of patients and operative work

(Structured training Schedule for clinical & elective subjects only)

Table 1

Category	I year MPT	II year MPT
O	20 cases	20 cases
A	20 cases	30 cases
PS	100 cases	60cases
PI	20 cases	50 cases

Keys: O – Observes

A – Assisted a Senior Physiotherapist

PS – Performed Procedure under the direct supervision of a Senior Specialist

PI – Performed Independently

12. Dissertation – Accepted/Not Accepted/ Accepted with modification

Every candidate pursuing MPT degree course is required to carry out work on a selected research project **of relevant speciality** under the guidance of a recognized postgraduate teacher. The results of such a work shall be submitted in the form of dissertation. The dissertation is aimed to train a graduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search & review of literature getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions.

Every candidate shall submit to the Principal of the College in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within 6 months from the date of commencement of the course after having been presented and approved by the Institutional Research and Ethics Committee. The synopsis shall be sent through the proper channel i.e. through Guide/Supervisor and Head of the Dept. Such synopsis will be reviewed and the College and University will register the dissertation topic. No change in the dissertation topic or guide shall be made without prior approval of the university.

One Page Abstract to be submitted to the University.

The dissertation should be written under the following headings (with relevant Tables/ Graphs/ Diagrams/ Pictures where required)

1. Introduction.
2. Review of literature
3. Aims and objectives of study
4. Material & methods
5. Observations / Results
6. Discussion
7. Conclusion
8. Summary
9. Bibliography
10. Annexure.

I) Statistical analysis

ii) Master chart

The written text of dissertation shall not be less than 150 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" X 11.69") and Hard bound. **General text should be of times new roman with font size 12**. The guide/supervisor, co-supervisor, Head of the department and Principal shall certify the dissertation. Five copies of dissertation thus prepared shall be submitted to the Registrar by the Principal of the college, three months before final examination on or before the dates notified by the university.

The examiners appointed by the university shall evaluate the dissertation with comments on each item of the Dissertation. Approval of dissertation work is an essential pre-condition for a candidate to appear in the university examination. In case of Disapproval/ Resubmission proper reasons and Justification has to be given by the Examiners .Two evaluators (examiners) apart from the guide shall evaluate the dissertation. One of the evaluator is external from outside BFUHS the other one shall be from another college affiliated to BFUHS. Acceptance by both the external evaluators is mandatory

13. Guide

The academic qualification and teaching experience required for recognition by this University for a Post graduate teacher for guiding MPT Candidates shall be:

1. MPT / MSPT with **atleast five years of full time teaching and clinical experience in core subject area after post graduation. Not withstanding the above clause in any case of acute shortage of qualified postgraduate guides, a PG teacher with 3 years teaching experience after MPT/MSPT can be considered.**
2. The age of Post graduate teacher / guide shall not exceed 65 years.
3. The guide student ratio shall be 1:3

Co- guide: May be included provided the work requires substantial contribution from a sister department or from another medical institution recognized for teaching / training by Baba Farid University of Health Sciences. The co- guide shall be a recognized Post graduate teacher of Baba Farid University of Health Sciences. Same guide lines for other master degree programs in Medicine under BFUHS

14. Change of guide

In the event of a recognized guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the University.

15. Schedule of examination

The examination for MPT course shall be held at the end of each academic year. The university shall conduct two examinations in the year at an interval of 4-6 months between two examinations. Not more than two examinations shall be conducted in an academic year.

16. Scheme of examination written Examination (Theory) = 80 Marks + 20 Internal Marks

Written examination consisting of question papers, each of three hours duration and each paper carrying 80 Marks. Recent advances in Physiotherapy may be asked in any or all the papers.

Practical Examination - 160 Marks + 40 Internal marks=200

It should be aimed at examining clinical skills and competency of the candidates for undertaking independent practice.

Viva – voce Viva-voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communications skills. The marks of viva-voce examination shall be included in the clinical examination.

EXAMINERS

There shall be 2 examiners in each subject. One of them shall be external from outside the university and the other shall be internal, preferably from the same college or as decided by the University.

CRITERIA FOR DECLARING AS PASS IN UNIVERSITY EXAMINATION

A candidate shall secure not less than 50% of marks in each head of passing which shall include theory and practical (including clinical viva- voce examination) separately. A candidate securing less than 50% of marks as described above shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the University.

Declaration of distinction.

A successful candidate passing the university examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate mark is 75 percent and above. Distinction will not be awarded for candidates passing the examination in more than one attempt.

17. Type of questions in written paper

Theory – 80 Marks each paper

1. Long essay (1 Questions) – 1 x 20 =20 marks
2. Short essay (6 Questions) – 6 x 10=60 marks

Total 80+20 (Internal Assessment) =100

Practical / Clinical – 160 marks.

Note: All cases for clinical examination should be on patients.

1. Long case (1) – 1 x 40=40
2. Short cases (2) - 2 X 25 = 50 marks

i if a candidate gets a long case in surgical conditions then the general short case will be in medical condition and vice- versa

ii. Repetition of the cases should be avoided as far as possible.

3. Viva + Spots (10 X 3 = 30): 40+30=70 marks

Total 160 + 40 (Internal Assessment) = 200

Question Paper Pattern

All Question are compulsory/No Choice

18. Monitoring learning progress – checklists and log book

MODEL CHECK- LIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS

Name of the Student:

Name of Faculty / Observer:

Date:

TABLE I

S.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		(0)	(1)	(2)	(3)	(4)
1	Article chosen was					
2.	Justification of Article					
3.	Review of Literature					
4.	Aims and Objectives					
5.	Materials and methods					
6.	Observations					
7.	Discussions					
8.	Relevant Statistics					
9.	Message					
10.	Implication					
11.	Ability to respond to questions on the paper / subject					
12.	Audio- visual aids used					
13	Ability to defend the paper					
14	Clarity of presentation					
15.	Any other observation					
	Total Score					

TABLE II

MODEL CHECK LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Name of the Student:

Name of Faculty / Observer:

Date:

S.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
1.	Introduction	(0)	(1)	(2)	(3)	(4)
2.	Review of Literature					
3.	Recent Developments					
4.	Clarity of presentation					
5.	Understanding of subject					
6.	Ability to answer the questions					
7.	Time management					
8.	Appropriate use of Audio / Visual aids					
9.	Overall performance					
10.	Any other observations					
	Total Score					

TABLE III

MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK

Name of the Student: Date:

Name of Unit Head / Supervisor:

Date:

S.No	Points to be Considered	Poor	Below Average	Average	Good	Very Good
		(0)	(1)	(2)	(3)	(4)
1.	Punctuality					
2.	Interaction with colleagues and supportive staff					
3.	Maintenance of case records					
4.	Presentation of cases during Rounds					
5.	Investigations work up					
6.	Bedside manners					
7.	Rapport with patients					
8.	Treatment approaches & Techniques					
9.	Overall quality of Clinical work					
	Total Score					

TABLE IV

EVALUATION FOR CLINICAL PRESENTATIONS

Name of the Student:

Name of Faculty / Supervisor:

Date:

S.No	Points to be Considered	Poor	Below Average	Average	Good	Very Good
		(0)	(1)	(2)	(3)	(4)
1.	Initial therapist approach to patient					
a	Completeness of History					
b	Whether all relevant points elicited					
c	Clarity of presentation					
d	Logical order					
e	Mentioned all positive and negative points of Importance					
f	Accuracy of general physical examination					
g	Whether all physical signs elicited correctly					
h	Whether any major signs missed or misinterpreted					

2	Provisional Diagnosis– whether it follows logically from history & findings with Justification					
3	**Differential Diagnosis with Justification**					
4.	**Investigations** required. Special Investigations-Justify					
5.	**Final Diagnosis- Justify**					
6	**Options for treatment**					
7	**Treatment Selected- Justify**					
8	**Treatment Protocol**					
9.	**Recent Advances**					
10.	**Time Management**					
	Grand Total					

TABLE V

MODEL CHECK LIST EVALUATION OF TEACHING SKILL PRACTICE

Name of the Student:

Name of Faculty / Observer:

Date:

S.No	Points to be Considered	Poor	Below Average	Average	Good	Very Good
		(0)	(1)	(2)	(3)	(4)
1	Communication of the purpose of the talk-Introduction					
2	The sequence of the ideas					
3	Uses Audio visual aids appropriately					
4	The use of practical examples and / or illustrations					
5	Speaking style (enjoyable, monotonous etc., - Specify					
6,	Evokes audience interest and Participation in the subject					
7	Summary of the main points at the end					
8	Asks questions					
9	Answer questions and clears doubts					
10	Effectiveness of the talk (Feedback Forms)					

TABLE VI

MODEL CHECK-LIST FOR DISSERTATION SYNOPSIS PRESENTATION

Name of the Student:

Name of Faculty / Supervisor:

Date:

S.No	Points to be Considered	Poor	Below Average	Average	Good	Very Good
		(0)	(1)	(2)	(3)	(4)
1	Interest shown in selecting a topic					
2	Appropriate review of literature					
3	Discussion with guide & other faculty					
4	Identification of Problem					
5	Formulation of Hypothesis					
6.	Preparation of proforma					
7.	Relevance of Topic					
	Total Score					

TABLE VII

CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE

Name of the Student:

Name of Faculty / Supervisor:

Date:

S.No	Points to be Considered	Poor	Below Average	Average	Good	Very Good
		(0)	(1)	(2)	(3)	(4)
1	Periodic Consultation with guide					
2	Regular collection of case material					
3	Depth of analysis / discussion					
4	Departmental prescription of findings					
5	Quality of final output					
6.	Review all Heading a. Introduction b. Review of literature c. Aims and objectives of study d. Material & methods e. Observations f. Discussion g. Conclusion h. Summary I. Bibliography j. Tables & Diagrams k. Annexure (if any). Statistical analysis Master chart					
7.	Others					
	Total Score					

19. COURSE OF STUDY

MPT in Orthopedics — 144 —

SYLLABUS

COURSE STRUCTURE OF M.P.T –

PART / YEAR – 1 – M.P.T.

S.No	Subjects	Code	Theory/ Exam	Internal Assessment	Total	Total Study /Hour Total No. of Weeks x Hours
1.	Review of Basic Sciences (Anatomy, Physiology, Pathology, Pharmacology & Biochemistry)	MPO-101	80	20	100	30 x 3 = 90
2.	Review of Basic Therapeutics (Exercise Therapy, Electro Therapy, Biomechanics & Bio. Engineering)	MPO – 102	80	20	100	30 x 3 = 90
3.	Advanced Therapeutics & Diagnosis (Manual Therapy, MET, Myofascial Release, LASERS, Micro Current, Radiology & Diagnostic Studies. Lab (Pathology)	MPO – 103	80	20	100	30 x 3 = 90
4.	Computers, Research Methodology & Biostatistics	MP – 104	80	20	100	30 x 2 = 60
5.	Clinical / Practicals	MPO-105				30 x 24 = 720
				Total	400	1050

PART I YEAR – II (M.P.T. ORTHO)

S.No	Subjects	Code	Theory/ Practical Exam	Internal Assessment	Total	Total Study /Hour Total No. of Weeks x Hours
1.	Physical therapy in Orthopedic Conditions	MPO – 201	80	20	100	30 x 4 = 120
2.	Spinal Disorders And Rehabilitation	MPO – 202	80	20	100	30 x 4 = 120
3.	Hand Rehabilitation	MPO – 203	80	20	100	30 x 4 = 120
4.	Skill enhancing studies (Ethics, Educational Technology & Medico legal aspects)	MP– 204	80	20	100	30 x 4 = 120
5.	Practical/Clinical Exam Viva Voce	MPO – 205	160	40	200	30 x 24 = 720
				Total	600	1200

COURSE OBJECTIVES (MPT- Orthopedics I Year)

The Post graduate Physiotherapy Programme:

1. ACQUIRE ADEQUATE KNOWLEDGE OF THE BASIC MEDICAL SUBJECTS AND ADVANCE KNOWLEDGE IN ORTHOPEDIC CONDITIONS AND IN THE PRACTICE OF PHYSIOTHERAPY.
2. DEVELOPS SKILLS AND TECHNIQUES OF EXERCISE THERAPY AND ELECTROTHERAPY MODALITIES, IT'S APPLICATION IN VARIOUS MEDICAL AND SURGICAL CONDITIONS. ADVANCE CONCEPT APPLICATION IN THEIR SPECIALIZED SUBJECTS
3. DEVELOPMENT OF PROPER ATTITUDE FOR COMPASSION AND CONCERN FOR THE INDIVIDUALS AND WELFARE OF PHYSICALLY HANDICAPPED IN THE COMMUNITY.

4. DEMONSTRATES SKILLS IN HANDLING THE PATIENTS WITH VARIOUS DISORDERS, TEACHING METHODS, MANAGEMENT, RESEARCH GUIDANCE AND COUNSELING.
5. PRACTICE MORAL AND ETHICAL VALUES.

SUBJECT 1

REVIEW OF BASIC SCIENCES

M.P.T. – 1st Year,

Code – M.P.O. – 101

Max Marks – 100

Unit I: Human Anatomy (Basic & Applied related to the specialty)

1. Osteology: Basic terminology, composition, function, classification of Bones, Structural details of bones of whole body
2. Arthrology: Definition and Classification of Joints, movements of Joints, Description of Joints of Upper and Lower Extremities with their Ligaments, Vertebral Column.
3. Myology: Classification and Structure of Muscles, Description of all major muscles with their origin, Insertion, nerve supply and action.
4. Neurology (In Brief) Knowledge of Central Nervous system, nerve plexus of the body with their distributions (Cervical Plexus, Brachial plexus, Lumbosacral plexus)

Unit II: Human Physiology (Related to the Specialty)

1. Musculoskeletal System- bones, cartilages, muscles, ligaments etc

a) Muscle Physiology: Structure and function of muscle fibers, Mechanism of muscle contraction

b) Exercise Physiology: Respiratory responses to exercise.

i) Ventilation at Rest and during Exercise., Ventilation and the Anaerobic Threshold, Alveolar Ventilation and Dead Space, Other Lung volumes and Capacities, Oxygen Cost of breathing, Second wind. Stitch in side.

ii) Cardiovascular responses to exercise: - Cardiovascular aspects of Exercise: Control and regulation of heart and circulation at rest and during exercise.

iii) Exercise and Acid Base Balance: Acid and Base Buffers, pH, Respiratory Regulation of pH, Alkali Reserve,

iv) Hormonal responses to exercise: Growth hormone (GM), Thyroid and Parathyroid Hormones. Anti diuretic Hormone (ADM) and Aldosterone, Insulin and Glucagons, The catecholamine; epinephrine and norepinephrine. The sex hormones. The glucocorticoids (Cortisol) and Adrenocorticotrophic Hormones (ACTH). Prostaglandins and Endorphins:

2. Cardiovascular system.

a) Structure & Properties of heart

b) Cardiac Cycle.

c) The regulation of heart's performance.

d) Cardiac output.

e) The arterial blood pressure.

f) The physiology of vascular system.

g) Lymphatic circulation.

3. Respiratory system

a) Functional anatomy

b) Ventilation & control of ventilation

c) Alveolar air

d) Regulation of the breathing

e) Pulmonary function test.

Unit III: Pharmacology (Related to Specialty)

Their effects, uses, side effects and dosage.of following group of drugs

1. Drugs used in pain.
2. Local anesthetics
3. Steroids
4. Muscle relaxants.
5. Drug acting upon central nervous systems & autonomic nervous system.
6. Topically acting drugs.

Unit IV: Pathology (Related to Specialty)

1. General Pathology (Cell Injury, Inflammation, repair, immune system)

2. Musculoskeletal system.

a) Bones: - Hereditary & Metabolic diseases.(Osteoporosis, rickets, Osteomalacia, Osteitis fibrosa cystica, renal Osteodystrophy, Gout, Crystal Synovitis), Infections : (Osteomyelitis, tuberculosis)

b) Joints: - Degenerative joint disease- Bursitis.

c) Skeletal muscles (muscle atrophy, myositis ossificans, muscular dystrophy, myasthenia gravis)

d) Hemophilia and other bleeding disorders

e) Delayed Healing responses in Soft tissue injuries

Unit V: Biochemistry: (Related to Specialty)

Diet- it's nutritional and calorific value of various foods balance diet, energy requirement of various individuals.

SUBJECT 2

REVIEW OF BASIC THERAPEUTICS

M.P.T. – 1st year

Code – M.P.O – 102

Max. Marks = 100

Unit I: Exercise Therapy

Review of the following techniques.

a) Assessment techniques like MMT & Goniometry

b) Stretching and mobilization.

c) Re-education and strengthening.

d) Balance and Co-ordination exercises.

e) Gait analysis and training (both normal & pathological gait).

f) Relaxation & soft tissue manipulation.

g) Posture

h) PNF

i) Traction.

j) Hydrotherapy.

