Mahatma Gandhi University

Of

Medical Sciences & Technology, Jaipur

Syllabus

Master of Physiotherapy(MPT)

Neurology

(2 Years Postgraduate Degree Course)

Edition 2020-21

Notice

1. The University reserves the right to make changes in the Rules/Regulations/ Syllabus/Books/Guidelines/Fees-Structure or any other information at any time without prior notice. The decision of the University shall be binding on all.

2. The Jurisdiction of all court cases shall be Jaipur Bench of Hon'ble Rajasthan High Court only.

RULES & REGULATIONS
MASTER OF PHYSIOTHERAPY (MPT)
(2 Years Postgraduate Degree Course)

SPECIALIZATION (BRANCHES)

1. MPT in Orthopaedics
2. MPT in Neurology
3. MPT in Cardiopulmonary
4. MPT in Sports

DURATION OF THE COURSE

The duration of the Master of Physiotherapy (M.P.T.) Course shall be (2) two continuous academic years on a full time basis in each specialization.

MPT Part-I (1st year) 0-12 months

MPT Part-II (2nd year) 13-24 months

Medium of instruction: English shall be the medium of instruction.

OBJECTIVES

At the end of the completion of Master of Physiotherapy, the Postgraduate will be able to:

1. Apply advanced knowledge of clinical skills in problem solving.
2. Gather and interpret information within a holistic framework pertaining to health.
3. Design, implement and monitor appropriate therapeutic interventions.
4. Apply scientific principles to the concepts of health, illness and disability.
5. Promote health.
6. Appraise the social and political context of health care.
7. Undertake independent research projects.
8. Promote Physiotherapy education.
9. Appraise action and social skills of self and others.

ELIGIBILITY

Candidates who have passed B.Sc. (PT) or BPT degree from recognised institutions where the mode of study is a full time program, with minimum 3½ years / 4 ½ years duration in India or abroad as equivalent with not less than 50% of marks in aggregate and have completed 6 months of compulsory rotatory internship in Physiotherapy.

OR

Candidates who have passed BPT through Bridge Course or through Lateral Entry after completing their Diploma in Physiotherapy from recognised institutions where the mode of study is a full time program in India or abroad as equivalent with not less than 50% of marks in aggregate and have completed 6 months of compulsory rotating internship in Physiotherapy.

INTAKE OF STUDENTS

The intake of students to the course shall be in accordance with the availability of the Guide. The guide student ratio shall be 1:5.

REGISTRATION

A candidate admitted to this course shall register with this University by remitting the prescribed fee along with the application form for registration duly filled in and forwarded to the University through the principal of the college within the stipulated time.

ENROLMENT
Candidates admitted to the Master of Physiotherapy course shall be enrolled with the university by remitting the prescribed fee along with the application form for enrolment duly filled in and forwarded to the university through Principal of the College within stipulated date. Candidate already enrolled with this University need not be enrolled again provided he/she has not taken migration certificate from this University.

SYLLABUS
The curriculum and the scheme of examination for the course shall be as prescribed by the University from time to time.

COMMENCEMENT OF THE COURSE
The Course shall commence from the 1st August of every Academic year.

CONDUCTION OF THE UNIVERSITY EXAMINATION
University examination shall be conducted twice in a year; that is Main and Supplementary Examination.

ATTENDANCE
1. No candidate shall be permitted to appear in M.P.T. Part-I/II university examination unless he/she has attended the course for the prescribed period and produces the necessary certificate of attendance and satisfactory conduct from the Principal of the College.
2. A candidate is required to compulsorily attend 75% of the theory classes and also 75% of the practical / or clinical classes held annually in each of the prescribed subject(s) separately, those not fulfilling the above criteria will not be eligible to appear for the university examination in the concerned subject(s).

SCHEME OF EXAMINATION
There shall be Internal Assessment Examinations in Theory as well as Practical at the College level. These shall carry 30% of total marks assigned to Theory as well as Practical Examination.

At the end of every academic year, after completion of the course of study there shall be University Theory & Practical Examination. These shall carry 70% of total marks assigned to Theory as well as Practical Examination.

Internal Assessment Examination:
1. Theory and practical paper(s): 30% of total marks shall be allotted to the Internal Assessment for each subject. Three internal assessment examinations will be held in each subject (Theory and Practical separately) before the commencement of the theory university examination (Main) in each academic year. Every candidate shall be required to obtain at least 40% marks in the aggregate of any best of two out of the three internal assessment tests in each subject. Candidates failing to secure 40% marks in the aggregate of best two internal assessment tests in any subject shall not be allowed to appear in concerned subject(s) in the ensuing university main examination. In case the examination forms have already been filled and submitted in the university, the Principal will detain such students from appearing in the University examination of concerned subject(s). Mode and number of internal assessment tests will be determined at the level of the Principal of the college. The candidates shall be required to obtain at least 40% marks in each subject

in an improvement internal assessment test to qualify and appear in the university forthcoming supplementary examination.

2. A candidate may improve his/her internal assessment marks whenever he/she reappears. In case the candidate does not opt for improvement or doesn't improve, his/her earlier internal assessment marks would be conveyed by the Principal to the university.