Unit II: Electrotherapy

1. General review of low, medium & high frequency currents and their modification like didynamic and Russian currents.
2. Ultrasound.
3. UVR and IRR
4. Cryotherapy
5. Intermittent pneumatic compression
6. Other thermal modalities. (Heat and Cold)

Unit III: Biomechanics and Pathomechanics.

1. Introduction to Kinesiology and Biomechanics
2. Principle of Biomechanics, Nature and importance of Biomechanics in Physiotherapy.
3. Introduction to Biomechanics, Analysis of human motion. Analytical tools and techniques – Isokinetic dynamometer, Kinesiological EMG, Electronic goniometer, Force platform, Videography.
4. Shoulder , Elbow, Wrist and Hand
5. Pelvis, Hip, Knee, Ankle & Foot
6. Spine.
7. Posture & Gait analysis

Unit IV: Bio –Engineering

1. Principles of Orthotic- types, Indications, contra Indication, assessment (check out), uses and fitting- region wise.

a) Fabrication of simple splints and self help devices for upper and lower extremity- indications and applications.

b) Orthotics for the Upper Limb.

c) Orthotics for the Lower Limb.

d) Orthotics for the Spine.

2. Principles of prosthetics- types, indications, contraindications, assessment check out, uses and fitting – region wise.

3. Principles of vocational problems, including evaluation & vocational goals for people with disability.

SUBJECT 3

ADVANCED THERAPEUTICS AND DIAGNOSIS (Related to Specialty)

M.P.T. – 1st year

Code – M.P.O – 103

Max. Marks = 100

Unit I : Manual Therapy: Introduction, History, Basic Classification, Assessment for manipulation, discussion in brief about the concepts of mobilization like Cyriax, Maitland & Mulligan and Butler in mobilization of joints & nerves. Methodology in general with examples (Manipulation studies & work according to their specialization). **PNF and taping techniques.**

Unit II: Muscle Energy techniques and positional stretch: The basic concept and application of these techniques.

Unit III: Myofascial Release: Concept & brief discussion of its application techniques.

Unit IV: LASERS: Production, types, effects, application, indications & contraindications.

Unit V: Nerve conduction studies and EMG: Normal & abnormal action potentials, its recording protocols, analysis & apparatus.

Unit VI: Micro currents: Concept, Indications, And Contraindications & Application.

Unit VII: Biofeedback: Principles, effects, uses and contraindications.

Unit VIII: ICU assessment, monitoring and Management

Unit IX: Recent Advancement in Physiotherapy.

(FOLLOWING ARE ONLY FOR PRACTICAL KNOWLEDGE; NOT FOR THEORY EXAM)

Unit X: Basic Principles of Radiology & Diagnostic Studies, esp. X ray

Unit XI: Analysis of basic laboratory Examination reports and their clinical Co-relation with various musculoskeletal disorders and nervous disorders

SUBJECT 4

COMPUTER, BIOSTATISTICS AND RESEARCH METHODOLOGY

M.P.T. – 1st year

Code – M.P. – 104

Max. Marks = 100

Unit I: Biostatistics & Research Methodology

1. Introduction
2. Uses of statistical methods & standard deviation.
3. Methods of collection, classification, tabulation & presentation of data.
4. Central tendency-Mean, Median, Mode & Standard deviation
5. Correlation & Regression:-Karl Pearson's co relation method, Rank co relation method
6. Regression & coefficients.
7. Sampling, hypothesis & testing
8. Data collection **including methods and tools of data collection like surveys and Questionnaire**
9. **Study of Research designs**
10. Types of sampling **and sampling errors**
11. t- Test, Z- Test, Chi Square test
12. **Data analysis and interpretation**

Unit II: Computer

1. Introduction of software and hardware.
2. M.S. Office,
3. Application of computers **and internet** in medical sciences.
4. **Practice of Statistical methods using Statistical software like SPSS etc.**

PRACTICAL

M.P.T. – 1st year

Code – M.P.O – 105

Unit I: Exercise Therapy:

1. Assessment of joint, muscles & nerve.
2. Various types of strengthening techniques.

3. Various types of mobilization techniques.
4. Stretching & Soft tissue mobilization.
5. Gait analysis & training.
6. Suspension therapy
7. Muscle Reeducation
8. PNF Patterns and Techniques
9. Postural assessment & re education.
10. Balance & coordination.
11. Special techniques of exercise therapy.
12. Traction.
13. Hydrotherapy.

Unit II: Electro Therapy.

1. All types of low & medium frequency currents.

a) Faradic.

b) Galvanic.

c) High voltage current

d) Di dynamic.

e) Russian.

f) Interferential Therapy.

g) TENS.

h) Micro-currents.

2. All types of high frequency currents & modalities.

a) Short wave diathermy.

b) Microwave diathermy.

c) Ultrasound.

3. Miscellaneous.

a) Cryotherapy.

b) Biofeedback.

c) UVR.

d) IRR.

e) LASER.

f) Other heat modalities.

Unit III: Advanced Manual Therapy

1. Demonstration of any one of the following manual therapy (according to their specialization field):

a) Cyriax

b) Maitland

c) Mulligan

d) Nerve mobilization by Butler

e) McKenzie

2. Outline of practical knowledge of Muscle Energy techniques, positional stretch & Myofascial release.

M.P.T. (Orthopedics) – II

COURSE OBJECTIVES

1. DEMONSTRATE, ANALYZE, INTERPRET, THEORETICAL/ CLINICAL FINDINGS AND JUSTIFY THE SELECTION OF MANIPULATIVE TECHNIQUES THAT ARE REQUIRED TO FULFILL THERAPEUTIC OBJECTIVES.

2. DEMONSTRATE MANIPULATIVE SKILLS (MECKENZIE, CYRIAX, MAITLAND, MULLIGAN) AND COMPETENCY REQUIRED TO FULFILL THE THERAPEUTIC OBJECTIVES.

3. ANALYZE, INTERPRET AND EVALUATE VARIOUS LEVELS OF SPINAL CORD INJURIES.

4. BE ABLE TO RATIONALIZE THE TREATMENT APPROACH ACCORDING TO THE MANAGEMENT NEEDED (MEDICAL/ SURGICAL) AND TO APPLY APPROPRIATE TECHNIQUES.

5. COMPARE THE EFFECT AND EFFICIENCY OF VARIOUS APPROACHES/ TECHNIQUES FOR RESEARCH PURPOSES.

6. ANALYSE, INTERPRET AND EVALUATE VARIOUS LEVELS OF HAND INJURIES AND THEIR FUNCTIONAL IMPORTANCE.

7. RATIONALISE VARIOUS APPROACHES FOR HAND REHABILITATION BASED ON ETIOLOGY OF DISEASE AND TO PROGRESS WITH REHABILITATION.

8. PLAY HIS/HER ROLE AS AN EFFICIENT TEAM MEMBER ALONG WITH OTHER PROFESSIONALS SUCH AS OCCUPATIONAL THERAPISTS, SOCIAL WORKER ETC.
9. ETHICS & MEDICOLEGAL ASPECTS FOR CLINICAL PURPOSES.
10. EDUCATIONAL TECHNOLOGY FOR TEACHING & LEARNING PURPOSES.

SUBJECT 1

PHYSICAL THERAPY IN ORTHOPEDIC CONDITIONS

M.P.T. – 2nd Year

Code – M.P.O – 201

Max Marks = 100

Unit I: - Orthopedic Assessment

1. Patient History, Observation, Examination- Active and Passive movements, Functional Assessment, Special Tests, Joint Play, Movement, Palpation Pain Assessment, Balance Assessment, Muscle Length Testing.
2. Clinical Gait Assessment
3. Reflex Testing.
4. Limb Length Measurement
5. Posture- Normal and Abnormal, Spinal Deformities
6. Disability Evaluation
7. Assessment of Amputee
8. Examination of Geriatric Patient
9. Examination of Upper Limb & Lower Limb
10. Examination of Spine

Unit II: - Regional examination with Special Emphasis on Special tests:

1. Head and face, cervical spine
2. Shoulder
3. Elbow
4. Forearm, Wrist and Hand
5. Thoracic Spine, Lumber Spine
6. Pelvis
7. Hip
8. Knee

9. Lower Leg, Ankle and Foot

Unit III: - Orthopedics Diagnosis

1. Basic hematology and Serology
2. Biopsy
3. Plain Radiography
4. Magnetic Resonance Imaging (Basics)
5. Arthroscopy (Basics)
6. Electromyography, Nerve Conduction Velocity Studies, Strength Duration Curve (Basic)
7. BMD- Bone Densitometry (Basic principle)

Unit IV: - Differential Diagnosis of Common Musculoskeletal Conditions

1. General Orthopedics

a) Infections in bones and joints
b) Rheumatic disorders
c) Generalized affections of bone and joint (metabolic & endocrinal) disorders (cartilaginous dysplasias, bony dysplasias etc.)
d) Congenital disorders
e) Degenerative disorders
f) Tumors of bones
g) Osteonecrosis and osteochondritis.
h) Neurological and muscular disorders & peripheral nerve injuries.

2. Regional Orthopedics and Physiotherapy: Bony & Soft Tissue disorders of

a) Shoulder and arm
b) Elbow and forearm
c) Wrist
d) Hip and thigh
e) Knee and leg
f) Ankle and foot
g) Vestibular assessment and rehabilitation

3. Traumatology

a) Incidence, etiology, clinical features, complications, assessment, investigations and conservative reductions, pre and post immobilization physiotherapy management of the following:-

i. Fractures and dislocations of upper limb.
ii. Fractures and dislocations of lower limb
iii. Fractures and dislocations of pelvis
iv. Stress fractures
v. Burns.

4. Some Common Orthopedics Surgeries and its Physiotherapy Management:
Basic principles of common surgeries. Menisectomy, Laminectomy, patellectomy, total knee replacement, total hip replacement, triple arthrodesis, hip arthodesis and arthroplasty, bone grafting, internal and external fixations, tendon transfers, nerve suturing and grafting, , correction of Deformities (polio, Cerebral palsy), Limb reimplantation

5. Amputation

a) Types, Levels & procedures
b) Pre and post operative physiotherapy
c) Prosthesis and stump care.

6. Vascular and Neural Injuries and Disorders.

a) Thoracic outlet/ inlet syndrome
b) Volkmann's ischemic contractures.
c) Compartment syndrome.
d) Neuropathies
e) Peripheral nerve injuries
f) Thrombophlebitis, Raynaud's Disease, Burgers disease, varicose veins and Ulcers, DVT, Acute and Chronic Venous Insufficiency.

7. Miscellaneous:

Leprosy, Cerebral palsy, Poliomyelitis, Principles of Geriatric Physiotherapy.

Unit V: Bioengineering: Walking Aids, Orthosis and splints: Their types, applications, care & uses.

SUBJECT 2

SPINAL DISORDERS AND PHYSIOTHERAPY MANAGEMENT

M.P.T. – 2nd Year

Code – M.P.O – 202

Max Marks = 100

Unit I: Review of anatomy and biomechanics of vertebral column

Unit II: Congenital disorders of vertebral column & vertebral deformities.

Unit III: Inflammatory disorders of vertebrae, vertebral joints, soft tissues

Unit IV: Disease of the vertebral joints, segmental instability

Unit V: Disorders of structural changes, changes of alignment of bone, joint of vertebral Column.

Unit VI: Causes, assessment of a patient with Low Back pain, & stiffness disorders , maligners. Regional: - Cervical, Lumber, Thoracic, Sacral, etc.

Unit VII: Traumatic injuries of vertebral column: General & regional injuries.

1. Soft tissue injuries, tightness, structural changes.
2. Bone injuries (fractures & dislocations of spine)
3. Pelvic injuries.

Unit VIII: Spinal cord injuries

1. Types, Classifications
2. Pathology
3. Level
4. Examination
5. Management & Physiotherapy
6. Orthopedic surgeries
7. Bio engineering appliances & support devices
8. Pre & post operative physiotherapy
9. Wheelchair- principles for design, types, management and modifications.

UNIT IX: Tumors and Infection

SUBJECT 3

HAND REHABILITATION

M.P.T. – 2nd Year

Code – M.P.O – 203

Max Marks = 100

Unit I: Functions of hand as motor and sensory organ with advanced bio and pathomechanics of hand. Classification of hand injuries and principles of hand rehabilitation (Functional and Vocational Training).

Unit II:

1. Tendon Injuries
2. Nerve injuries and entrapments
3. Crush injuries
4. Fractures, joint injuries and correction of deformities. their effects on rehabilitation.

Unit III:

1. Burns in hand
2. Spastic hand
3. Rheumatoid hand
4. Hand in Hansen's disease
5. Reflex sympathetic dystrophy
6. Stiff hand

Unit IV

1. Phantom pain
2. Prosthetic hand
3. Orthosis for hand and their uses.

SUBJECT 4

SKILL ENHANCING STUDIES

M.P.T. – 2nd Year

Code – M.P. – 204

Max Marks = 100

Unit I: Physiotherapy Ethics

1. Morals and ethics
2. Ethical issue in physical therapy
3. Rules and regulation of council

Unit II: Physical Therapy & Law: Medico-legal aspect of physical therapy, Liability, Negligence and practice licensure workmen compensation. Proper maintenance of Patient's record.

Unit III: Physiotherapy Department Management.

1. Policies and procedures.
2. Recruitment, interview, probation, salary, hours of working, leaves facilities, Retirement, referred policy.
3. Maintenance of records: equipments, statistics.
4. Planning, design construction, expansion plan.

Unit IV: Physiotherapy Education Technology

1. Aims, philosophy and trends and issues:-

a) Educational aims.

b) Agencies of education.

c) Formal and informal education

d) Major philosophies of education.

(Naturalism, idealism, professionalism, realism)

e) Modern and contemporary philosophies of educations.

f) Physiotherapy education in India (past, present and future), current issues and trends in education.

2. Concepts of teaching and learning.

a) Theories of teaching.

b) Relationship between teaching and learning.

c) Psychology of education.

d) Dynamics of behavior, motivational process of learning perception, individual differences, intelligence personality.

3. Curriculum

a) Curriculum committee.

b) Development of a curriculum for physiotherapy.

c) Types of Curriculum

d) Placing, courses placement, time allotment

e) Correlation of therapy and practice.

f) Hospital and community areas for clinical instructions.

g) Clinical assignments.

4. Principles and methods of teaching.

a) Strategies of teaching.

b) Planning of teaching.

c) Organization, writing lesson plan.

d) A.V. aids.

e) Teaching methods – socialized methods.

5. Measurement and evaluation

a) Nature of measurement of Educations, meaning, process, personnel, Standardized, non standardized.

b) Standardized tools, important tests of intelligence, aptitude, instrument, Personality, achievements and status scale.

c) Programme evaluation.

d) Cumulative evaluation.

e) Guidance and counseling: Student Ragging and Issues related

f) Philosophy, principles and concepts, guidance and counseling services.

g) Faculty development and development of personnel for physiotherapy services.

M.P.T. (Orthopedics) – II

PRACTICAL

M.P.T. – 2nd Year

Code – M.P.O – 205

Max Marks = 100

Practical Examination

Long cases for example: PIVD, Spondylolisthesis, Back Pain, cervical radiculopathy PPRP, Paraplegia, Cerebral Palsy

Short cases for example: Ligament injuries, tendonitis, bursitis, Wrist and foot drop stiff joint etc.

Viva & Spots related to specialty (For e.g.: Physiotherapy equipments, Braces)

Following procedures will be included in the practical examination:

1. Assessment
2. Investigations.
3. Provisional diagnosis with justification
4. Differential diagnosis & its reason.
5. Treatment: options physiotherapy Management & advanced technique application
6. Home Programme

Fracture cases: Intensive care. Emergency care, positioning, reduction, plaster application, care in period of immobilization & post immobilization revalidation.

Books Recommended

1. Gray's Anatomy – Williams & Warwick – Churchill Livingston
2. Clinical Anatomy for Medical Students – Snell's- Lippincott.
3. Text Book of Medical Physiology – Guyton - Mosby.
4. Pathologic Basis of Diseases – Robbins , Kotran and Kumar – W.B. Saunders
5. Pharmacology and Pharmacotherapeutics – Satoskar & Bhandarkar – Popular Publications – Bombay.
6. Text Book of Medical Biochemistry – MN Chatterjea- Rana Shinde- Jaypee
7. John Low & Reed: Electro therapy Explained ,Butterworth
8. Joseph Kahn: Principles and practice of Electrotherapy, Churchill Livingstone.
9. Claytons Electrotherapy 10th Ed. - Sarah & Bazin – W.B. Saunders.

10. T B of Therapeutic Exercises, Narayanan, Jaypee
11. Therapeutic Exercise, Basmajian, Williams & Wilkins
12. Therapeutic Exercise Foundation & Techniques, Kisner Colby, Jaypee.
13. A.G. Sinha, Principle and Practices of therapeutic Massage. Jaypee
14. Orthotics and Prosthetics in Rehabilitation, 2e Lusardi, Elsevier.
15. Orthotics in Functional Rehabilitation of the Lower Limb Nawoczenski, Elseivier
16. Gardiner M. Dena: The Principles of Exercise Therapy - CBS Publishers, Delhi.
17. Wood & Baker: Beard's Massage, W.B. Saunders.
18. Kendall: Muscles – Testing and Function - Williams & Wilkins
19. Daniels and Worthinghams: Muscle Testing – Techniques of Manual Examination, W.B. Saunders.
20. First Aid to Injured: St. John's Ambulance Association.
21. Norkin & White: Measurement of Joint Motion – A Guide to Goniometry
22. James G. Hay – The Biomechanics of Sports Techniques, Prentice Hall
23. Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Ed, 1997, Brown & Benchmark.
24. White and Punjabi - Biomechanics of Spine - Lippincott.
25. Basmajian - Muscle alive - Williams & Wilkins
26. Muscle Energy Technique, Leon chaitow ,Churchill Livingstone.
27. Maitland's vertebral Manipulation , GD Maitland, Butterworth Heinemann.
28. Cyriax's Illustrated Manual of Orthopaedic Medicine , JH Cyriax, Butterworth
29. Position Release Technique, Leon chaitow ,Churchill Livingstone.
30. Manual Therapy , Brain Mulligan.
31. Butler Neural mobilization , Butler
32. Orthopedic Physiotherapy, Robert A Donatelli, Churchill Livingstone.
33. Physical Rehabilitation Assessment and Treatment, Susan Sullivan, Japee brothers
34. Physical therapy of shoulder, Robert A Donatelli, Churchill Livingstone
35. Orthopedic Physical Assessment David J Magee, Saunders
36. Manual Examination and Treatment of the Spine and Extrimities , Carolyn Wadsworth, Williams and Wilkins.
37. Illustrated Orthopaedic physical Assessment , Ronald C Evans , Mosby.
38. Physical Examination of the Spine and Extrimities , Stenley, Lipenfield.

39. Clinical Orthopaedic Examination , Mc Rae, Churchill Livingstone.
40. Systems of Orthopedics - Apleys - Butterworth Heinmann.
41. Outline of Orthopedics - Adams - Churchill Livingstone.
42. Outline of Fractures - Adams - Churchill Livingstone.
43. Tureks – Orthopedics - Weinsteil & Buckwalter - Lippincott Publications.
44. Text Book of Radiology - Sutton D. - Churchill Livingstone.
45. Mohsin S.M.: Research Methods in Behavioral Sciences: Orient Publications.
46. Colton: Statistics in medicine, Little Brown Company, Boston.
47. Mahajan: Methods in Biostatistics, Jay Pee Brothers.
48. Vincent: Statistics in Kineslology, Human Kinetics.
49. Hicks: Research for Physiotherapists, Churchill Livingstone
50. Essentials of Exercise Physiology: McArdle, WD, Katch, FI, and Katch, VL. 2nd edn, Lippincott Williams and Wilkins (2000) ·
51. Fundamentals of Exercise Physiology: For Fitness Performance and Health, Robergs RA, and Roberts, S.O. McGraw Hill (2000)
52. Exercise Physiology: Powers, SK and Howley ET. 4th edn; Mc Graw Hill (2001)
53. Physiology of Sport and Exercise: Wilmore, JH and Costil, DL. Human Kinetics (1994)
54. Exercise Physiology- Human Bioenergetics and its Application: Brooks, GA, Fahey, TD, White, TP. Mayfield Publishing Company (1996)
55. Komi, P. (Ed.) (1992) Strength and power in sport. Blackwell Scientific Publications.
56. Levick, J.R. (1998) An introduction to Cardiovascular Physiology. 2nd ed. Butterworth Heinemann
57. McArdle, WD, Katch, FI & Katch, VL (2001) Exercise Physiology. 5th ed. Lippincott, Williams & Wilkins.
58. Shephard and Astrand (1996) Endurance in sport. Blackwell Scientific Publications.
59. Willmore, JH & Costill, DL (1999) Physiology of Sport and Exercise. 2nd ed. Human Kinetics.
60. Guyton, A.C. Textbook of Medical Physiology (7th Ed.). Philadelphia: Saunders, 1986, pp. 382-386, 472-476.

MPT in Neurology

SYLLABUS

COURSE STRUCTURE OF M.P.T –

PART / YEAR – 1 – M.P.T.

S.No.	Subjects	Code	Theory Exam	Internal Assessment	Total	Total Study Hours Total No. of Weeks x Hours
1.	Review of Basic Sciences (Anatomy, Physiology, Pathology, Pharmacology & Biochemistry)	MPN-101	80	20	100	30 x 3 = 90
2.	Review of Basic Therapeutics (Exercise Therapy, Electro Therapy, Biomechanics & Bio. Engineering)	MPN –102	80	20	100	30 x 3 = 90
3.	Advanced Therapeutics & Diagnosis (Manual Therapy, MET, Myofascial Release, LASERS, EMG, NCV, EEG, Biofeedback, Micro Current, Radiology & Diagnostic Studies. Lab Pathology)	MPN –103	80	20	100	30 x 3 = 90
4.	Computers, Research Methodology & Biostatistics	MP – 104	80	20	100	30 x 2 =60
5.	Clinical / Practicals	MPN-105				30 x 24 = 720
				Total	400	1050

PART / YEAR – II (M.P.T.NEURO)

S.No	Subjects	Code	Theory Practical Exam	Internal Assessment	Total	Total Study /Hour Total No. of Weeks x Hours
1.	Physical therapy in Neurological Conditions	MPN– 201	80	20	100	30 x 4 = 120
2.	Physiotherapy in Neurosurgical Conditions	MPN – 202	80	20	100	30 x 4 = 120
3.	Physical therapy in Pediatric Neurology Conditions	MPN – 203	80	20	100	30 x 4 = 120
4.	Skill enhancing studies (Ethics, Educational Technology & Medico legal aspects	MP – 204	80	20	100	30 x 4 = 120
5.	Practical/Clinical Exam Viva Voce	MP – 205	160	40	200	30 x 24 = 720
				Total	600	1200

M.P.T. Neurology I Year

COURSE OBJECTIVES

1.. ACQUIRE ADEQUATE KNOWLEDGE OF THE BASIC MEDICAL SUBJECTS AND ADVANCE KNOWLEDGE IN NEUROLOGICAL CONDITIONS AND IN THE PRACTICE OF PHYSIOTHERAPY.

2. DEVELOPS SKILLS AND TECHNIQUES OF EXERCISE THERAPY AND ELECTROTHERAPY MODALITIES, ITS APPLICATION IN VARIOUS MEDICAL AND SURGICAL CONDITIONS. ADVANCE CONCEPT APPLICATION IN THEIR SPECIALIZED SUBJECTS

3. DEVELOPMENT OF PROPER ATTITUDE FOR COMPASSION AND CONCERN FOR THE INDIVIDUALS AND WELFARE OF PHYSICALLY HANDICAPPED IN THE COMMUNITY.

4. DEMONSTRATES SKILLS IN HANDLING THE PATIENTS WITH VARIOUS DISORDERS, TEACHING METHODS, MANAGEMENT, RESEARCH GUIDANCE AND COUNSELING.

5. PRACTICE MORAL AND ETHICAL VALUES.

SUBJECT 1

REVIEW OF HUMAN SCIENCES

M.P.T. – 1st Year,

Code – M.P.N – 101

Max Marks – 100

Unit I: Human Anatomy (Basic & Applied Related to the Specialty)

1. Neurology: Knowledge of Central Nervous system, nerve plexus of the body with their distributions (Cervical Plexus, Brachial plexus, Lumbosacral plexus). **Revision of brain, meninges, and spinal cord, Outline of Ventricles, Brain stem Introduction to Head & Neck. Revision of blood supply to the brain and spinal cord and development of nervous system**

Unit II: Human Physiology (Related to Specialty)

1. Nervous System

a) Neurons and Neuroglia

b) Properties of Nerve Fibers

c) Synapse

d) Spinal Cord

e) Cerebral Cortex

f) Pyramidal & Extra Pyramidal System

g) Cerebellum

h) Autonomic Nervous System

i) Peripheral Nervous System

j) Cranial Nerves

k) Cerebrospinal Fluid

l) Physiology of pain

m) Neuroplasticity

n) Higher intellectual functions

o) Brief on special senses

p) Tonal abnormalities

2. Cardiovascular system.

a) The regulation of heart's performance.

b) Cardiac output.

c) The arterial blood pressure.

d) The physiology of vascular system.

3. Respiratory system

a) Ventilation & control of ventilation

b) Regulation of the breathing

c) Pulmonary function test.

Unit III: Pharmacology (Related to Specialty)

Their effects, uses, side effects and dosage.of following group of drugs

1. Drugs used in pain.
2. Local anesthetics
3. Sterolds
4. Muscle relaxants.
5. Drugs acting upon central nervous systems & autonomic nervous system.
6. Topically acting drugs.

Unit IV: Pathology (Related to Specialty)

1. General Pathology (Cell Injury, Inflammation, repair, immune system)
2. Nervous system

a) Infection (meningitis, encephalitis)

b) Vascular diseases (Ischemic encephalopathy, cerebral infarction, intracranial hemorrhage)

c) Degenerative disease (Alzheimer's disease, Huntington's disease, Parkinsonism, Motor neuron disease)

d) Demyelinating disease (Multiple sclerosis)

e) The peripheral nervous system (Peripheral neuropathy acute idiopathic polyneuropathy diabetic neuropathy)

3. Musculoskeletal system.

a) Joints: - Charcot's joints

b) Skeletal muscles (muscle atrophy, muscular dystrophy, myasthenia gravis)

Unit V: Biochemistry: (Related to Specialty)

Diet- It's nutritional and calorific value of various foods balance diet, energy requirement of various individuals.

SUBJECT 2

REVIEW OF BASIC THERAPEUTICS

M.P.T. – 1st year

Code – M.P.N – 102

Max. Marks = 100

Unit I: Exercise Therapy

Review of the following techniques.

1. Assessment techniques like MMT & Goniometry
2. Stretching and soft tissue mobilization.
3. Re-education and strengthening.
4. Balance and Co-ordination exercises.
5. Gait analysis and training (both normal & pathological gait).
6. Relaxation & soft tissue manipulation.
7. Posture
8. PNF.
9. Traction.
10. Hydrotherapy.

Unit II: Electrotherapy

1. General review of low, medium & high frequency currents and their modification like didynamic and Russian currents.
2. Ultrasound.
3. UVR and IRR

4. Cryotherapy,
5. Intermittent pneumatic compression
6. Other thermal modalities. (Heat and Cold)

Unit III: Biomechanics and Pathomechanics of all Joints.

1. Introduction to Kinesiology and Biomechanics
2. Principle of Biomechanics, Nature and importance of Biomechanics in Physiotherapy
3. Introduction to Biomechanics, Analysis of human motion. Analytical tools and techniques – Isokinetic dynamometer, Kinesiological EMG, Electronic goniometer, Force platform, Videography.
4. Shoulder, Elbow, Wrist and Hand
5. Pelvis, Hip, Knee, Ankle & Foot
6. Spine.
7. Posture & Gait analysis

Unit IV: Bio –Engineering

1. Principles of Orthotic- types, indications, contra indication, assessment (check out), uses and fitting- region wise.

a) Fabrication of simple splints and self help devices for upper and lower extremity– Indications and applications.

b) Orthotics for neurological Conditions

c) Orthotics for the Upper Limb & Lower Limb

d) Orthotics for the Spine.

2. Principles of prosthetics- Basic Principles, types, indications, contraindications, assessment check out, uses and fitting – region wise.
3. Principles of vocational problems, including evaluation & vocational goals for people with disability.

SUBJECT 3

ADVANCED THERAPEUTICS AND DIAGNOSIS (Related to Specialty)

M.P.T. – 1st year

Code – M.P.N – 103

Max. Marks = 100

Unit I: Manual Therapy: Introduction, History, Basic Classification, Assessment for manipulation, discussion in brief about the concepts of mobilization like Butler in mobilization of joints and nerves, Bobath, Brunnstrom, MRP, NDT, PNF, Rood's approach, Sensory integration. Methodology in general with examples (Manipulation studies & work according to their specialization).

Unit II: Brief outline of Vojta, Tai Chi, Cranio-sacral therapy and Peto techniques.

Unit III: Myofascial Release as adjunct to NDT: Concept & brief discussion of its application techniques.

Unit IV: LASERS: Production, types, effects, application, indications & contraindications.

Unit V: Nerve conduction studies EMG, EEG: Normal & abnormal action potentials, its recording protocols, analysis & apparatus.

Unit VI: Micro currents: Concept, Indications and Contraindications & Application.

Unit VII: Biofeedback: Principles, effects, uses and contraindications.

FOLLOWING ARE ONLY FOR PRACTICAL KNOWLEDGE; NOT FOR THEORY EXAM)

Unit VIII: Basic principles of radiology & Diagnostic Studies esp. Neuro imaging and its application in various nervous disorders

Unit IX: Analysis of basic laboratory examination reports and their clinical Co-relation with various nervous disorders

SUBJECT 4

COMPUTER, BIOSTATISTICS AND RESEARCH METHODOLOGY

M.P.T. – 1st year

Code – M.P. – 104

Max. Marks = 100

Unit I: Biostatistics & Research Methodology

1. Introduction
2. Uses of statistical methods & standard deviation.
3. Methods of collection, classification, tabulation & presentation of data.
4. Central tendency-Mean, Median, Mode & Standard deviation
5. Correlation & Regression:-Karl Pearson's co relation method, Rank co relation method
6. Regression & coefficients.
7. Sampling, hypothesis & testing
8. Data collection **including methods and tools of data collection like surveys and Questionnaire**
9. **Study of Research designs**
10. Types of sampling **and sampling errors**
11. t- Test, Z- Test, Chi Square test
12. **Data analysis and interpretation**

Unit II: Computer

1. Introduction of software and hardware.
2. M.S. Office,
3. Application of computers **and Internet** in medical sciences.
4. **Practice of Statistical methods using Statistical software like SPSS etc.**

PRACTICAL

M.P.T. – 1st year

Code – M.P.N – 104

Unit I: Exercise Therapy:

1. Assessment of joint muscles & nerve.
2. Various types of strengthening techniques.

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3. Various types of mobilization techniques.
4. Stretching & soft tissue mobilization.
5. Gait analysis & training.
6. Suspension therapy
7. Muscle Reeducation
8. PNF Patterns and Techniques
9. Postural assessment & re education.
10. Balance & coordination.
11. Special techniques of exercise therapy.
12. Traction.
13. Hydrotherapy.

Unit II: Electro Therapy.

1. All types of low & medium frequency currents.

a) Faradic.
b) Galvanic.
c) High voltage current
d) Di dynamic.
e) Russian.
f) Interferential Therapy.
g) TENS.
h) . Micro-currents.

2. All types of high frequency currents & modalities.

a) Short wave diathermy
b) Microwave diathermy.
c) Ultrasound.

3. Miscellaneous.

a) Cryotherapy.
b) Biofeedback.
c) UVR & IRR.
d) LASER.
e) Other heat modalities.

Unit III: Advanced Manual Therapy

1 . Demonstration of any one of the following manual therapy (according to their Specialization field):

a) Cyriax

b) Maitland

c) Mulligan

d) Nerve mobilization by Butler

e) McKenzie

2. Outline of practical knowledge of Muscle Energy techniques, positional stretch & Myofascial release.

M.P.T. Neurology – II

COURSE OBJECTIVE

1 TO ANALYSE, INTERPRET AND EVALUATE VARIOUS NEUROLOGICAL CONDITIONS AND TO ANALYSE THE REASONS FOR DEVELOPMENT OF SPECIFIC CLINICAL FEATURES IN APPLIED NEUROLOGICAL CONDITIONS.

2. TO BE ABLE TO RATIONALIZE THE TREATMENT APPROACH ACCORDING TO THE MANAGEMENT NEEDED (MEDICAL/SURGICAL AND TO APPLY APPROPRIATE TECHNIQUES).