University Examination:

1. There shall be two examinations of MPT Part-I & Part-II Course in one academic year, the Main examination and subsequent Supplementary examination.
2. A candidate who has completed a regular course of study prescribed for MPT Part-I for one academic year shall be eligible to appear at MPT Part-I examination.
3. A candidate failing in any number of subjects at the main examination shall be allowed to appear in the failing subjects at the ensuing supplementary examination.
4. A candidate not passing MPT Part-I supplementary examination shall be allowed to clear his/her still un-cleared papers in the ensuing main/supplementary examination(s).
5. A candidate who has not passed even a single subject (theory &/or practical) of MPT Part-I supplementary examination shall not be promoted to MPT Part-II course.
6. A candidate who has passed one or more subject(s) of MPT Part-I main/supplementary examination will be promoted to MPT Part-II course. After completion of regular course of study for one academic year of MPT Part-II course he/she shall be eligible for MPT Part-II examination only after passing all the due papers of MPT Part-I i.e. a candidate shall be eligible to appear for MPT Part-II examination only when all the prescribed papers of MPT Part-I examination have been passed by him/her, even if he/she has attended all the theory and practical classes of MPT Part-II course.
7. A candidate will be permitted to avail any number of attempts to pass all the papers of MPT Part-I and Part-II course but he/she will be required to complete the entire MPT course within four years of his/her admission to MPT Part-I course.

Paper Setter/Examiner:

1. All the examiners, paper setters, Theory examination answer books evaluators, Internal and External Examiners for Practical examinations shall be appointed by the President of the University.
2. Qualification of the Paper setter / Examiner:Masters degree (MPT) with 3 years of full time teaching experience from recognized university.
3. Examiner / Paper setter: Paper setter can be an examiner

Duration, Distribution of marks and Pattern of Question papers:

1. The question paper shall cover the entire syllabus of the subject.
2. Each subject (Theory & Practical) shall carry 30% marks for internal assessment and 70% marks for the University examination.
3. Duration of Examination: Each written paper of University examination of 70 marks shall be of 3 hours duration.
4. Pattern of question papers :

All questions shall be required to be attempted. There may be internal choice(s) in the questions :

Paper carrying 70 Marks :

Long answer (essay type) questions (2 out of 4)	2x15= 30
Short answer questions (4 out of 6)	4x10= 40

Practical (including Viva)

There will be internal assessment examinations spread over the academic year at the College level and University examination at the end of the academic year. These shall be related to assessments, investigations and physiotherapy management. Internal assessment examinations shall carry 30% and the University examination shall carry 70% of total marks assigned to practical including viva-voce.

Mode	Long case assessment, Short case, written, Demonstration, Investigations & Viva
Duration	Up to 120 minutes per candidate
Examiner	02 (One internal and one external from the panel of Examiners from University)

DISSERTATION

Every candidate pursuing MPT degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The 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 and review of literature getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions.

Every candidate shall submit to the Registrar of university in the prescribed Performa, a synopsis containing particulars of proposed dissertation work within 6 months from the date of commencement of the course on or before the dates notified by the university. The synopsis shall be sent through the proper channel i.e. the Head of the Department and the Principal of the College. Before submitting the synopsis, it shall be ensured by the Principal of the College that it has been cleared by the Ethics Committee. The university will register the dissertation topic. No change in the dissertation topic or guide shall be made without prior approval of the university.

Guide will be only a facilitator, advisor of the concept and responsible in correctly directing the candidate in the methodology and not responsible for the outcome and results.

The dissertation should be written under the following headings:

1. Introduction
2. Aims or objectives of study
3. Review of literature
4. Material and methods
5. Results
6. Discussion
7. Conclusion
8. References
9. Appendices

The written text of dissertation shall not be less than 50 pages and shall not exceed 100 pages excluding references, tables, questionnaires and other annexures. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27” x 11.69”) and bound properly. Spiral binding should be avoided. The Guide, Head of the Department and Principal of the College shall certify the dissertation.

I. Three copies of dissertation thus prepared shall be signed by the candidate and the guide and then submitted for evaluation to the Principal of the college, one month before the commencement of final theory paper University examination.

II. The dissertation shall be examined by minimum of two examiners one Internal and one External.

III. Evaluation of the dissertation would be done jointly by the external and internal examiners, who will be appointed by the President of University.

IV. The examiners appointed for the practical can also evaluate dissertation and take viva-voce based on the dissertation of the candidate to assessing depth of knowledge, logical reasoning, confidence & oral communication skill. Special emphasis shall be given to dissertation work during the MPT Part-II course.

V. A candidate will be required to secure minimum 50% marks to pass viva-voce examination of dissertation.

VI. Even if the candidate fails in the Theory/Practical University Examination his / her dissertation marks shall still be carried over to the subsequent examinations.

Guide:

Criteria for recognition of MPT teacher / guide:

1. Guide should be at least Assistant Professor having qualification of M.Sc. (PT)/ MPT in the concern subject/ Specialty.
2. The guide student ratio should be 1:5

Change of Guide:

In the event of registered 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.

CRITERIA FOR PASS

1. In order to pass an examination a candidate must secure 50% marks in each theory subject (inclusive of internal assessment) and practical (inclusive of internal assessment) & viva-voce separately. In case of Section A & Section B of a Paper, students will have to secure 50% marks combined to pass the paper.
2. To pass MPT Part-II examination, a candidate will also be required to secure minimum 50% marks in dissertation & its viva-voce examination.

GRACE MARKS

No grace marks will be awarded in University Postgraduate examinations including Master of Physiotherapy.

REVALUATION/SCRUTINY

Revaluation of answer books is not permissible. Scrutiny of marks in any number of papers/subjects shall be permissible as per University Rules.

MIGRATION/TRANSFER OF CANDIDATES

Migration/transfer of a candidate from another recognized University to this University or vice versa shall not be considered.