3. TO COMPARE THE EFFECT AND EFFICACY OF VARIOUS APPROACHES/ TECHNIQUES FOR RESEARCH PURPOSES.

4. TO ANALYSE, INTERPRET AND EVALUATE VARIOUS LEVELS OF SPINAL CORD INJURIES.

5. TO BE ABLE TO RATIONALIZE THE TREATMENT APPROACH ACCORDING TO THE MANAGEMENT NEEDED (MEDICAL/SURGICAL AND TO APPLY APPROPRIATE TECHNIQUES).

6. TO PLAY EFFEICIENT ROLE IN COMPLETE REHABILITATION OF NEUROLOGICAL PATIENTS

7. TO ELICIT AND EVALUATE REFLEXES, ANALYSE DEVELOPMENTAL MILESTONES, THEIR PATHOLOGICAL SIGNIFICANCE.

8. TO APPLY VARIOUS NEO-NATAL, THERAPEUTIC APPROACHES, NEURO DEVELOPMENTAL TECHNIQUES, BOBATH, ROOD, SENSORY INTEGRATION APPROACH
9. ETHICS & MEDICOLEGAL ASPECTS FOR CLINICAL PURPOSES.
10. EDUCATIONAL TECHNOLOGY FOR TEACHING & LEARNING PURPOSES.

SUBJECT 1

PHYSICAL THERAPY IN NEUROLOGICAL DISORDERS

M.P.T. 2nd year

Code – M.P.N.: 201

Max marks: 100

Unit I - Introduction- . Neurological examination and investigation tools – Glasgow coma scale, Rancho Los Amigos scale, Modified Ashworth Scale, Fugel Meyer scale, Berg balance, CT/MRI, Myelogram, blood and CSF investigations, EMG, EEG, Nerve conduction test, radiology

Unit II - Cranial Nerves

1. Testing of cranial nerves
2. Disorders of cranial nerves. Cranial Neuropathies
3. Physiotherapy management

Unit III - Stupor and Coma

1. The Neural basis of consciousness.
2. Lesions responsible for Stupor and Coma.
3. The assessment and Investigation of the unconscious patient.
4. The Management of the Unconscious patient.
5. Physiotherapy management

Unit IV - Disorders of the Cerebral Circulation

1. Epidemiology of the stroke
2. Causes, types, pathophysiology
3. Clinical features & investigations

4. Assessment and treatment of different type of stroke
5. Recovery & Physiotherapy management
6. Stroke prevention

Unit V - Infections

1. Meningitis
2. Encephalitis
3. Transverse Myelitis
4. Brain abscess
5. Syphilis
6. Herpes Simplex
7. Chorea
8. Tuberculosis
9. Poliomyelitis

Unit VI - Demyelinating Diseases of the Nervous system

1. Classification of Demyelinating Diseases
2. Multiple Sclerosis
3. Diffuse Sclerosis

Unit VII - Movement disorders

1. Akinetic-rigidity Syndromes
2. Dyskinesia disorders

Unit VIII - Degenerative Diseases of the Spinal cord and Cauda equina

1. Ataxia
2. Motor Neuron Disease

Unit IX - Disorders of the spinal cord & Cauda equina and its physiotherapy management of

1. Acute Traumatic injuries of the spinal cord
2. Haematomyelia and Acute Central Cervical Cord Injuries.
3. Slow progressive compression of the spinal cord

4. Syringomyelia
5. Ischemia and infection of the Spinal Cord and Cauda Equina
6. Spina Bifida

Unit X - Deficiency & Nutritional Disorders

1. Deficiency of vitamins & related disorders
2. Other nutritional neuropathies

Unit XI- Disorders of Peripheral Nerves:

1. Clinical diagnosis of Peripheral Neuropathy
2. All types of peripheral Neuropathy and Brachial Plexus injuries
3. Causalgia.
4. Reflex sympathetic Dystrophy
5. Peripheral Nerve Tumors and Irradiation Neuropathy.
6. Traumatic, Compressive and Ischemic Neuropathy.
7. Spinal Radiculitis and Radiculopathy
8. Hereditary Motor and Sensory Neuropathy (HMSN) (Type I, II, IV & V).
9. Acute & chronic Idiopathic Polyneuritis
10. Neuropathy due to Infections
11. Vasculomotor Neuropathy
12. Neuropathy due to systemic medical disorders.
13. Drug - Induced Neuropathy
14. Metal - Poisoning chemical Neuropathies.

Unit XII- Disorders of Muscle

1. Muscular Dystrophies of Adulthood
2. The Myotonic Disorders.
3. Inflammatory disorders of Muscle
4. Myasthenia Gravis
5. Endocrine and Metabolic Myopathies

Unit XIII- Autonomic Nervous Disorders

Disorder of autonomic function after lesion of the spinal cord

Unit XIV- Disorder of the higher cerebral functions

Disorder of different lobes

1. Frontal lobes
2. Temporal lobe
3. Parietal lobe
4. Occipital lobe
5. Sub cortical Lesion

Unit XV- Headache and Seizure disorders.

SUBJECT 2

PHYSICAL THERAPY IN NEUROSURGICAL REHABILITATION

M.P.T. 2nd year

Code – M.P.N.: 202

Max marks: 100

Unit I –

1. Introduction to spinal injuries- various types, levels, effects.

a) Acute lesion characteristics, type and level
b) Respiratory therapy
c) Initial physical re-education
d) Training for personal independence, self care, transfers
e) Wheelchair- principles for design, types, management and modifications.
f) Complications of high lesion and incomplete spinal lesions
g) Orthotic support systems

2. Decompression surgery of spinal cord: pre and post surgical physiotherapy assessment and treatment

a) Other Disc Operations (Cervical, Lumbar)
b) Spinal canal Stenosis
c) Lumbar Puncture

Unit II - Cranio Cerebral Injury (Head & Brain Injury)

1. Basic principles, techniques, types of skull, brain surgeries, their complications, pre and post surgical physiotherapy assessment and treatment.
2. Epidemiology, Pathophysiology, Symptoms, Signs, Investigation, , Assessment and Management of all types of brain injury- adult and children
3. Closed skull fractures
4. Hematomas- epidural, subdural, intracerebral
5. Open cranio cerebral injuries

Unit III - Tumors

1. Basic pathophysiology, classification, effects of mass lesion, symptoms and signs, examination, Management Pre & Post operative physiotherapy protocol of spinal and cranial tumours.

Unit IV-

1. Conditions related to raised intra cranial pressure.

a) Hydrocephalus

b) Intracranial Abscess.

c) Cerebral Edema

2. Vascular diseases of the Brain

a) Aneurysms

b) Thrombosis

Unit V- Assessment and Management of various Peripheral nerve injuries and Surgeries: De – Compression, Nerve Suture, Nerve Grafting. Pre and post operative Physiotherapy & Complications.

SUBJECT 3

PHYSICAL THERAPY IN PAEDIATRIC NEUROLOGY

M.P.T. 2nd year

Code – M.P.N.: 20

Max marks: 100

Unit I- General developmental sequence of normal child: Weight, height and circumferential measurements related to age in normal child & Developmental milestones and neonatal reflexes. Examination of new born child. High risk infants and early intervention programmes.

Unit II- Nutrition and Immunization: Normal nutritional requirements of a child, infant feeding, prevention of some nutritional disorders, nutritional deficiency diseases, immunization.

Unit III – Cerebral palsy: Types, etiology, clinical features, management and rehabilitation of various types of cerebral palsies.

Unit IV – Neurological affection of childhood: Poliomyelitis, Spina bifida, Hydrocephalus, Encephalitis- etiology, clinical features and rehabilitation. Birth injuries of brachial plexus, paraplegia in children.

Unit V – Muscular disorders: Types of muscular dystrophies and Myopathies of childhood, DMD, BMD etc.

Unit VI - Motor control and Motor learning: Theories of Motor control and Motor learning, role of limbic system and its influence over Motor control and learning.

Unit VII - Genetic disorders, congenital malformations, chromosomal disorders and learning disabilities relevant to speciality.

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SUBJECT 4

SKILL ENHANCING STUDIES

M.P.T. – 2nd Year

Code – M.P. – 204

Max Marks = 100

Unit I: Physiotherapy Ethics

1. Morals and ethics
2. Ethical issue in physical therapy
3. Rules and regulations of council

Unit II: Physical Therapy & Law: Medico-legal aspect of physical therapy, liability, Negligence and practice licensure, workmen compensation. Proper maintenance of Patient's record.

Unit III: Physiotherapy Department Management.

1. Policies and procedures.
2. Recruitment, interview, probation, salary, hours of working, leaves facilities, retirement, referred policy.
3. Maintenance of records: equipments, statistics.
4. Planning, design construction, expansion plan.

Unit IV: Physiotherapy Education Technology

1. Aims, philosophy and trends and issues:-

a) Educational aims.

b) Agencies of education.

c) Formal and informal education

d) Major philosophies of education.

(Naturalism, idealism, professionalism, realism)

e) Modern and contemporary philosophies of educations.

f) Physiotherapy education in India (past, present and future), current issues and trends in education.

2. Concepts of teaching and learning.

a) Theories of teaching.

b) Relationship between teaching and learning.

c) Psychology of education.

d) Dynamics of behavior, motivational process of learning perception, individual differences, intelligence personality.

3. Curriculum

a) Curriculum committee.

b) Development of a curriculum for physiotherapy.

c) Types of Curriculum

d) Placing, courses placement, time allotment

e) Correlation of therapy and practice.

f) Hospital and community areas for clinical instructions.

g) Clinical assignments.

4. Principles and methods of teaching.

a) Strategies of teaching.

b) Planning of teaching.

c) Organization, writing lesson plan.

d) A.V. aids.

e) Teaching methods – socialized methods.

5. Measurement and evaluation

a) Nature of measurement of Educations, meaning, process, personnel, Standardized, non standardized.

b) Standardised tools, important tests of intelligence, aptitude, instrument, Personality, achievements and status scale.

c) Programme evaluation.

d) Cumulative evaluation.

e) Guidance and counseling: Student Ragging and Issues related

f) Philosophy, principles and concepts, guidance and counseling services.

g) Faculty development and development of personnel for physiotherapy services.

PRACTICAL

M.P.T. 2nd year

Code – M.P.N: 205

Max marks: 100

Practical Examination

Long cases for example: Hemiplegia, Cerebral palsy, Paraplegia, PIVD,

Short cases for example: Nerve injuries, brachial neuralgia etc.

Viva & Spots related to specialty EMG, NCV, SD curve, electro diagnosis

Following procedures will be included in the practical examination:

1. Assessment
2. Investigations.
3. Provisional diagnosis with justification
4. Differential diagnosis & its reason.
5. Treatment: options physiotherapy Management & advanced technique application
6. Home Programme

Books Recommended

1. Gray's Anatomy – Williams & Warwick – Churchill Livingston
2. Clinical Anatomy for Medical Students – Snell's- Lippincott.
3. Text Book of Medical Physiology – Guyton - Mosby.
4. Pathologic Basis of Diseases – Robbins , Kotran and Kumar – W.B. Saunders
5. Rau Respiratory Care Pharmacology, 6e
6. Pharmacology and Pharmacotherapeutics, R.S.Satoskar – Popular Publications, Bombay.
7. Pharmacology - Praseem K. Das. - Churchill Livingstone.
8. Essential of Medical Pharmacology - K. D. Tripathi - Jaypee Brothers.
9. General Pathology - Walter & Israel - Churchill Livingstone
10. Muirs Textbook of Pathology; Anderson - Edward Arnold Ltd.
11. Textbook of Pathology - Harsh Mohan- Jaypee Brothers.
12. Pathology: Implications for Physical Therapists - Goodmann and Boissonnault -

W.E. Saunders.

13. Essential of Medical Microbiology - Bhatia & Lal - Jaypee Brothers.
14. Microbiology & introduction for the Health Sciences - Ackerman and Richards - W.B. Saunders Co.
15. Text Book of Medical Biochemistry – MN Chatterjea- Rana Shinde- Jaypee
16. John Low & Reed: Electro therapy Explained ,Butterworth
17. Joseph Kahn: Principles and practice of Electrotherapy, Churchill Livingstone.
18. Claytons Electrotherapy 10th Ed. - Sarah & Bazin – W.B. Saunders.
19. T B of Therapeutic Exercises, Narayanan, Jaypee
20. Therapeutic Exercise, Basmajian, Williams & Wilkins
21. Therapeutic Exercise Foundation & Techniques, Kisner Colby, Jaypee.
22. A.G. Sinha, Principle and Practices of therapeutic Massage. Jaypee
23. Orthotics and Prosthetics in Rehabilitation, 2e Lusardi, Elsevier.
24. Orthotics in Functional Rehabilitation of the Lower Limb Nawoczenski, Elseivier
25. Gardiner M. Dena: The Principles of Exercise Therapy - CBS Publishers, Delhi.
26. Wood & Baker: Beard's Massage, W.B. Saunders.
27. Kendall: Muscles – Testing and Function - Williams & Wilkins
28. Daniels and Worthinghams: Muscle Testing – Techniques of Manual
29. Examination, W.B. Saunders.
30. First Aid to Injured: St. John's Ambulance Association.
31. Norkin & White: Measurement of Joint Motion – A Guide to Goniometry
32. Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Ed. 1997, Brown & Benchmark.
33. White and Punjabi - Biomechanics of Spine - Lippincott.
34. Basmajian - Muscle alive - Williams & Wilkins
35. Muscle Energy Technique, Leon chaitow ,Churchill Livingstone.
36. Maitland's vertebral Manipulation , GD Maitland, Butterworth Heinemann.
37. Cyriax's Illustrated Manual of Orthopaedic Medicine , JH Cyriax, Butterworth
38. Position Release Technique, Leon chaitow ,Churchill Livingstone.
39. Manual Therapy , Brain Mulligan.
40. Butler Neural mobilization , Butler
41. Campbell Rehabilitation for Traumatic Brain Injury: Physical Therapy Practice in Context

42. Carr Stroke Rehabilitation: Guidelines for Exercise and Training to Optimize Motor Skill
43. Carr Neurological Rehabilitation: Optimizing Motor Performance, 2e
44. Cech Functional Movement Development Across the Life Span, 2e
45. Campbell Physical Therapy for Children, 3e
46. Edwards Neurological Physiotherapy: A Problem-Solving Approach, 2e
47. Lundy-Ekman Neuroscience: Fundamentals for Rehabilitation, 2e
48. Martin Neurologic Interventions for Physical Therapy, 2e
49. Petty Neuromusculoskeletal Examination and Assessment: A Handbook for Therapists, 3e
50. Piper Motor Assessment of the Developing Infant
51. Pope Severe and Complex Neurological Disability: Management of the Physical Condition
52. Ratliffe Clinical Pediatric Physical Therapy, 2e
53. Shacklock Clinical Neurodynamics: A New System of Neuromusculoskeletal Treatment
54. Shepherd Physiotherapy in Pediatrics, 3e
55. Stokes Physical Management in Neurological Rehabilitation, 2e
56. Umphred Neurological Rehabilitation, 5e
57. Von Craniofacial Pain: Neuromusculoskeletal Assessment, Treatment and Management
58. Dejong's, Neurological Examination
59. O.Sullivan, Susan B Physical rehabilitation: Assessment and Treatment, FA Davis Company
60. Berta bobath, Adult Hemiplegia: Evaluation & Treatment
61. Delisa, Physical Medicine and Rehabilitation

M.P.T. CARDIO PULMONARY

PART / YEAR M.P.T.-I

S.No.	Subjects	Code	Theory Exam	Internal Assessment	Total	Total Study Hours Total No. of Weeks x Hours
1.	Review of Basic Sciences (Anatomy, Physiology, Pathology, Pharmacology & Biochemistry)	MPC-101	80	20	100	30 x 3 = 90
2.	Review of Basic Therapeutics (Exercise Therapy, Electro Therapy, Biomechanics & Bio. Engineering	MPC– 102	80	20	100	30 x 3 = 90
3.	Advanced Therapeutics & Diagnosis (ECG, PFT, TMT etc.) Radiology & Diagnostic Studies. Lab (Pathology)	MPC – 103	80	20	100	30 x 3 = 90
4.	Computers, Research Methodology & Biostatistics	MP – 104	80	20	100	30 x 2 =60
5.	Clinical / Practicals	MPC-105				30 x 24 = 720
				Total	400	1050

PART/ YEAR MPT-II (MPT Cardio)

S.No	Subjects	Code	Theory/ Practical Exam	Internal Assessment	Total	Total Study /Hour Total No. of Weeks x Hours
1.	Physical therapy in Cardio pulmonary Medical Conditions	MPC– 201	80	20	100	30 x 4 = 120
2.	Physiotherapy in Cardiopulmonary Surgical Conditions	MPC– 202	80	20	100	30 x 4 = 120
3.	Physical therapy in Intensive Care Unit Conditions	MPC – 203	80	20	100	30 x 4 = 120
4.	Skill enhancing studies (Ethics, Educational Technology & Medico legal aspects	MP – 204	80	20	100	30 x 4 = 120
5.	Practical/Clinical Exam Viva Voce	MPC – 205	160	40	200	30 x 24 = 720
			Total		600	1200

COURSE OBJECTIVES: M.P.T. Cardio Pulmonary I Year

1. ACQUIRE ADEQUATE KNOWLEDGE OF THE BASIC MEDICAL SUBJECTS AND ADVANCE KNOWLEDGE IN CARDIO PULMONARY CONDITIONS AND IN THE PRACTICE OF PHYSIOTHERAPY.
2. DEVELOPS SKILLS AND TECHNIQUES OF EXERCISE THERAPY AND ELECTROTHERAPY MODALITIES, ITS APPLICATION IN VARIOUS MEDICAL AND SURGICAL CONDITIONS. ADVANCE CONCEPT APPLICATION IN THEIR SPECIALIZED SUBJECTS
3. DEVELOPMENT OF PROPER ATTITUDE FOR COMPASSION AND CONCERN FOR THE INDIVIDUALS AND WELFARE OF PHYSICALLY HANDICAPPED IN THE COMMUNITY.

4. DEMONSTRATES SKILLS IN HANDLING THE PATIENTS WITH VARIOUS DISORDERS, TEACHING METHODS, MANAGEMENT, RESEARCH GUIDANCE AND COUNSELING.
5. PRACTICE MORAL AND ETHICAL VALUES.

SUBJECT 1

REVIEW OF HUMAN SCIENCES

M.P.T. – 1st Year

Code – M.P.C – 101

Max Marks – 100

Unit I: Human Anatomy (Basic & Applied related to Specialty)

1. Detail Anatomy of the Heart and relevant Neurology
2. Detail anatomy of the Lungs and Pleura
3. Vasculature of the Heart and Lungs
4. Osteology: Basic terminology, composition, function, classification of Bones, Structural details of bones of thorax and chest wall
5. Arthrology: Definition and Classification of Joints, Movements of Joints, Description of Joints of thorax, Vertebral Column.
6. Myology: Classification and Structure of Muscles, Description of all major muscles with their origin, Insertion, nerve supply and action of muscles of thorax and abdomen

Unit II: Human Physiology (related to specialty)

1. **Cardiovascular system.**

a) Structure & Properties of heart
b) Cardiac Cycle.
c) The regulation of heart's performance.
d) Cardiac output.
e) The arterial blood pressure.
f) The physiology of vascular system.
g) Lymphatic circulation.

h) Electrophysiology of the Heart: Depolarization and repolarization Normal and Abnormal Electrocardiography- Sequence of excitation and the electrocardiographic inscription, Correlation of Electrical and Mechanical Events with ECG Pattern, Electrocardiographic lead configurations- Unipolar, Bipolar & Precordial Mean electrical axis of the heart: Its significance & method to calculate it Arrhythmias- Sinus, Atrial, Junctional – Premature Junctional Contractactions, Ventricular, Blocks and Conduction Defects.

2. Respiratory system

a) Functional anatomy

b) Ventilation & control of ventilation

c) Alveolar air

d) Regulation of breathing (Neural control of respiration)

e) Pulmonary function test.

3. Exercise Physiology

a) Introduction to Exercise physiology including aerobic and anaerobic metabolism

b) Energy Expenditure at rest and during physical activity- Basal metabolic and resting metabolic rates and factors affecting them,

c) Classification of Physical Activities by energy expenditure, Daily rates of average energy expenditure, Energy cost of Household, Industrial and recreational activities, Energy Expenditure during Walking, Jogging, Running and Swimming.

d) Measurement of Energy cost of Exercise - Direct Calorimetry, Indirect Calorimetry, Net O2 cost of Aerobic and anaerobic exercise, the concept of the MET, Ancillary considerations in Measuring Energy Expenditure, Body size and energy cost.

e) Measuring efficiencies on a Bicycle ergometer and Treadmill. Measurement of energy cost for 100M, 400M dash. Measurement of energy cost using telemetry.

4. Nervous System

a) Neurons and Neuroglia

b) Properties of Nerve Fibers

c) Synapse

d) Spinal Cord related to cardio respiratory functions.

e) Cerebral Cortex

f) Cerebellum

g) Autonomic Nervous System
h) Cranial Nerves

Unit III: Pharmacology (related to specialty)

Their effects, uses, side effects and dosage.of following group of drugs

1. Bronchodilators
2. Antibiotics
3. Steroids
4. Mucolytics.
5. Drug acting on autonomic nervous system.
6. Antihypertensives
7. Antiarrythmics and antianginal drugs
8. Drugs used in anesthesia, hypnotics & sedatives
9. Pain relieving drugs
10. Lipid lowering drugs
11. Drugs used for Diabetes

Unit IV: Pathology (related to specialty)

1. General Pathology (Cell Injury, Inflammation, repair, immune system)
2. Pathology related to cardiovascular system.
3. Common diseases of heart: Myocardial infarction, endocarditis, ischemic heart disease, heart failure.
4. Infections: Common Cardiac and Respiratory Infections.
5. Diseases related to airways, chest wall, lung and respiratory parenchyma, pulmonary and cardiac vasculature.

Unit V: Biochemistry: (related to specialty)

Diet relevant to heart and lungs, Nutritional and calorific value of various foods, balance diet, energy requirement for individuals with cardiac and pulmonary ailments.

SUBJECT 2

REVIEW OF BASIC THERAPEUTICS

M.P.T. – 1st year

Code – M.P.C. – 102

Max. Marks = 100

Unit I: Exercise Therapy

Review of the following techniques.

1. Assessment techniques like MMT & Goniometry
2. Stretching and soft tissue mobilization.
3. Re-education and strengthening.
4. Balance and Co-ordination exercises.
5. Relaxation & soft tissue manipulation.
6. Posture.
7. PNF.
8. Hydrotherapy.

Unit II: Electrotherapy

1. Gen. Review of low, medium & high frequency currents and their modification like didynamic and Russian currents.
2. Ultrasound.
3. UVR and IRR
4. Cryotherapy
5. Intermittent pneumatic compression
6. Other thermal modalities. (Heat and Cold)

Unit III: Biomechanics and Pathomechanics

1. Evaluation and assessment of thorax and chest wall joint motion.
2. Evaluation and assessment of posture.

Unit IV: Bio-Engineering

Various types of Orthosis & Its uses (spine)

SUBJECT 3

ADVANCED THERAPEUTICS AND DIAGNOSIS

M.P.T. – 1st year

Code – M.P.C. – 103

Max. Marks = 100

Unit I: Manual Therapy: Introduction, History, Basic Classification, Assessment for manipulation, discussion in brief about the concepts of mobilization like Cyriax, Maitland & Mulligan and Butler in mobilization of joints nerves. Methodology in general with examples (Manipulation studies & work according to their specialization).

Unit II Airway Clearance Techniques: Procedure, Indications, Contraindications, Physiological Effects, Mechanism of Action

1. Percussion, Vibration, Shaking, Quick Stretch
2. Postural drainage
3. Huffing & Coughing
4. Suctioning procedure
5. Active cycle of Breathing
6. Autogenic Drainage
7. Glossopharyngeal Breathing, Pursed Lip breathing, relaxed breathing, segmental breathing, indications for each technique
8. Body positioning.
9. Mobilization
10. Manual Hyper Inflation
11. Positive Pressure Breathing

Unit III

1. Respiratory muscle training
2. Blood pressure & pulse monitoring with a subject at rest and during activity
3. Rate of perceived exertion scale and use in the formulation of exercise prescription
4. Technique for facilitating ventilatory pattern.
5. Burgers Exercise
6. Electrical Stimulation for venous disorder.
7. Intermittent compression for lymphatic disorders

8. Shoulder and thoracic mobility exercise

Unit IV

1. Cardio pulmonary Resuscitation
2. Shock management
3. Stretcher use-Handling and transfer
4. Management of Cardiac arrest
5. Acute asthma
6. Burn
7. Trauma to the chest; Fracture Rib, Hemothorax, Pneumothorax, tension Pneumothorax.
8. Acute respiratory distress syndrome

Unit V

1. Oxygen therapy and humidification, oxygen toxicity
2. Instillation
3. Nebulization
4. Aerosol therapy
5. Techniques, knowledge of interpretation of spirometry ratings, importance

Unit VI: Micro currents: Concept, Indications and Contraindications & Application.

Unit VII: Biofeedback: Principles, effects, uses and contraindications.

Unit VIII: ICU assessment tools and monitors

FOLLOWING ARE ONLY FOR PRACTICAL KNOWLEDGE; NOT FOR THEORY EXAM)

Unit IX: Basic principles of Radiology & Diagnostic Studies Related to heart and lungs - X-ray

SUBJECT 4

COMPUTER, BIOSTATISTICS AND RESEARCH METHODOLOGY

M.P.T. – 1st year

Code – M.P. – 104

Max. Marks = 100

Unit I: Biostatistics & Research Methodology

1. Introduction
2. Uses of statistical methods & standard deviation.
3. Methods of collection, classification, tabulation & presentation of data.
4. Central tendency-Mean, Median, Mode & Standard deviation
5. Correlation & Regression:-Karl Pearson's co relation method, Rank co relation method
6. Regression & coefficients.
7. Sampling, hypothesis & testing
8. Data collection including methods and tools of data collection like surveys and Questionnaire
9. Study of Research designs
10. Types of sampling and sampling errors
11. t- Test, Z- Test, Chi Square test
12. Data analysis and interpretation

Unit II: Computer

1. Introduction of software and hardware.
2. M.S. Office,
3. Application of computers and Internet in medical sciences.
4. Practice of Statistical methods using Statistical software like SPSS etc.

PRACTICAL

M.P.T. - 1st Year

Code - M.P.C. -104

Unit I: Exercise Therapy:

1. Assessment of Joint muscles & nerve.
2. Various types of strengthening techniques.
3. Various types of mobilization and manipulation techniques.
4. Stretching & soft tissue mobilization.
5. Gait analysis & training.
6. Suspension therapy
7. Muscle Reeducation
8. PNF Patterns and Techniques
9. Postural assessment & re education.
10. Balance & coordination.
11. Special techniques of exercise therapy.
12. Traction.
13. Hydrotherapy.

Unit II: Electro Therapy

1. All types of low & medium frequency currents.

i) Fradic.

j) Galvanic

k) High voltage current

l) Di dynamic

m) Russian

n) Interferential Therapy

o) TENS.

p) Micro-currents.

2. All types of high frequency currents & modalities.

a) Short wave diathermy
b) Microwave diathermy
c) Ultrasound.

3. Miscellaneous

a) Cryotherapy
b) Biofeedback
c) UVR & IRR.
d) LASER
e) Other heat modalities.

Unit III: Advanced Manual Therapy

1. Airway Clearance Techniques: Procedure, Indications, Contraindications, Physiological Efforts, Mechanism of Action.
2. Percussion, Vibration, Shaking, Quick Stretch
3. Postural drainage
4. Huffing & Coughing
5. Suctioining procedure
6. Active cycle of Breathing
7. Autogenic Drainage
8. Glossopharyngeal Breathing, Pursed Lip breathing, relaxed breathing, segmental breathing, Indications for each technique
9. Body positioning
10. Mobilization.
11. Manual Hyper Inflation
12. Positive Pressure Breathing

M.P.T. Cardio Respiratory – II

COURSE OBJECTIVES

1. TO ANALYSE, INTERPRET AND EVALUATE VARIOUS CARDIO PULMONARY CONDITIONS AND TO ANALYSE THE REASONS FOR DEVELOPMENT OF SPECIFIC CLINICAL FEATURES IN APPLIED CARDIO PULMONARY CONDITIONS.
2. TO BE ABLE TO RATIONALIZE THE TREATMENT APPROACH ACCORDING TO THE MANAGEMENT NEEDED (MEDICAL/SURGICAL AND TO APPLY APPROPRIATE TECHNIQUES).
3. TO COMPARE THE EFFECT AND EFFICACY OF VARIOUS APPROACHES/ TECHNIQUES FOR RESEARCH PURPOSES.
4. TO BE ABLE TO RATIONALIZE THE TREATMENT APPROACH ACCORDING TO THE MANAGEMENT NEEDED (MEDICAL/SURGICAL AND TO APPLY APPROPRIATE TECHNIQUES).
5. TO PLAY EFFEICIENT ROLE IN COMPLETE REHABILITATION OF CARDIAC AND PULMONARY PATIENTS
6. ETHICS & MEDICOLEGAL ASPECTS FOR CLINICAL PURPOSES.
7. EDUCATIONAL TECHNOLOGY FOR TEACHING & LEARNING PURPOSES.

SUBJECT 1

PHYSICAL THERAPY IN CARDIO- PULMONARY MEDICAL CONDITIONS

M.P.T. – 2nd Year

Code – M.PC – 201

Max Marks = 100

Unit I

1. Methods of clinical examination in cardiopulmonary system
2. General Examination of Cardiovascular and respiratory system

a) The history

b) The physical examination

c) Investigations

Unit II

1. Introduction to basic Principles of Cardiopulmonary Diagnostic tools;

a) ECG Interpretation
b) Echo cardiograph
c) Biofeed back
d) Exercise tolerance test
e) Lipid profile
f) Angiography
g) MRI
h) C.T. Scan
i) Pulmonary function tests
j) A.B.G. (Arterial Blood Gas) analysis
k) Radiographic Importance of common cardiothoracic conditions
l) Color Doppler

Unit III

1. Definition, Causes, pathophysiology, signs & symptoms, management of the following Medical Respiratory Conditions

a) Asthma
b) COPD
c) Bronchiectasis
d) Lung Abscess
e) Respiratory Infections (eg: Pneumonia, Tuberculosis)
f) Pleural Disorders
g) ARDS
h) Interstitial and Infiltrative Lung Diseases
i) Cystic Fibrosis
j) Pulmonary Embolism
k) Lung cancer
l) Deformities of Chest wall

Unit IV

1. Definition, Causes, pathophysiology, signs & symptoms, management of the following Medical cardiac condition

a) Cardiac failure
b) Valvular disease
c) Ischemic heart disease
d) Myocardial Infarction
e) Rheumatic Fever/ Rheumatic heart disease
f) Congenital heart diseases
g) Pulmonary and Systemic hypertension

Unit V

1. Special test:-

a) Venous filling time
b) Claudication test
c) Cuff test
d) Percussion
e) Tendelen burg test
f) Air plethysmography
g) Stemmer's test
h) Venography & Arteriography

2. Advanced physiotherapy intervention in

a) Acute arterial and venous disease.
b) Chronic arterial disease.
c) Chronic venous insufficiency.
d) Lymphoedema.

3. Use of the following Physical therapy modalities in various cardio respiratory & vascular conditions

a) Hydrotherapy.
b) Ultrasound.
c) Compression therapy
d) Electrical stimulation
e) Ultraviolet radiation

f) Vacuum assisted closure
g) Biofeedback

SUBJECT 2

PHYSICAL THERAPY IN CARDIO- PULMONARY SURGICAL CONDITIONS

M.P.T. – 2nd Year

Code – M.PC – 202

Max Marks = 100

Unit I

1. Respiratory responses to exercise

a) Ventilation at Rest and during Exercise.

b) Ventilation and the Anaerobic Threshold

c) Alveolar Ventilation and Dead Space,

d) Other Lung volumes and Capacities,

e) Oxygen Cost of breathing

2. Cardiovascular responses to exercise-

a) Cardiovascular aspects of Exercise: Control and regulation of heart and circulation at rest and during exercise.

3. Exercise and Acid Base Balance.

a) Acid and Bases, Buffers, pH, Respiratory Regulation of pH, Alkali Reserve,

b) The kidneys and Acid base balance, Alkalosis and Acidosis,

c) Acid base balance following exercise.