VACATION

The Principal of the College may declare vacation in an academic year to the students as per the academic calendar

TEACHING SCHEDULE

MPT Part – I (1 Year) Common to all branches

S. No.	Course Code	Subject	Teaching Hours	
			Theory	Practical
1	MPT-6010	Review of Human Sciences and Biomechanics	**100**	**50**
2	MPT-6020	Physical & functional diagnosis	**100**	**50**
3	MPT-6030	Research Methodology& Biostatistics	**100**	**50**
4	MPT-6040	Practical	**--**	**100**
	MPT-7010	Seminars on Clinical issues(Non University Examination)	**100**	**--**
7	Clinical Practice		**--**	**1100**
		Total	**400**	**1350**
Total Hours 400+1350=1750				

MPT Part – II (1 Year)

S. No.	Course Code	Subject	Teaching Hours	
			Theory	Practical
1	MPT-6210	Administration, Management and Ethical Issues (Common to all branches)	**100**	**--**
2	MPT-6220	Physiotherapy in neurological disorder	**100**	**50**
3	MPT-6230	Neurosurgical and paediatric rehabilitation	**100**	**50**
4	MPT-6240	Practical	**--**	**100**
5	MPT-7020	Dissertation	**200**	**--**
6	Clinical Practice		**--**	**1100**
		Total hours	**500**	**1300**
Total Hours 500+1300=1800				
Grand Total:- 1750+1800=3550 Hours				

DISTRIBUTION OF MARKS

MPT Part-I

S. No.	Course Code	Subjects	Theory/ Practical		Total
			M.M. Annual	M.M. Internal assessment	
1.	MPT-6010	Review of Human Sciences and Biomechanics	70	30	100
2.	MPT-6020	Physical & functional diagnosis	70	30	100
3.	MPT-6030	Research Methodology& Biostatistics	70	30	100
4.	MPT-6040	Practical	70	30	100
5.	MPT-7010	Seminars on Clinical issues(Non University Examination)	100	--	100
		Total Marks			**500**

MPT Part-II

S. No.	Course Code	Subjects	Theory/ Practical		Total
			M.M. Annual	M.M. Internal assessment	
1.	MPT-6210	Administration, Management and Ethical Issues	70	30	100
2.	MPT-6220	Physiotherapy in neurological disorder	70	30	100
3.	MPT-6230	Neurosurgical and paediatric rehabilitation	70	30	100
4.	MPT-6240	Practical	70	30	100
5.	MPT-7020	Dissertation	200	--	200
		Total Marks			**600**

Grand Total:-500+600=1100 Marks

SYLLABUS

MPT Prat-I Paper-I : Review of Human Sciences and Biomechanics (6010)

COURSE OBJECTIVE

1. Applied anatomy & Physiology for supportive specialization.
2. Normal functional anatomy & Physiology for Analysis between normal & abnormal.
3. Subject support : Diagnosis & related mechanics.
4. On completion of the study of this subject the student should be able to
5. Comprehend the structure & function of parts of the Musculoskeletal, nervous and cardiothoracic systems in relevance to Physiotherapy
6. Correlate the knowledge gained, in understanding the Musculoskeletal, nervous and cardiothoracic systems dysfunction.

Unit 1 : Human Anatomy

1. Out line of general anatomy.
2. Introduction to upper limb & lower limb.
   a) Bones & Joints
   b) Muscles.
   c) Nerves, roots, plexus.
   d) Pectoral, Axilla, Scapular, Arm, Forearm, Cubital fossa, Hand.
   e) Vascular structure.
   f) Thigh, Gluteal region, popliteal fossa.
   g) Leg, foot.
3. Introduction of thoracic bones & Joints.
4. Introduction of vertebral column.
   a) Cervical, thoracic, lumbar, sacral spine
   b) Anatomy of spinal cord.
5. Introduction of Head & Neck :
   a) Neck **:** Side of neck; Back of neck; Triangle of neck.
   b) Temporomandibular joint
6. Introduction of Brain & Spinal Cord
   a) Meninges, CSF.
   b) Blood supply of brain & spinal cord.
   c) Outline of ventricles.
   d) Outline of brain stem.

Unit II : Human Physiology

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. Nervous system
   a) Elementary neuroanatomy
   b) Neurons & Neuroglia
   c) Properties of nerve fibres, synapse
   d) Spinal cord
   e) Cerebral cortex
   f) Pyramidal & extra-pyramidal system
   g) The cerebellum
   h) Automatic nervous systems
   i) Cerebrospinal fluid
   j) Cranial nerves.

Unit-III:- Biomechanics

1. **Kinematics**
   Types of motion (accessory and joint play of axial and peripheral skeletal) Location of motion (instantaneous axis of movement, shifting axis of movement)
   a) Magnitude of motion (factors determining it)
   b) Direction of motion
   c) Angular motion and its various parameters
   d) Linear motion and its various parameters
   e) Projectile motions

2. **Kinetics**
   a) Definition of forces
   b) Force vectors (composition, resolution, magnitude)
   c) Naming of Force (gravity and anti-gravity force, GRF (Ground reaction Force of gravity and Centre of Gravity
   d) Stability
   e) Reaction forces
   f) Equilibrium & BALANCE
   g) Linear forces system
   h) Friction and its various parameters
   i) Parallel force systems
   j) Concurrent force systems
   k) Work power and energy
   l) Moment arms of force & its application
   m) Force components
   n) Equilibrium of force

3. **Mechanical energy, work and power**
   a) Definitions
   b) Positive and Negative work of muscles
   c) Muscle mechanical power
   d) Causes of inefficient movement
      - Co-contractions
      - Isometric contraction against gravity jerky movement

- Energy generation at one joint and absorption at another
- Energy flow and Energy system used by the body
- Energy storage

4. **Muscle Mechanics**
   Structure and composition of muscle. Physiology of musculoskeletal systems Fiber length and cross section area
   a) Mechanical properties of various muscles.
   b) EMG changes during fatigue and contraction.
   c) Changes in mechanical and physiological properties because of ageing, exercise and immobilization, dystrophies and pathological conditions.