4. Hormonal responses to exercise:

a) Growth Hormone (GM),

b) Thyroid and Parathyroid Hormones.

c) Anti diuretic Hormone (ADM) and Aldosterone,

d) Insulin and Glucagons,

e) The catecholamine; epinephrine and nor epinephrine.

f) The sex hormones.

g) The glucocorticoids (Cortisol) and AdrenoCorticotrophic Hormones (ACTH).

h) Prostaglandins and Endorphins

UNIT II

1. Preoperative – post operative assessment, Physiotherapy Management of the following pulmonary surgeries

a) Thoracoscopy
b) Video assisted thoracoscopy
c) Lobectomy
d) Pneumonectomy
e) Thoracotomy
f) Pluerodesis
g) Pleurectomy
h) Bullectomy
i) Lung resection
j) Segmental resection

2. Preoperative – post operative assessment, Physiotherapy Management of the following Cardiac surgeries

a) Coronary artery bypass Grafting
b) Aneurysectomy
c) Pericardiectomy
d) Repair of septal Defect
e) Valvoplasties
f) Angioplasties
g) Cardiac Transplant

UNIT III

1. Role of physiotherapy in pulmonary rehabilitation

a) Physical rehabilitation for ventilatory dependent patients
b) Physiotherapy management for neonate with respiratory disease
c) Physiotherapy management for child with respiratory disease
d) Conditioning for children with lung dysfunction

2. Current trends in pulmonary rehabilitation.

a) Aerobic training
b) Strength training.
c) Exercise progression
d) Program duration

e) Home exercise program
f) Multi specialty team approach
g) Patient education & counseling
h) Work & recreation

3. Role of physiotherapy in Cardiac rehabilitation
a) Philosophy & structure of Cardiac rehabilitation Programme.
b) Programme design for cardiac rehabilitation
   i. Inpatient rehab
   ii. Out patient rehab
   iii. Community rehabilitation
   iv. Home exercise program & Safety limits
4. Current trends in cardiac rehabilitation.
5. Neuromuscular & Skeletal disorders leading to alveolar hypoventilation.
a) Myopaties
b) Spinal muscular atrophies
c) Poliomyelitis
d) Kypho-scoliosis
e) Pectus carnivatum
f) Pectus excavatum.

UNIT IV

1. Role of nutrition & immunization in prevention of disease of heart and lung.
2. Role of physical activity in disease prevention.
3. Role of yoga & meditation in prevention of cardiac disease.
4. Role of physiotherapy in prevention and rehabilitation of patents with heart attack, diabetes & asthma.
5. Health club & Fitness; the concept behind healthy leaving.
6. Exercise & Heart: Types of exercise and its effect on heart.
7. Effect of Aging process, in the performance of heart.
8. Effect of Aging, in the performance of lungs.
9. Effect of nutrition on heart lung & blood vessels.

SUBJECT 3

-:2027

PHYSICAL THERAPY IN INTENSIVE CARE UNIT

M.P.T. – 2nd Year

Code – M.PC – 203

Max Marks = 100

Unit I

1. Interpret monitors of vital signs, systemic functions, X-rays, various breath sounds and use of techniques appropriately.
2. ICU management of primary cardiopulmonary dysfunction (principles mobilization, positioning, secretion clearance, specific maneuvers, weaning)
3. ICU management of secondary cardiopulmonary dysfunction (obesity, musculoskeletal trauma, head injuries, spinal injuries, burns)
4. Care of the unconscious patient
5. Care of the patients with mechanical ventilation
6. Social – psychological impact on patient and family
7. Social – psychological impact of ICU work on the physiotherapist

Unit II

Special precaution for the following condition during physiotherapy treatment

1. Cardiac disease
2. Congestive heart failure
3. Carbondixoide retention
4. Adult respiratory distress syndrome
5. Pleural effusion
6. Pulmonary embolism
7. Hemoptysis
8. Osteoporosis, osteopenia & fracture rib
9. Increased Intra cranial pressure
10. H I V
11. Thoracentesis
12. Tube feeding
13. Progressive muscular dysfunction

Unit III

1. Physiotherapy management in Pediatric and neonatal I.C.U.
2. Management of endotracheal tubes, tracheal suctioning, subclavian lines & chest tubes

Unit IV

1. Various Oxygen Delivery Devices (Invasive and Non Invasive)
2. Mechanical Ventilation & Types of mechanical ventilator.
3. Physiological effects
4. Indication and contraindication.
5. Complication.
6. Weaning the patients from ventilation.
7. Extubation & post Extubation care.
8. Symptoms of hypoxia & carbon dioxide narcosis.

SUBJECT 4

SKILL ENHANCING STUDIES

M.P.T. – 2nd Year

Code – M.P. – 204

Max Marks = 100

Unit I: Physiotherapy Ethics

1. Morals and ethics
2. Ethical issue in physical therapy
3. Rules and regulation of association/ council

Unit II: Physical Therapy & Law: Medico-legal aspect of physical therapy, liability, Negligence and practice licensure workmen compensation. Proper maintenance of Patient's record.

Unit III: Physiotherapy Department Management.

1. Policies and procedures.
2. Recruitment, interview, probation, salary, hours of working, leaves facilities,

retirement, referred policy.

3. Maintenance of records: equipments, statistics.

4. Planning, design construction, expansion plan.

Unit IV: Physiotherapy Education Technology

1. Aims, philosophy and trends and issues:-

a) Educational aims.

b) Agencies of education.

c) Formal and informal education

d) Major philosophies of education.

(Naturalism, Idealism, professionalism, realism)

e) Modern and contemporary philosophies of educations.

f) Physiotherapy education in India (past, present and future), current issues and trends in education.

2. Concepts of teaching and learning.

a) Theories of teaching.

b) Relationship between teaching and learning.

c) Psychology of education.

d) Dynamics of behavior, motivational process of learning perception, individual differences, intelligence personality.

3. Curriculum

a) Curriculum committee.

b) Development of a curriculum for physiotherapy.

c) Types of Curriculum

d) Placing, courses placement, time allotment

e) Correlation of therapy and practice.

f) Hospital and community areas for clinical instructions.

g) Clinical assignments.

4. Principles and methods of teaching.

a) Strategies of teaching.

b) Planning of teaching.

c) Organization, writing lesson plan.

d) A.V. aids.

e) Teaching methods – socialized methods.

5. Measurement and evaluation

a) Nature of measurement of Educations, meaning, process, personnel, standardized, non standardized.

b) Standardised tools, important tests of intelligence, aptitude, instrument, personality, achievements and status scale.

c) Programme evaluation.

d) Cumulative evaluation.

e) Guidance and counseling: Student Ragging and Issues related

f) Philosophy, principles and concepts, guidance and counseling services.

g) Faculty development and development of personnel for physiotherapy services.

PRACTICAL

M.P.T. 2nd year

Code – M.P.C: 205

Max marks: 100

Practical examination

1. Long cases for example: Post Open Heart Surgery, Asthma etc.
2. Short cases for example: ICU Physiotherapy Technique, Chest wall deformities
3. Viva voce & spots: ECG, X rays, ABG, ICU Monitors, Nebulisers, Peak Flow meter.

Following procedures will be included in examination

1. Assessment
2. Investigations.
3. Provisional diagnosis with justification
4. Differential diagnosis & its reason.
5. Treatment: options physiotherapy Management & advanced technique application
6. Home Programme

Books Recommended

1. Gray's Anatomy – Williams & Warwick – Churchill Livingston
2. Clinical Anatomy for Medical Students – Snell's- Lippincott.
3. Text Book of Medical Physiology – Guyton - Mosby.
4. Pathologic Basis of Diseases – Robbins , Kotran and Kumar – W.B. Saunders
5. Rau Respiratory Care Pharmacology, 6e
6. Pharmacology and Pharmacotherapeutics, R.S.Satoskar – Popular Publications, Bombay.
7. Pharmacology - Praseem K. Das. - Churchill Livingstone.
8. Essential of Medical Pharmacology - K. D. Tripathi - Jaypee Brothers.
9. General Pathology - Walter & Israel - Churchill Livingstone
10. Muirs Textbook of Pathology; Anderson - Edward Arnold Ltd.
11. Textbook of Pathology - Harsh Mohan- Jaypee Brothers.
12. Pathology: Implications for Physical Therapists - Goodmann and Boissonnault – W.E. Saunders.
13. Essential of Medical Microbiology - Bhatia & Lal - Jaypee Brothers.
14. Microbiology & Introduction for the Health Sciences - Ackerman and Richards – W.B. Saunders Co.
15. Essentials of Exercise Physiology: McArdle, WD, Katch, FI, and Katch, VL. 2nd edn, Lippincott Williams and Wilkins (2000).
16. Fundamentals of Exercise Physiology: For Fitness Performance and Health, Robergs RA, and Roberts, S.O. McGraw Hill (2000)
17. Exercise Physiology: Powers, SK and Howley ET. 4th edn; Mc Graw Hill (2001)
18. Physiology of Sport and Exercise: Wilmore, JH and Costil, DL. Human Kinetics (1994)
19. Exercise Physiology- Human Bioenergetics and its Application: Brooks, GA, Fahey, TD, White, TP. Mayfield Publishing Company (1996)
20. Levick, J.R. (1998) An Introduction to Cardiovascular Physiology. 2nd ed. Butterworth Heinemann
21. McArdle, WD, Katch, FI & Katch, VL (2001) Exercise Physiology. 5th ed. Lippincott, Williams & Wilkins.
22. Text Book of Medical Biochemistry – MN Chatterjea- Rana Shinde- Jaypee
23. John Low & Reed: Electro therapy Explained ,Butterworth

24. Joseph Kahn: Principles and practice of Electrotherapy, Churchill Livingstone.
25. Claytons Electrotherapy 10th Ed. - Sarah & Bazin – W.B. Saunders.
26. T B of Therapeutic Exercises, Narayanan, Jaypee
27. Therapeutic Exercise, Basmajian, Williams & Wilkins
28. Therapeutic Exercise Foundation & Techniques, Kisner Colby, Jaypee.
29. A.G. Sinha, Principle and Practices of therapeutic Massage. Jaypee
30. Orthotics and Prosthetics in Rehabilitation, 2e Lusardi, Elsevier.
31. Orthotics in Functional Rehabilitation of the Lower Limb Nawoczenski, Elseivier
32. Gardiner M. Dena: The Principles of Exercise Therapy - CBS Publishers, Delhi.
33. Wood & Baker: Beard's Massage, W.B. Saunders.
34. Kendall: Muscles – Testing and Function - Williams & Wilkins
35. Daniels and Worthinghams: Muscle Testing – Techniques of Manual
36. Examination, W.B. Saunders.
37. First Aid to Injured: St. John's Ambulance Association.
38. Norkin & White: Measurement of Joint Motion – A Guide to Goniometry
39. Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Ed, 1997, Brown & Benchmark.
40. White and Punjabi - Biomechanics of Spine - Lippincott.
41. Basmajian - Muscle alive - Williams & Wilkins
42. Muscle Energy Technique, Leon chaitow ,Churchill Livingstone.
43. Maitland's vertebral Manipulation , GD Maitland, Butterworth Heinemann.
44. Cyriax's Illustrated Manual of Orthopaedic Medicine , JH Cyriax, Butterworth
45. Position Release Technique, Leon chaitow ,Churchill Livingstone.
46. Manual Therapy , Brain Mulligan.
47. Butler Neural mobilization , Butler
48. Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
49. Methods in Biostatistics - Mahajan – J. P.
50. Research for Physiotherapist: Project Design and Analysis - Hicks Churchill Livingstone.
51. Biostatistcs: The manual for Statistical methods for use in health and nutrition – K.V.Rao - J.P.
52. Manual of Cardiac Rehabilitation: Dr. Peeyush Jain & Dr. R. Panda
53. The steps to a healthy heart: Kowalski R.E

54. Czervinske Perinatal and Pediatric Respiratory Care, 2e
55. Des Clinical Manifestations and Assessment of Respiratory Disease, 5e
56. Frownfelter Cardiovascular and Pulmonary Physical Therapy: Evidence and Practice, 4e
57. Hess Self-Assessment Guide to Accompany Respiratory Care: Principles & Practice
58. Hess Respiratory Care: Principles and Practice
59. Hicks Cardiopulmonary Anatomy and Physiology
60. Hillegass Essentials of Cardiopulmonary Physical Therapy, 2e
61. Irwin Cardiopulmonary Physical Therapy: A Guide to Practice, 4e
62. Kacmarek Essentials of Respiratory Care, 4e
63. Pilbeam Mechanical Ventilation: Physiological and Clinical Applications, 4e
64. Pryor Physiotherapy for Respiratory and Cardiac Problems: Adults and Paediatrics, 3e
65. Shapiro Clinical Application of Blood Gases, 5e
66. Simmons Workbook to Accompany Respiratory Care Pharmacology, 6e
67. Smith Cardiovascular Respiratory Physiotherapy
68. Watchie Cardiopulmonary Physical Therapy: A Clinical Manual
69. Wilkins Clinical Assessment In Respiratory Care, 5e

MPT in Sports

SYLLABUS

COURSE STRUCTURE OF M.P.T –

PART / YEAR – 1 – M.P.T.

S.No.	Subjects	Code	Theory Exam	Internal Assessment	Total	Total Study Hours Total No. of Weeks x Hours
1.	Review of Basic Sciences (Anatomy, Physiology, Pathology, Pharmacology & Biochemistry)	MPS-101	80	20	100	30 x 3 = 90
2.	Review of Basic Therapeutics (Exercise Therapy, Electro Therapy, Biomechanics & Bio. Engineering)	MPS – 102	80	20	100	30 x 3 = 90
3.	Advanced Therapeutics & Diagnosis (Exercise Physiology and Nutrition)	MPS – 103	80	20	100	30 x 3 = 90
4.	Computers, Research Methodology & Biostatistics	MP – 104	80	20	100	30 x 2 =60
5.	Clinical / Practicals	MPS-105				30 x 24 = 720
				Total	400	1050

PART / YEAR – II (M.P.T. SPORTS)

S.No.	Subjects	Code	Theory Exam	Internal Assessment	Total	Total Study Hours Total No. of Weeks x Hours
1.	Physical Therapy In sports conditions	MPS – 201	80	20	100	30 x 4=120
2.	Athletic injuries	MPS – 202	80	20	100	30 x 4 = 120
3.	Applied Exercise Physiology and sports psychology	MPS – 203	80	20	100	30 x 4 = 120
4.	Skill enhancing studies (Ethics, Educational Technology & Medico legal aspects	MP – 204	80	20	100	30 x 4 = 120
5.	Practical/Clinical Exam Viva Voce	MPS – 205	170	30	200	30 x 24 = 720 ---
6.	Dissertation (Based on Project Work)	MPS – 205			200	
				Total	800	1200

COURSE OBJECTIVES –

M.P.T. Sports I Year

1. ACQUIRE ADEQUATE KNOWLEDGE OF THE BASIC MEDICAL SUBJECTS AND ADVANCE KNOWLEDGE IN SPORTS PHYSIOTHERAPY
2. DEVELOPS SKILLS AND TECHNIQUES OF THERAPEUTIC MASSAGE, EXERCISE AND ELECTROTHERAPY MODALITIES & APPLICATION METHODS FOR MANAGEMENT OF VARIOUS MEDICAL AND SURGICAL CONDITIONS AND ADVANCE EQUIPMENT, ADVANCE CONCEPT APPLICATION IN SPORTS PHYSIOTHERAPY
3. DEVELOPMENT OF PROPER ATTITUDE FOR COMPASSION AND CONCERN FOR THE INDIVIDUALS AND WELFARE OF PHYSICALLY HANDICAPPED IN THE COMMUNITY.

4. DEMONSTRATES SKILLS IN HANDLING THE PATIENTS WITH VARIOUS DISORDERS, TEACHING METHODS, MANAGEMENT, RESEARCH GUIDANCE AND COUNSELING.
5. PRACTICE MORAL AND ETHICAL VALUES.

SUBJECT 1

REVIEW OF BASIC SCIENCES

M.P.T. – 1st Year,

Code – M.P.S – 101

Max Marks – 100

Unit I: Human Anatomy (Related to the Specialty)

1. Osteology: Basic terminology, composition, function, classification of Bones, Structural details of bones of whole body

2. Arthrology: Definition and Classification of Joints, movements of Joints, Description of Joints of Upper and Lower Extremities with their Ligaments, Vertebral Column.

3. Myology: Classification and Structure of Muscles, Description of all major muscles with their origin, Insertion, nerve supply and action.

4.Neurology (In Brief) Knowledge of Central Nervous system, nerve plexus of the body with their distributions (Cervical Plexus, Brachial plexus, Lumbosacral plexus)

5. Neuromuscular Anatomy

a) Skeletal muscle anatomy

i). Cytoskeleton, extra cellular matrix, fluid and ion fluxes, sarcolemma structure and function

ii) Contractile and regulatory protein structure and function

iii) Sensory control of skeletal muscle. Anatomy, function and control of spindle, tendon organ and joint receptor.

iv) Neuromuscular junction function

b) Connective tissue

i) Gross and cellular anatomy of connective tissue

ii) Fibroblast and connective tissue physiology

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Unit II: Human Physiology (Related to Specialty)

1. Cardiovascular system.

a) Structure & Properties of heart

b) Cardiac Cycle.

c) The regulation of heart's performance.

d) Cardiac output.

e) The arterial blood pressure.

f) The physiology of vascular system.

g) Lymphatic circulation.