5. **Ligament & Tendon mechanics**
   a) Structure and composition
   b) Mechanical properties and physiological properties.
   c) Cross sectional area measurements
   d) Muscle tendon properties
   e) Temperature sensitivity
   f) Changes in physical and mechanical properties because of aging, exercise and Immobilization and position Mechanoreceptors, its types, distribution with respect to joint, structure and function.
   g) Clinical applications

6. **Joint mechanics**
   a) Joint design
   b) Joint categories
   c) Joint function
      - Arthrokinematics
      - Osteokinematics
      - Kinematic chains Open
        Closed
        Joint forces, equilibrium and distribution of these forces
        Degenerative changes in weight bearing joints and compensatory actions
        Joint stability and its mechanics
        Clinical applications

7. **Kinematics and Kinetics Concepts of following joints**
   a) **Upper Extremity:**
      - Scapulo-shoulder Joint
      - Elbow Joint
      - Wrist Joint & Hand
   b) **Lower Extremity:**
      - Hip & pelvis
      - Knee joint
      - Patello femoral joint
      - Ankle and foot

8 Biomecahnics of vertebral column

9 Posture:

a) Anatomical aspects of posture
b) Types of Posture
c) Assessment of Posture
d) Factors affecting posture
e) Postural deviation

10. **Gait**

a) Normal Gait and its determinants
b) Gait parameter
   - Kinetic
   - Kinematics
   - Time-Space

   Pathological gait with emphasis on polio, cerebral palsy, dystrophies, hemi paresis, Para paresis
c) Running
d) Stair climbing
e) Changes in gait following various surgeries/ diseases/ disorders.
   - Basic wheelchair skills and assessment training.
   - Transfer skill training

REFERENCES:

S. No.	Title
1	Synopsis of Surgical Anatomy
2	Gray's Anatomy-
3	Grants – Methods of Anatomy
4	Clinical Anatomy for Medical Students
5	Textbook of Medical Physiology
6	Pathologic Basis of Diseases
7	The Pharmacological basis of Therapeutics
8	Pathology implications for Physical Therapists
9	Hutchinsons – Clinical Methods of Medicine
10	Outline of Orthopedics
11	Outline of Fractures
12	Tureks – Orthopedics
13	Text Book of Radiology
14	The Pharmacological basis of Therapeutics
15	Pharmacology and Pharmacotherapeutics
16	Davidsons – Principles and Practice of Medicine
17	Systems of Orthopedics
18	Clinical Kinesiology
19	Kinesiology – Scientific Basis of Human Motion, Brown & Benchmark
20	Kinesiology and Applied Anatomy,
21	Biomechanics of Spine
22	Physiology of Joints
23	Clinical Neurophysiology.
24	The Biomechanics of Sports Techniques,

25	Biomechanics – A Qualitative approach for studying Human Motion
26	Joint Structure and Function - A Comprehensive Analysis -
27	Analysis of Sports Motion: Anatomic and Biomechanics perspectives
28	Basic Biomechanics in Sports and Orthopedic Therapy
29	Biomechanics of Sports
30	Muscle alive
31	Basic Biomechanics of Muscular Skeletal System
32	Introduction to Sports biomechanics

MODEL PAPER

MPT Part-I **Revi.OfHuma.Scien.andBiomec.-I**
(6010)

Master of Physiotherapy

(Orthopaedis/Neurology/Cardiopulmonary/Sports)
Part-I (Main) Examination Month, Year
Paper-I
Review of Human Sciences and Biomechanics

Time: Three Hour
Maximum Marks :70

Attempt **all** Questions

Long Answer Questions (Attempt any Two out of four)

Q1. Arthrokinematics and osteokinematics of hip joint. Discuss about angle of inclination and torsional angle. 15

Q2. Discuss the kinematics and kinetics of gait. Discuss five pathological gaits 15

Q3. Write down the basic anatomy and physiology of cardiovascular system. 15

Q4. Write down the basic anatomy and physiology of nervoussystem system. 15

Short Answer Questions (Attempt any Four out of Six)

Q5. What are the mechanical properties of various muscles 10

Q6. Explain projectile motions with examples 10

Q7. EMG changes during fatigue and contraction 10

Q8. Bio-mechanical properties of bone 10

Q9. Kinematics and kinetics of glenohumaral joint 10

Q10. Describe equilibrium & balance 10

MPT Prat-I Paper -II : Physical & Functional Diagnosis (6020)

COURSEOBJECTIVE:

On completion of the study of this subject the student should be able to

1. Perform thorough Physiotherapy assessment & list deficiencies
2. Design individualized goals for the patient
3. Rationalize the outcome of the assessment
4. Document systematic, meaningful, accurate written records of the patient

- Clinical Decision Making - Planning Effective Treatment. Collection and documentation of data. Analysis of data and identifying the problems. Setting goals, Formulation and implementation of treatment plan including evaluation of treatment outcome. Clinical decision making models. Foundation for clinical decision making
- Review of General assessment – patients history, observation, palpation, examination
- Vital Signs. Identification of reasons for monitoring vital signs; importance of monitoring vital signs; common techniques of monitoring vital signs; identification and analysis of normal values with that of abnormal values.
- Pain assessment and scales for evaluation in acute and chronic pain
- Anthropometric and other measurements. Limb Length, Girth Measurement, ROM, tone, Muscle length.
- Evaluation Methods, Special tests used in Musculoskeletal, Neurological and Cardiopulmonary disorders.
- Reflex testing
- Postural assessment methods and common deviations from the normal
- Gait Analysis. Overview of normal gait analysis : kinetic and kinematic analysis; the reliability and validity of gait analysis; Description of some of the most commonly used types of observational gait analysis; Advantages and disadvantages of kinematic qualitative and kinematic quantitative gait analysis.
- Gait Training. Pre ambulation programme; assistive devices and gait patterns.
- Evaluation and management of amputee; overview of amputation surgery which includes concepts, pre operative, post operative, pre fitting, post fitting physiotherapy. Prosthetic assessment and management: Prosthetic assessment including dynamic and static checkouts, components with recent advancements and management.
- Orthotic Evaluation and Management. Types of orthosis; footwear modifications; lower limb orthoses, components.
- Spinal Orthosis: Types and components; Physiotherapy management including orthotic gait analysis and gait training.
- Wheel Chair: Components of wheel chair; assessment of wheel chair; measurement for wheel chair; features of sports wheel chair.
- Bio-feed back: Principles of bio-feed back in physiotherapy; limitations; electromyographicfeed back for motor relearning: Equipment and technical specifications. Kinematic feed back: Standing feedback; kinetic feed back; New concepts of bio-feed back.
- Sensory evaluation and assessment : Purposes of sensory evaluation and assessment; classification and function of receptor mechanisms, involving the perception of sensation; identification of spinal pathways that mediate sensation; guidelines for completing sensory evaluation; description for testing protocol for assessment of each sensory modality.
- Cranial nerve testing.

- Assessment of Higher mental functions
- Coordination evaluation and assessment: Purpose; common coordination defects associated with lesions of cerebellum, basal ganglia and dorsal columns. Testing procedures: Non-equilibrium coordination test; equilibrium coordination tests.
- Assessment of cognitive, perceptual dysfunctions and vestibular dysfunction.
- Neurodevelopmental screening, motor learning. Motor assessment, Balance assessment and scales for assessment. Balance Outcome measures and there administration.
- Motor control assessment: Purposes and components, identification and description of CNS controls mechanism associated with motor control mechanism, description of common motor control defects with specific procedures and tests used to assess motor control defects, the factors which influences the result of motor control assessment.
- Functional evaluation : The concepts of health status impairment; functional limitations; disability and handicap; definition of functional activity and the purposes and components of the functional assessment; selection of activity and roles for an individual based on his or her capabilities and functional limitations, various forms of functional tests; physical function test and multi dimensional functional assessment instrument, identification of instrument for testing function; various scoring methods used in functional assessment; reliability and validity of various functional assessment. physical Disability evaluation in detail .ICF classification
- Pulmonary function tests.
- Methods of Kinetic and kinematic investigation for joints.
- Physical fitness assessment.- Agility, speed, flexibility, endurance, strength.
- Evaluation of aging
- Auscultation.
- ECG, Echo cardiography, cardiac catheterization, Radionuclide scanning, stress testing, ABG, Labs,Holter monitoring etc.) CT scan, MRI, NCV, EMG

REFERENCES:

Sr.No.	Title
1	Rehabilitation of people with Spinal cord injury
2	Essentials of in patient rehabilitation
3	Physical Rehabilitation: Assessment and Treatment by
	O'Sullivan, F.A. Davis, Philadelphia , 1994
4	Orthopaedic physical assessment by Magee
5	Physical therapy of the low back
6	Practical evidence based physiotherapy
7	Differential diagnosis and physical therapy by Goodman
8	Orthopaedic Rehabilitation by Brokman
9	Orthopaedic taping, wrapping, bracing & paddling
10	Textbook of Rehabilitation by Sunder
11	Physiotherapy and growing child by Burns
12	Essential of Orthopaedic for physiotherapists by Ebnezar
13	Physical therapy of the low back by Twomey, Churchill, Livingstone, London 1995
14	Myofascial and pain dysfunction by Travell, Villimans and Wilkins, Baltimore 1983
15	Orthopaedic Physical therapy by Donatteli, London Churchill Livingstone
16	Mobilization of the extremity joints by Kaltenbore, Harper and Row

MODEL PAPER

MPT Part-I **Physi.&Func. Diagno.-II (6020)**

Master of Physiotherapy

(Orthopaedis/Neurology/Cardiopulmonary/Sports)

Part-I (Main) Examination Month, Year

Paper-II

Physical Functional Diagnosis

Time: Three Hour

Maximum Marks :70

Attempt **all** Questions

Long Answer Questions (Attempt any Two out of four)

Q1 Write down the basic SOAP assessment for Neuromusculoskeletal disorders 15

Q2. Write in detail about exercise testing and exercise prescription of ischaemic Heart Disease ? 15

Q3. Define pain. Discuss various functional scales for evaluation of pain. 15

Q4. Discuss EMG & NCV report reading and analysis ? Also give brief introduction about various parameters of these ? 15

Short Answer Questions (Attempt any Four out of Six)

Q5. Pulmonary Function Tests 10

Q6. ICF Classification of disability 10

Q7. Functional scales for assessment of balance 10

Q8. GCS for comatose patient 10

Q9. Methods of limb length testing and its clinical significance 10

Q10. Disability evaluation of upper limb 10

MPT Prat-IPaper-III : Research Methodology and Biostatistics(6030)

COURSE OBJECTIVE:

On completion of the study of this subject the student should be able to:

1. Enumerate the steps in Physiotherapy research process
2. Acquire skills of reviewing literature, formulating a hypothesis, collect data, writing research proposal etc
3. Describe the importance & use of biostatistics for research work