2. Respiratory system

a) Functional anatomy

b) Ventilation & control of ventilation

c) Alveolar air

d) Regulation of the breathing

e) Pulmonary function test.

3. Neuromuscular aspects of Physiology

a) Central Nervous System

i) Motor areas of the brain - region anatomy, integration of motor control, central role of the cerebellum in motor control

ii) Spinal generators of locomotion

4. Endocrine System

a) Review of Endocrine system: Organization, Various secretions and their functions.

b) Regulation of various endocrine glands and its secretions

Unit III: Pharmacology (Related to Specialty)

. Their effects, uses, side effects and dosage.of following group of drugs

1. Doping techniques including Steroids Including anabolic steroids and blood doping.

2. Drugs used in pain

3. Muscle relaxants.

4. Drug acting upon central nervous systems & autonomic nervous system.

5. Topically acting drugs.

Unit IV: Pathology (Related to Specialty)

1. General Pathology (Cell Injury, Inflammation, repair, immune system)
2. Response of Injury to Tissue: bone, cartilage, bursa, ligaments, tendon, muscle and nerve
3. Delayed Healing responses in Soft tissue injuries

Unit V: Biochemistry: (Related to specialty)

Diet- It's nutritional and calorific value for various foods ,balance diet, energy requirement of various immediate, short term, long term energy spectrum in sports

SUBJECT 2

REVIEW OF BASIC THERAPEUTICS

M.P.T. – 1st year

Code – M.P. S– 102

Max. Marks = 100

Unit I: Exercise Therapy

Review of the following techniques.

a). Assessment techniques like MMT & Goniometry

b) Stretching and soft tissue mobilization in relation to sports.

c). Re-education and strengthening.

d). Balance and Co-ordination exercises.

e). Gait analysis and training (both normal & pathological gait).

f) . Relaxation & soft tissue manipulation.

g). Posture.

h) PNF.

i) . Traction.

j) . Hydrotherapy including aqua running: Mineral bath, physical bath, hydroelectric bath, whirlpool bath, showers and steam showers, sleep down brushing rub downs, sauna bath, spa etc.

Unit II: Electrotherapy

1. Gen. Review of low, medium & high frequency currents and their modification like didynamic and Russian currents & implication to sports.

2. Production, types, Physiological and Therapeutic effects, application, indications & contraindications of:
3. Ultrasound, Diathermy, LASER
4. Point Stimulators, TENS, IFT, HVPGS etc
5. Thermal modalities.(Heat and Cold)
6. UVR and IRR
7. Intermittent pneumatic compression
8. Acupuncture

Unit III: Biomechanics and Pathomechanics of all Joints.

1. Basic Concepts of Joint and Muscle Structure and Function
2. Introduction to Biomechanics, Analysis of human motion. Analytical tools and techniques – Isokinetic dynamometer, Kinesiological EMG, Electronic goniometer, Force platform, Videography.
3. Shoulder , Elbow, Wrist and Hand
4. Pelvis, Hip, Knee, Ankle & Foot
5. Spine.
6. Posture & Gait analysis
7. Brief idea about common sports: Terminology, Methodology, rules, equipments and infrastructure. Cricket, football, hockey, tennis, badminton, table tennis, wrestling, boxing, track and field, gymnastics, volleyball, basketball and aquatic sports
8. Biomechanics of Running, throwing, swimming, jumping, Cycling
9. Recent advances in Equipments of movement analyses.
10. Projectiles and Aerodynamics.

Unit IV: Bio-Engineering

1. Various types of orthosis & braces with its uses (limbs & spines)
2. Various types of prosthesis, patient preparation and application.
3. Principles and Mechanics for Wheelchair modifications in Para Olympic Sports
4. Functional bandages and sports taping techniques: Classification, types of bandages, techniques, material, indications, contraindications..

SUBJECT 3

ADVANCED THERAPEUTICS AND DIAGNOSIS

M.P.T. – 1st year

Code – M.P.S – 103

Max. Marks = 100

Unit I : Manual Therapy: Introduction, History, Basic Classification, Assessment for manipulation, discussion in brief about the concepts of mobilization like Cyriax, Maitland & Mulligan and Butler in mobilization of joints & nerves. Methodology in general with examples (Manipulation studies & work according to their specialization).

Unit II: Muscle Energy techniques and positional stretch: The basic concept and application of these techniques.

Unit III: Myofascial Release: Concept & brief discussion of its application techniques.

Unit IV: Biofeedback and Simulation: Principles, effects, uses and contraindications.

Unit V: Introduction to Exercise Physiology

1. Origins of exercise physiology: Foundations for the field of study
2. Nutrition and Energy Transfer

a) Macronutrients and Food Energy: Carbohydrates, Lipids and Proteins
b) Micronutrients and water: Vitamins& Supplements, Minerals, and Water
c) Fundamentals of Human energy Transfer
d) Human Energy Transfer during Exercise
e) Measurement of Human energy expenditure
f) Energy expenditure During Rest and Physical Activity
g) Evaluating Energy- Generating Capacities during Exercise
h) Optimal Nutrition for Exercise and Sport
i) Carbohydrate loading and various methods of dieting.

3. The Physiologic Support Systems

a) The Pulmonary system and exercise:

i. Anatomy of Ventilation
ii. Lung Volumes and Capacities
iii. Pulmonary Ventilation
iv. Second wind
v. Gas exchange in the body
vi. O2 & CO2 Transport
vii. Ventilatory control
viii. Ventilatory control in exercise
ix. Pulmonary Ventilation and energy Demands
x. Breath holding, High Pressure ventilation, SCUBA diving and Athletes Lung

b) The Cardiovascular system and exercise:

i. Components of the Cardiovascular System
ii. Blood Pressure
iii. Heart's Blood Supply
iv. Heart rate regulation
v. Blood Distribution
vi. Integrated Response in Exercise
vii. Cardiac Output
viii. Resting Cardiac Output, Stroke Volume & Heart Rate
ix. Exercise Cardiac Output,Stroke Volume & Heart Rate
x. Cardiac Output Distribution & Cardiac output and Oxygen transport Extraction of Oxygen: The a-v O2 Difference
xi. Cardiovascular Adjustments to Upper-Body Exercise & Athlete's Heart.

c) The Neuromuscular system and exercise:

i. Neuromotor system Organization
ii. Motor Unit Physiology
iii. Proprioceptors in Muscles, Joints and Tendons
iv. Comparison of Skeletal, Cardiac and Smooth Muscle
v. Muscle: Gross & Ultra Structure& Muscle fiber typing.

d) Hormones, Exercise, and Training:

i. Endocrine System Overview

ii. Endocrine System Organization, Resting and Exercise- Induced various Endocrine secretions

iii. Endurance & Resistance Training and Endocrine function

Unit VI

Medical imaging of sports injury

1. Basic of : X-ray and other relevant diagnostic agents (MRI and Ultrasound for soft tissue Injuries)
2. Nerve conduction studies, EMG, Normal & abnormal action potentials, Its recording protocols, analysis & apparatus
3. Importance of the above diagnostic agents in sports

SUBJECT 4

COMPUTER, BIOSTATISTICS AND RESEARCH METHODOLOGY

M.P.T. – 1st year

Code – M.P. – 104

Max. Marks = 100

Unit I: Biostatistics & Research Methodology

1. Introduction
2. Uses of statistical methods & standard deviation.
3. Methods of collection, classification, tabulation & presentation of data.
4. Central tendency-Mean, Median, Mode & Standard deviation
5. Correlation & Regression:-Karl Pearson's co relation method, Rank co relation method
6. Regression & coefficients.
7. Sampling, hypothesis & testing
8. Data collection including methods and tools of data collection like surveys and Questionnaire
9. Study of Research designs
10. Types of sampling and sampling errors
11. t- Test, Z- Test, Chi Square test
12. Data analysis and Interpretation

Unit II: Computer

1. Introduction of software and hardware.
2. M.S. Office,
3. Application of computers and internet in medical sciences.
4. Practice of Statistical methods using Statistical software like SPSS etc.

PRACTICAL

M.P.T. – 1st year

Code – M.PS– 104

Max Marks = 100

Course Objective: Knowledge of basic therapeutics & practical studies of advanced therapeutics applied to different conditions/ relieving of mechanical factors & assessment & Treatment purpose.

Unit I: Exercise Therapy:

a) Assessment of joint, muscles & nerve.
b) Various types of strengthening techniques.
c) Various type of mobilization techniques
d) Stretching & Soft tissue mobilization.
e) Gait analysis & training.
f) Suspension therapy
g) Muscle Reeducation
h) PNF Patterns and Techniques
i) Postural assessment & re education.
j) Balance & coordination.
k) Special techniques of exercise therapy.
l) Traction.
m) Hydrotherapy.

Unit II: Electro Therapy.

1. All types of low & medium frequency currents.
a). Faradic.
b). Galvanic.

c). High voltage current

d). Di dynamic.

e). Russian.

f) . Interferential Therapy.

g) TENS.

h). Micro-currents.

2. All types of high frequency currents & modalities.

a). Short wave diathermy.

b). Microwave diathermy.

c). Ultrasound.

3. Miscellaneous.

a) Cryotherapy.

b) Biofeedback.

c) UVR.

d) IRR.

e) LASER.

f) Other heat modalities.

Unit III: Advanced Manual Therapy

1. Demonstration of any one of the following manual therapy (according to their Specialization field):

a) Cyriax

b) Maitland

c) Mulligan

d) Butter

e) Nerve mobilization

2. Outline of practical knowledge of Muscle Energy techniques & positional stretch & Myofascial release.

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(FOLLOWING ARE ONLY FOR PRACTICAL KNOWLEDGE; NOT FOR THEORY EXAM)

Unit I: Basic principles of radiology & Diagnostic Studies related to the specialty.

Unit II: Analysis of various laboratory Examination reports and their clinical Co-relation with various muscular skeletal conditions in Sports.

COURSE OBJECTIVES (M.P.T.SPORTS II Year)

1. TO ANALYSE, INTERPRET AND EVALUATE VARIOUS SPORTS CONDITIONS AND TO ANALYSE THE REASONS FOR DEVELOPMENT OF SPECIFIC CLINICAL FEATURES IN APPLIED SPORTS PHYSIOTHERAPY
2. TO BE ABLE TO RATIONALIZE THE TREATMENT APPROACH ACCORDING TO THE MANAGEMENT NEEDED (MEDICAL/SURGICAL AND TO APPLY APPROPRIATE TECHNIQUES).
3. TO COMPARE THE EFFECT AND EFFICACY OF VARIOUS APPROACHES/ TECHNIQUES FOR RESEARCH PURPOSES.
4. TO BE ABLE TO RATIONALIZE THE TREATMENT APPROACH ACCORDING TO THE MANAGEMENT REQUIRED (MEDICAL/SURGICAL AND TO APPLY APPROPRIATE TECHNIQUES).
5. TO PLAY EFFEICIENT ROLE IN COMPLETE REHABILITATION OF SPORTS INJURIES
6. ETHICS & MEDICOLEGAL ASPECTS FOR CLINICAL PURPOSES.
7. EDUCATIONAL TECHNOLOGY FOR TEACHING & LEARNING PURPOSES.

M.P.T. (Sports) – II

SUBJECT 1

PHYSICAL THERAPY IN SPORTS CONDITIONS

M.P.T. – 2nd Year

Code – M.P.S – 201

Max. Marks = 100

Unit I

1. Role of Physiotherapist and other rehabilitation members in Prevention of Sports injuries.
2. Causes and mechanism of sports injuries. Importance of correct biomechanics, warm up, stretching, Taping& bracing,
3. Protective equipment, appropriate surfaces & training, adequate recovery, other physiotherapeutic modalities in prevention of sports injuries.
4. Training techniques used in sports - Plyometrics, circuit training, cross training, Fart-lek training and agility training.

Unit II

Principles of injury evaluation: pre season assessment, on field assessment, off field detailed clinical assessment with consideration to age groups.

Unit III

Principles of injury management: Sports emergencies, on field management and off field and late stage management of sports injuries in detail.

Unit IV

1. Regional assessment and management:
2. Discuss common sports injuries, physical examination including differential diagnosis, physiotherapy management of

a) Temporo mandibular region, cervical, thoracic and abdomen,

b) Shoulder complex, elbow complex, wrist and hand,

c) Lumbar region, pelvis, hip and thigh, knee, leg, foot and ankle in acute, sub-acute and chronic stage.

Unit V

Common injuries and their rehabilitation in following Sports

Football, Basket Ball, Volley Ball, Swimming, Gymnastics, tennis and other racquet sports, wrestling, golf, rowing, Boxing, Bicycling, Hockey, Cricket, Kabbady

Unit VI:

Criteria for return to play after rehabilitation of injuries including reconstructive surgeries in the above games

Unit VII

Discuss common surgeries in sports (region wise) and their rehabilitation protocols in detail.

Unit VIII

Practical Sports Medicine: Participation Screening, Medical care of the sporting team, traveling with the team, Medical coverage of endurance events Ethics and Sports Medicine

M.P.T. (Sports) – II

SUBJECT 2

Athletic Injuries

M.P.T. – 2nd Year

Code – M.P.S – 201

Max Marks = 100

Unit I

Fundamental Principles

1. Sports Medicine: The team Approach.
2. Sports Injuries : Acute & Overuse (overview)
3. Pain: Where is it coming from?

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4. Condition Masquerading as sports injuries
5. Principles of Injury Prevention, Diagnosis Treatment &Rehabilitation

Unit II

Regional Problems

1. Minor Head Injury in sport:

a) Applied Pathophysiology

b) Grading, Complication& Management & Prevention of Concussion

c) Post Concussion Syndrome & Recurrent episodes of Concussion

2. *Headache:*

a) Clinical Approach to the patient with Headache: History & Examination

b) Vascular & Cervical headache: Mechanism, clinical features and treatment

c) Exercise related causes of headache: Benign exert ional & post traumatic headache and Exert ional & footballers migraine

3. Facial Injuries

a) Functional anatomy

b) Nose : Epistaxis, nasal fractures & septal hematomas

c) Ear: Otitits interna & externa

d) Eye: Assessment, treatment and prevention of common injuries of eye

e) Teeth: Common dental injuries with Its Prevention

f) Fractures of facial bones

g) Prevention of facial injuries

4. Neck Pain

a) Clinical perspective: History examination and investigations

b) Treatment of the athlete with the neck pain including neural stretching

c) Neck pain syndromes: Acute wry neck, Acceleration / deceleration injuries, Acute nerve root pain, Cervical postural syndromes

5. Shoulder Pain:

a) Functional anatomy

b) Clinical perspective : Clinical Approach to the patient with shoulder: History & Examination

c) Shoulder injuries: impingement, rotator cuff injuries, glenoid labrum injuries, dislocation, instability of shoulder, Fractures of the clavicle, AC joint injuries, referred pain and other less common causes of shoulder pain

d) Guidelines shoulder rehabilitation

e) Specific rehabilitation protocols: Acute, recovery, functional phase and criteria for return to play.

6. Elbow & Fore arm pain:

a) History ,Examination, investigation& management of the patient with lateral, medial and posterior elbow pain

b) Acute elbow injuries

c) Forearm pain: Fractures of the radius & ulna, stress fractures and forearm compartment pressure syndromes

7. Wrist and hand pain:

a) Acute injuries of the wrist: History, examination, investigation and management of fractures of distal radius and ulna, scaphoid and hook of the hammate and dislocation of the carpal bones.

b) Chronic injuries of the wrist History, examination, investigation and management of common injuries

c) Hand and finger injuries: History, examination, investigation and management of hand injuries: fracture of the meta carpals & Phalanges, dislocation of MCP Joints and finger joints, ligament &tendon injuries and laceration & infections of the hand

8. Thoracic and chest pain

a) History, examination, investigation and management of thoracic IV joint disorder, CV joint disorder, Scheurmann's disease, thoracic IV disc prolapse and T 4 syndromes

b) History, examination, investigation and management of chest pain: rib trauma, costochondritis & stress fractures of ribs

9. Low back pain: Functional Anatomy

a) Clinical perspective: Clinical Approach to the patient with Low back pain: History examination & investigation.

b) Causes and management of mild, moderate &severe LBA including stress fractures of pars inter articularis, Spondylolisthesis &lumbar hyper mobility and structural lumbar instability.

c) Rehabilitation following LBA (including RECENT ADVANCES): Posture, Daily Activities, Sporting Technique.

10. Buttock Pain

a) Clinical perspective: Clinical Approach to the patient with Buttock pain: History examination & investigation.

b) Causes & Management of referred pain from Lumbar spine, Sacro iliac joint Disorders, Hamstring origin tendinopathy, ischiogluteal bursitis and Piriformis *syndrome*.

11. Hip & Groin Pain:

a) Clinical perspective: Clinical Approach to the patient with Hip &Groin pain: History examination & investigation.

b) Causes and management of adductor muscle strains (including recurrent), osteitis pubis, adductor tendinopathy, obturator neuropathy and trochanteric bursitis & other less common conditions

12. Anterior & Posterior thigh pain:

a) Clinical perspective: Clinical Approach to the patient with Anterior & Posterior thigh pain: History examination & investigation.

b) Causes and management of quadriceps contusion, myositis ossificans quadriceps muscle strain.

c) Causes and management of hamstring muscle strain (In detail), referred pain to posterior thigh & other less common conditions.

12. Knee injuries

a) Review of functional anatomy

b) Clinical perspective: Clinical Approach to the patient with Acute Knee Injuries: History examination & investigation.

c) Causes and management of meniscal injuries, collateral ligament injuries cruciate ligament injuries, articular cartilage damage, acute patellar trauma and chronic instability. Rehabilitation protocols of the above injuries

d) Clinical perspective: Clinical Approach to the patient with Anterior, Lateral, Medial & Posterior Knee pain: History, examination & investigation. Causes &

Management of Patellofemoral syndrome, Patellofemoral instability, Patellar tendinopathy, Fat pad impingement, acute &chronic Partial tears, Osgood Schlatters Disease, Sinding –Larsen-Johansson Syndrome and Quadriceps tendinopathy

e) Causes & Management of Iliotibial band friction syndrome ,excessive lateral pressure syndrome ,biceps femoris tendinopathy, pesanserinus tendinopathy, pellegrini-stieda syndrome

f) Causes &management of Popliteus tendinopathy Biceps Femoris Tendinopathy& Bakers cyst

13. Shin pain

a) Clinical perspective: Role Of Bio mechanics, Clinical Approach to the patient with shin pain: History examination & investigation.

b) Causes & Management of Stress fracture of tibia & Fibula, Inflammatory shin pain ,Compartment Syndromes Acute bony injuries: Peri osteal Contusion &fractured tibia &fibula ,

14. Calf Pain

a) Clinical perspective: Role Of Bio mechanics, Clinical Approach to the patient with Calf pain: History, examination & investigation.

b) Causes & Management of gastrocnemius & soleus muscle strain and Claudication type of calf pain

15. Pain in the Achilles region:

a) Clinical perspective: Clinical Approach to the patient with Achilles pain: History examination & investigation.

b) Causes and management of Achilles tendinopathy (in detail), Achilles tendon rupture, Retro calcaneal bursitis, Sever's disease and Posterior impingement syndrome.

16. Acute Ankle Injuries:

a) Functional Anatomy

b) Clinical perspective: Clinical Approach to the patient with Acute Ankle Injuries: History examination & investigation.

c) Causes & Management of Lateral and medial ligament injuries and Persistent pain after ankle sprain – The difficult ankle

17. Ankle Pain

a) Clinical perspective: Clinical Approach to the patient with Medial, Lateral & anterior Ankle pain: History examination & investigation

b) Causes & Management of tibialis posterior tendinopathy, Flexor hallucis tendinopathy, Tarsal tunnel syndrome ,stress fracture of medial malleolus and medial calcaneal nerve entrapment, Peroneal & Tibialis Anterior tendinopathy, Sinus tarsi syndrome ,Anterior, Antero lateral impingement

18. Foot Pain:

a) Clinical perspective: Clinical Approach to the patient with Real foot ,Midfoot & Forefoot Pain : History examination & Investigation

b) Causes & Management of common foot Conditions.

Unit III Special Group of Participants

1. The younger Athlete:

a) Management of musculo skeletal conditions ,

b) Children with Medical Illness ,

c) Nutrition for the younger athlete

2. The Female Athlete

a) Physiology of menstrual cycle &its effect on performance

b) Menstrual irregularities and Exercise; Treatment & Complications of exercise – associated menses irregularities.

c) Exercise and Pregnancy

d) Eating disorders

3. The older Athlete

a) Review tissue changes with Aging

b) Benefits &Risks of Exercise in the elderly

c) Drugs &the older athlete

4. The Disabled Athlete

a) Classification

b) Injuries in various disabled athletes

Unit IV Management of Medical Problems

1. Sporting emergencies

a) Preparation, equipment & personnel and Training

b) Treatment of the collapsed athlete, severe head injury, spinal shock, dental trauma, laryngeal & tracheal injuries, chest injuries, abdominal injuries & injuries to the extremities

2. The Athlete with epilepsy

Causes pathology diagnosis & management (including exercise prescription) of epilepsy

3. Common sports related in infections

a) Hepatitis A,B,C, and other forms

b) HIV

c) Skin infection

d) Viral respiratory infection

e) Travelers diarrhea

4. The tired athlete

History examination investigation management of over training syndrome, viral illness, Nutritional deficiencies and chronic fatigue syndrome

SUBJECT 3

M.P.T. (Sports) – II

SPORTS PSYCHOLOGY AND APPLIED EXERCISE PHYSIOLOGY

M.P.T. – 2nd Year

Code – M.P.S – 203

Max Marks = 100

Part A (Will be a separate section in the Question Paper)

Sports Psychology

Unit-I

1. Review of General Psychology: Meaning Nature and Scope, Psychology past & modern concept and its Different branches.

2. Scope of Sports Psychology

3. Role of Sports Psychology in Sports peak Performance and Prevention of sports injuries.

Unit-II

Growth and Development: Factors affecting it, Role of Heredity, Nature & Characteristics of growth and development, different stages of mental, social and emotional development, Role of Heredity and environment

Unit-III

1. Dynamics of Human Behavior: Instincts, Killer instincts, drives and needs, Attention interest and motivation
2. Mental Health: Introduction and Importance, Characteristics of Mentally healthy person, Role of sports in promotion of mental health
3. Personality and Sport: Introduction, Factors affecting personality and development theories of Personality and applying the theories to sports,
4. Applying social learning theory to sports

Unit-IV

1. Emotion in Sports: Introduction, Characteristics, Controlling and training, Contribution of sports to Emotional health
2. Aggression in Sports: Define, Theories of and reduction of Aggression
3. Arousal, anxiety and stress
4. Introduction, Factors inducing Arousal and Anxiety and its relation with Performance
5. Stress management: Modeling Stress: Isolating training
6. Biofeed Back and Progressive Muscle relaxation, Cognitive behavior Techniques, Mental coping strategies, visual Imagery and Meditation.

Unit-V

Social Influence on sporting behavior to sports: Sources, Groups and teams, Social facilitation, Leadership, Theories of leadership and applying it to sport

Unit-VI

1. Motivation and Sports: Introduction, Intrinsic and Extrinsic motivation, Theories of Motivation, Cognitive approach to motivation
2. Skill Acquisition: Introduction, definition, Classification, stages of Skill acquisition and enhancing skill acquisition

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PART-B (Will be a separate section in the Question Paper)

Applied Exercise Physiology

Unit I Exercise Training and Adaptations in Functional Capacity

Unit II Training the Anaerobic and Aerobic Energy Systems

1. General Training Principles
2. Anaerobic & Aerobic Training
3. Factors That Affect Aerobic Conditioning
4. Adaptations to Exercise Training
5. Formulating an Aerobic Training Program

Unit III Training Muscles to Become Stronger

1. Foundations for Muscle Strength
2. Measurement of Muscular Strength
3. Training Muscles to become Stronger
4. Sex differences in Muscles Strength
5. Systems of Resistance Training
6. Neural Muscular Bone & Connective Tissue Adaptations to muscle training
7. Cardiovascular and Body composition adaptations to muscle training

Unit IV

1. Factors Affecting Physiological Function, Energy Transfer, and Exercise Performance
2. Environment and Exercise

a) Mechanisms of thermoregulation

b) Thermoregulation and Environment Stress during Exercise

c) Exercise and Attitude

Unit V Ergogenic Aids

1. Pharmacologic and Nutritional Agents
2. Physiologic Agents

Unit VI

Optimizing Body Composition, Aging and Health- Related Exercise Benefits

1. Body composition: Components Assessment, and Human Variability
2. Obesity, Exercise and Weight Control
3. Exercise, Aging, and Cardiovascular Health

Unit VII

Clinical Exercise Physiology for Health- Related Professionals

1. Exercise Programmes for special Populations
2. Oncology
3. Cardiovascular diseases: Assessment, Rehabilitation& Exercise Prescription
4. Pulmonary Diseases: Assessment, Rehabilitation & Exercise Prescription

SKILL ENHANCING STUDIES

M.P.T. – 2nd Year

Code – M.P. – 204

Max Marks = 100

Unit I: Physiotherapy Ethics

1. Morals and ethics
2. Ethical issue in physical therapy
3. Rules and regulation of association/ council

Unit II: Physical Therapy & Law: Medico-legal aspect of physical therapy, liability, Negligence and practice licensure workmen compensation. Proper maintenance of Patient's record.

UnitIII: Physiotherapy Department Management.

1. Policies and procedures.
2. Recruitment, interview, probation, salary, hours of working, leaves facilities, retirement, referred policy.
3. Maintenance of records: equipments, statistics.
4. Planning, design construction, expansion plan.

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Unit IV: Physiotherapy Education Technology

1. Aims, philosophy and trends and issues:-

a) Educational aims.

b) Agencies of education.

c) Formal and informal education

d) Major philosophies of education.(naturalism, idealism, professionalism, realism)

e) Modern and contemporary philosophies of educations. Physiotherapy of education in India (past, present and future), current issues and trends in education.

2. Concepts of teaching and learning.

a) Theories of teaching.

b) Relationship between teaching and learning.

c) Psychology of education.

d) Dynamics of behavior, motivational process of learning perception, individual differences, intelligence personality.

3. Curriculum

a) Curriculum committee.

b) Development of a curriculum for physiotherapy.

c) Types of Curriculum

d) Placing, courses placement, time allotment

e) Correlation of therapy and practice.

f) Hospital and community areas for clinical instructions.

g) Clinical assignments.

4. Principles and methods of teaching.

a) Strategies of teaching.

b) Planning of teaching.

c) Organization, writing lesson plan.

d) A.V. aids.

e) Teaching methods – socialized methods.

5. Measurement and evaluation

a) Nature of measurement of Educations, meaning, process, personnel, standardized, non standardized.

b) Standardized tools, important tests of intelligence, aptitude, instrument, personality, achievements and status scale.

c) Programme evaluation.

d) Cumulative evaluation.

e) Guidance and counseling: Student Ragging and Issues related

f) Philosophy, principles and concepts, guidance and counseling services.

g) Faculty development and development of personnel for physiotherapy services.

PRACTICAL

M.P.T. 2nd year

Code – M.P.C: 205

Max marks: 100

Practical examination

1. Long cases for example: Athletic Injuries, PIVD
2. Short cases for example: Traumatic orthopedic conditions, Sprains and Strains,

Following procedures will be included in examination

1. Assessment
2. Investigations.
3. Provisional diagnosis with justification
4. Differential diagnosis & its reason.
5. Treatment: options physiotherapy Management & advanced technique application
6. Home Programme

Books Recommended:

1. Gray's Anatomy – Williams & Warwick – Churchill Livingston
2. Clinical Anatomy for Medical Students – Snell's- Lippincott.
3. Text Book of Medical Physiology – Guyton - Mosby.
4. Pathologic Basis of Diseases – Robbins , Kotran and Kumar – W.B. Saunders
5. Pharmacology and Pharmacotherapeutics – Satoskar & Bhandarkar – Popular Publications – Bombay.
6. Text Book of Medical Biochemistry – MN Chatterjea- Rana Shinde- Jaypee
7. John Low & Reed: Electro therapy Explained ,Butterworth
8. Joseph Kahn: Principles and practice of Electrotherapy, Churchill Livingstone.

9. Claytons Electrotherapy 10th Ed. - Sarah & Bazin – W.B. Saunders.
10. T B of Therapeutic Exercises, Narayanan, Jaypee
11. Therapeutic Exercise, Basmajian, Williams & Wilkins
12. Therapeutic Exercise Foundation & Techniques, Kisner Colby, Jaypee.
13. A.G. Sinha, Principle and Practices of therapeutic Massage. Jaypee
14. Orthotics and Prosthetics in Rehabilitation, 2e Lusardi, Elsevier.
15. Orthotics in Functional Rehabilitation of the Lower Limb Nawoczenski, Elseivier
16. Gardiner M. Dena: The Principles of Exercise Therapy - CBS Publishers, Delhi.
17. Wood & Baker: Beard's Massage, W.B. Saunders.
18. Kendall: Muscles – Testing and Function - Williams & Wilkins
19. Daniels and Worthinghams: Muscle Testing – Techniques of Manual Examination, W.B. Saunders.
20. First Aid to Injured: St. John's Ambulance Association.
21. Norkin & White: Measurement of Joint Motion – A Guide to Goniometry
22. James G. Hay – The Biomechanics of Sports Techniques, Prentice Hall
23. Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Ed, 1997, Brown & Benchmark.
24. White and Punjabi - Biomechanics of Spine - Lippincott.
25. Basmajian - Muscle alive - Williams & Wilkins
26. Muscle Energy Technique, Leon chaitow ,Churchill Livingstone.
27. Maitland's vertebral Manipulation , GD Maitland, Butterworth Heinemann.
28. Cyriax's Illustrated Manual of Orthopaedic Medicine , JH Cyriax, Butterworth
29. Position Release Technique, Leon chaitow ,Churchill Livingstone.
30. Manual Therapy , Brain Mulligan.
31. Butler Neural mobilization , Butler
32. Orthopedic Physiotherapy, Robert A Donatelli, Churchill Livingstone.
33. Physical Rehabilitation Assessment and Treatment, Susan Sullivan, Japee brothers
34. Physical therapy of shoulder, Robert A Donatelli, Churchill Livingstone
35. Orthopedic Physical Assessment David J Magee, Saunders
36. Manual Examination and Treatment of the Spine and Extrimities , Carolyn Wadsworth, Williams and Wilkins.
37. Illustrated Orthopaedic physical Assessment , Ronald C Evans , Mosby.

38. Physical Examination of the Spine and Extrimities , Stenley, Lipenfield.
39. Clinical Orthopaedic Examination , Mc Rae, Churchill Livingstone.
40. Systems of Orthopedics - Apleys - Butterworth Heinmann.
41. Outline of Orthopedics - Adams - Churchill Livingstone.
42. Physical Rehabilitation of the Injured Athlete, Anderson,
43. Physical Therapy of Sports, Werniar Kuprian.
44. Text Book of Radiology - Sutton D. - Churchill Livingstone.
45. Mohsin S.M.: Research Methods in Behavioral Sciences: Orient Publications.
46. Colton: Statistics in medicine, Little Brown Company, Boston.
47. Mahajan: Methods in Biostatistics, Jay Pee Brothers.
48. Vincent: Statistics in Kinesiology, Human Kinetics.
49. Hicks: Research for Physiotherapists, Churchill Livingstone
50. Essentials of Exercise Physiology: McArdle, WD, Katch, FI, and Katch, VL. 2nd edn, Lippincott Williams and Wilkins (2000) .
51. Fundamentals of Exercise Physiology: For Fitness Performance and Health, Robergs RA, and Roberts, S.O. McGraw Hill (2000)
52. Exercise Physiology: Powers, SK and Howley ET. 4th edn; Mc Graw Hill (2001)
53. Physiology of Sport and Exercise: Wilmore, JH and Costil, DL. Human Kinetics (1994)
54. Exercise Physiology- Human Bioenergetics and its Application: Brooks, GA, Fahey, TD, White, TP. Mayfield Publishing Company (1996)
55. Komi, P. (Ed.) (1992) Strength and power in sport. Blackwell Scientific Publications.
56. Levick, J.R. (1998) An introduction to Cardiovascular Physiology. 2nd ed. Butterworth Heinemann
57. McArdle, WD, Katch, FI & Katch, VL (2001) Essentials of Exercise Physiology. 5th ed. Lippincott, Williams & Wilkins.
58. Shephard and Astrand (1996) Endurance in sport. Blackwell Scientific Publications.
59. Willmore, JH & Costill, DL (1999) Physiology of Sport and Exercise. 2nd ed. Human Kinetics.
60. Guyton, A.C. Textbook of Medical Physiology (7th Ed.). Philadelphia: Saunders, 1986, pp. 382-386, 472-476.

61 Clinical Sports Medicine, Karim Khan and Peter Brukner, Second Edition, The McGraw Hill

62 Sports physiotherapy Applied Science and Practice, Maria Zuluaga, Churchill Livingstone

63. Therapeutic Modalities in Sports medicine; Prentice, William E; Mosby; 4th Edition

64. Physiology of Exercise; De Vries;Staples Press , London

65. Psychology in Contemprary Sport, Bryant J. Cratty;