Section-A Research Methodology

Introduction

1. Terminology in research, Ethical issues in research, Research process
2. Review of literature.
   - Importance, sources & steps in reviewing the literature.
3. Research design
   - Type of research – qualitative & quantitative.
   - Experimental & non experimental, survey – advantages & disadvantages
4. Research process
   - Research question, Aim & objectives, Assumptions, Limitations & Delimitations, Variables
   - Hypothesis – formation & testing.
5. Sampling
   - Sampling technique
   - Population, sample,
   - Sample size & determination
   - Sampling methods
   - Sampling error
6. Data collection and analysis
   - Data sources, technique of data collection, tools
   - Reliability & validity
   - Process of data collection
   - Pilot study-method, need
7. Interpretation & presentation of data
   - Quantitative & qualitative analysis
   - Graphical representation of data
   - Conclusion & discussion
8. Writing a dissertation, research paper
9. Critical appraisal of research
10. Presentation and Publication of research – Steps and process.

Section –B BIOSTATISTICS

1. Biostatistics
   - Introduction
   - Definition
   - Types
   - Application in Physiotherapy
2. Data

- Definition
- Types
- Presentation
- Collection methods

3. **Measures of central value**
   - Arithmetic mean, median, mode. Relationship between them
   - Graphical determination
4. Measures of Dispersion
   - Range
   - Mean Deviation
   - Standard Deviation
5. Normal Distribution Curve
   - Properties of normal distribution
   - Standard normal distribution
   - Transformation of normal random variables.
6. Correlation analysis
   - Bivariate distribution
   - Scatter Diagram
   - Coefficient of correlation
   - Calculation & interpretation of correlation coefficient
   - T-test, Z-test, P-value
7. Regression analysis
   - Lines of regression
   - Calculation of Regression coefficient
8. Sampling
   - Methods of Sampling
   - Sampling distribution
   - Standard error
   - Types I & II error
9. Probability (in Brief)
10. Hypothesis Testing
    - Null Hypothesis
    - Alternative hypothesis
    - Acceptance & rejection of null Hypothesis
    - Level of significance
11. Parametric & non Parametric tests
    - Chi square test
    - Mann-Whitney U test
    - Wilcoxon Signed test
    - Kruskal-Wallis test
    - Friednam test
    - T-test/student T test
    - Analysis of variance

REFERENCES:

S.No.	Title
1	Research methods for clinical therapist: Carolyn M Hicks
2	Research for physiotherapists
3	Handbook of research Method
4	Introduction to research in Health Sciences
5	Elements of research in Physical Therapy
6	Physical Therapy Research
7	Methods in Biostatistics: For Medical students and research workers
8	An Introduction to biostatistics

PRACTICAL/VIVA (6240)

Long case assessment & Short case assessment including application of above Physiotherapeutic techniques in the Treatment of all conditions studied in MPT part-I

Mode Long case assessment, Short case, written, Demonstration, Investigations & Viva

Duration Upto 120 minutes per candidate

Examiner 02 (One internal and one external from the panel of examiners from University)

MODEL PAPER

MPT Part-I **Res. Meth. &Bio.Stat.-III**
(6030)

Master of Physiotherapy

(Orthopaedis/Neurology/Cardiopulmonary/Sports)
Part-I (Main) Examination Month, Year
Paper-III
Research Methodology & Biostatistics

Time: Three Hour
Maximum Marks :70

Attempt **all** Questions

Long Answer Questions (Attempt any Two out of four)

Q1 Define and describe validity and its types in research and add a note on reliability. 15

Q2. Describe experimental research. How many types of experimental research designs are there? Describe any experimental research designs with example from physiotherapy 15

Q3. Discuss in detail about types of data, their presentation and theircollection methods. 15

Q4. What is sampling ? Explain random sampling methods in detail with suitable examples. 15

Short Answer Questions (Attempt any Four out of Six)

Q5. Describe the various components of ethically informed consent for physiotherapy research 10

Q6. Enumerate the principle of research design. Describe the difference between qualitative and quantitative research. 10

Q7. Short Note:- (2X5) = 10

a. Informed consent

b. Ethics in research

Q8. Describe standard deviation 10

Q9. Describe mean and value 10

Q10. Short note:- (2X5) =10

a. Type I & II error

b. Bivariate distribution

SEMINARS ON CLINICAL ISSUES

Course code 7010

Course objective:

These will serve as a platform for students to integrate components of patient management. Students will give presentations on topics provide to them. The students will engage in clinical practice in the Dept of Sports Physiotherapy. To enhance their clinical skills and apply theoretical knowledge gained during teaching sessions. There will be no university examination. The students will be awarded marks on the basis of their attendance & performance during clinical postings and seminar.

MPT Part– II Paper-I :Administration, Management and Ethical Issues (6210)

OBJECTIVE:

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

Management:

1. Introduction
   - Evolution of management
   - Functions of management
   - Management process – planning, organization, direction, controlling decision making
2. Personnel management:
   - Staffing
   - Recruitment selection
   - Performance appraisal
   - Collective bargaining
   - Job satisfaction
3. Marketing:
   - Market segmentation
   - Channels of distribution
   - Promotion
   - Consumer behavior
4. Physical Therapy &Law :
   Medicolegal aspect of physical therapy, liability, negligence eco practice licensure, workmen compension. Maintaining the medical Register.
5. Physiotherapy Department Management.
   a) Policies and procedures.
   b) Recruitment, interview, probation, salary, hours of working, leave facilities, retirement, referred policy.
   c) Maintenance of records, equipments, statistics.
   d) Planning, design construction, expansion plan.
6. Physiotherapy Education Technology
   - 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, profemation, realism).

     Physiotherapy of education in India (past, present and future) current issues and trends in educations.
   - Concepts of teaching and learning.
     a) Theories of teaching
     b) Relationship between teaching and learning.
     (c) Psychology of education.
     d) Dynamics of behaviour, motivational process of learning perception, individual differences, intelligence personality.
   - Curriculum :
     a) Curriculum committee.

b) Development of a curriculum for physiotherapy.
c) Types of curriculum.
d) Placing, courses placement, time allotment.
e) Correlation of theory and practice.
f) Hospital and community areas for clinical instructions.
g) Clinical assignments.

- Principles and methods of teaching :
  a) Strategies of teaching.
  b) Planning of teaching.
  c) Organisation, writing lesson plan.
  d) A.V. aids.
  e) Teaching methods – socialized teaching methods.
- Measurement and evaluation.
  a) Natures of measurement of Educations, meaning, process personnel standardized. Non standardized.
  b) Standardized tools, important tests of intelligences, aptitude, instrument, personality, achievements and status scale.
  c) Programme evaluation
  d) Cumulative evaluation
- Guidance and counseling :
  a) Philosophy, principles and concepts, guidance and counseling services.
  b) Faculty development and development of personnel for physiotherapy services.

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

REFERENCES

S.No.	Title
1	Human Resource Management by NK Singh
2	Organizational Behaviour by ArchanaTyagi
3	Public Power & Administration by Wilenski, Hale &Iremonger
4	Physical Therapy Administration & Management by Hickik Robert J
5	Management Principles for physiotherapists by Nosse Lorry J.
6	Managerial accounting for hospital
7	Hospital: planning, design & management
8	Medical ethics & consumer protection act
9	Health economics in development

10	Marketing Management by T.N. Chhabra & S.K. Grover
11	Hospital Administration by Dr. S.L. Goel& Dr. R. Kumar
12	Principles and Practice of Management by LM Prasad
13	Quality Management by Bedi
14	Handbook of human resource management
15	Personnel /Human Resource Management by Decenzo Robbins

MODEL PAPER

MPT Part-II **Adm. Manag. Ethics-I**
(6210)

Master of Physiotherapy

(Orthopaedis/Neurology/Cardiopulmonary/Sports)
Part-II (Main) Examination Month, Year
Paper-I
Administration, Management and Ethical Issues

Time: Three Hour
Maximum Marks :70

Attempt **all** Questions

Long Answer Questions (Attempt any Two out of four)

Q1. Write in detail about the legal ethical issues in hospital and legal responsibility of physical therapist. 15

Q2. Describe about evolution of management Also write about management process 15

Q3. What is performance appraisal? How it is done? Also write brieflyabout job satisfaction. 15

Q4. Describe Physiotherapy Department including Policies, Recruitment, equipment's and records Management 15

Short Answer Questions (Attempt any Four out of Six)

Q5. Code of ethics 10

Q6. Briefly explain the role of the international health agencies 10

Q7. Standards of practice for physiotherapists 10

Q8. Briefly explain the functions and types hospitals 10

Q9. What is Standards of practice for physiotherapists and Liability and obligations in the case of medical legal action 10

Q10. Give in detail about Physiotherapy associations/councils in India and write a short note on WCPT and its Functions 10

MPT Part– II Paper-II :Physiotherapy in Neurological Disorder (6220)

COURSE OBJECTIVE

1. Analyse interpret and evaluate various levels of spinal cord injuries and peripheral nerve injuries.
2. Reliable to rationalise the treatment approach according to the management needed (Medical/Surgical and to apply appropriate techniques.
3. Compare the effect and efficacy of various approaches/techniques for research purposes.

Unit 1: Introduction

1. Assessment & investigation of the patient with neurological test such as EMG, EEG, Nerve conduction test, radiology, X-ray, CT, MRI etc.
2. Physiotherapy assessment & rehabilitation
   (Advanced therapeutic techniques like Bobath, motor re-learning, NDT, Rood etc.)

Unit 2: Cranial Nerves

1. Testing of cranial nerves
2. Disorders of cranial nerves, cranial neuropathy
3. Rehabilitation protocol

Unit 3: 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 and management of unconscious patient

Unit 4: Disorders of the Cerebral circulation

1. Epidemiology of the stroke
2. Causes, types, pathophysiology
3. Clinical features and investigation and Treatment of different types of stroke

Unit 5: Infectious disorders

1. Meningitis
2. Encephalitis
3. Brain abscess
4. Syphilis
5. Herpes Simplex
6. Chorea

Classification, causes, pathophysiology, clinical features, complications management and rehabilitation

Unit 6: Demyelinating diseases of the nervous system

1. Classification of demyelinating diseases
2. Multiple sclerosis
3. Diffuse sclerosis

Unit 7: Movement disorders

1. Akinetic- rigidity syndromes disorders
2. Dyskinesia’s disorders

Unit 8: Degenerative diseases of the spinal cord and cerebellum

1. Ataxia
2. Motor neurone disease

Unit 9: Disorders/ Rehabilitation of the spinal cord & cauda equine

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. Ischaemia and infarction of the spinal cord and cauda equine
6. Spina Bifida

Unit 10: Deficiency and nutritional disorders

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

Unit 11: Disorders of peripheral nerves

1. Clinical diagnosis of peripheral neuropathy
2. All types and level of peripheral and brachial plexus neuropathy
3. Peripheral nerve tumours and irradiation neuropathy
4. Reflex sympathetic dystrophy
5. Traumatic, compressive and ischaemic neuropathy
6. Spinal radiculitis and radiculopathy
7. Hereditary motor and sensory neuropathy
8. Neuropathy due to infection
9. Vasculomotor neuropathy
10. Neuropathy due to systemic medical disorders
11. Drug induce neuropathy
12. Metal poisoning chemical neuropathies

Unit 12: Disorders of Muscle

1. Muscular dystrophies
2. The myotonic disorders
3. Inflammatory disorder of muscle
4. Myasthenia gravis
5. Endocrine and metabolic myopathies

Unit 13: Autonomic Nervous disorders

1. Disorders of autonomic function after lesions of the spinal cord

Unit 14: Disorders of higher cerebral cortical function

1. Disorders of different lobes
    a) Frontal lobes
    b) Temporal lobes
    c) Parietal lobes
    d) Occipital lobes
    e) Sub cortical lesions

MODEL PAPER

MPT Part-II **PT in Neuro. Disor.-II**
(6220)

Master of Physiotherapy **(Neurology)**

Part-II (Main) Examination Month, Year
Paper-II
Physiotherapy in Neurological Disorder

Time: Three Hour
Maximum Marks :70

Attempt **all** Questions

Long Answer Questions (Attempt any Two out of four)

Q1. Write down about cranial nerves and its related neuropathy. Describe reliable treatment approach of 7th cranial nerve 15

Q2. Write down about EMG, EEG and NCV. Explain its uses in assessment of different neurological conditions 15

Q3. Classification of infectious disease of brain. Write down the rehabilitation program in meningitis and its prognosis 15

Q4. Write down about degenerative diseases of cerebellum and spinal cord. Explain different approaches of rehabilitation in ataxia. 15

Short Answer Questions (Attempt any Four out of Six)

Q5. Explain brachial plexus neuropathy at all level and its rehabilitationmanagement 10

Q6. Explain NDT in Akinetic rigidity syndrome disorder 10

Q7. Classification of demyelinating diseases. Rehabilitation program of multiple sclerosis 10

Q8. Write about causes and types of stroke. Describe treatment approaches according to the management needed in stroke 10

Q9. Lesions responsible for stupor and coma and the management of unconscious patients 10

Q10. What is nutritional deficiencies of neuropathies and its management 10

MPTPart– II Paper-III :Neurosurgical and Paediatric Rehabilitation (6230)

COURSE OBJECTIVE:

1. Analyse, interpret and evaluate various paediatric and neurosurgical conditions and to analyse the reasons for development of specific clinical features in applied neurology
2. Demonstrate various neurological therapeutic approaches rood, bobath, MRP, PNF on selective conditions
3. Evaluate the effects of various neuro therapeutic techniques and prognosis
4. Play efficient role in complete rehabilitation of neurological patient

Unit 1:

Techniques, types of skull, brain & spine surgeries & their complication, pre and post physiotherapy assessment and treatment

Unit 2:

1. Cranio cerebral injury (Head and Brain injury)
2. Epidemiology, pathophysiology, symptoms, signs, investigation, management, pre and post-operative physiotherapy complication
   - Closed skull fractures
   - Haematomas, epidural, subdural intracerebral
   - Open cranio cerebral injuries
   - Re construction operation in head injuries

Unit 3: Tumours

1. Pathophysiology, classification effects of mass lesion, symptoms and sign, examination management pre and post-operative rehabilitation protocol
   - Tumours of cranial bones
   - Meningioma
   - Tumours in spinal cord
   - Intra cranial tumours
   - Other condition related to raised intra cranial pressure
     a) Hydrocephalus
     b) Intracranial abscess
     c) Central oedema
   - Vascular disease of the brain
     a) Aneurysms
     b) Thrombosis
   - Decompression surgery of spinal cord
     a) Disc operation (cervical lumbar)
     b) Stenosis
     c) Oedema abscess
     d) Lumbar puncture
     e) Spinal cord injury at various level
   - Peripheral nerves
     a) De-compression
     b) Nerve suture
     c) Nerve grafting
   - Paediatric rehabilitation
     a) CP types, aetiology, clinical features, management rehabilitation of various types

b) Neurological affection of childhood, poliomyelitis, spina bifida, hydrocephalus, aetiology, clinical features and rehabilitation, birth injuries of brachial plexus

PRACTICAL/VIVA

Long case assessment & Short case assessment including application of above Physiotherapeutic techniques in the Treatment of all conditions studied in MPT part-II

Mode	Long case assessment, Short case, written, Demonstration, Investigations & Viva
Duration	Upto 120 minutes per candidate
Examiner	02 (One internal and one external from the panel of examiners from University)

MODEL PAPER

MPT Part-II **Neur. Peds. Reh.-III**
(6230)

Master of Physiotherapy **(Neurology)**

Part-II (Main) Examination Month, Year
Paper-III
Neurosurgical and Paediatric Rehabilitation

Time: Three Hour
Maximum Marks :70

Attempt **all** Questions

Long Answer Questions (Attempt any Two out of four)

Q1. Write down classification, sign and symptoms of intracranial tumor and its post operative rehabilitation protocol 15

Q2. Explain about classification of peripheral nerve injuries and rehabilitation management for all types of injuries 15

Q3. Pre and post management of open craniocereberal injuries with suitable approaches of rehabilitation 15

Q4. Describe classification of cerebral palsy and its assessment and clinical features. Explain rehabilitation management 15

Short Answer Questions (Attempt any Four out of Six)

Q5. Explain causes of vascular diseases of brain and its signs, symptoms and treatment plan 10

Q6. Explain poliomyelitis and its rehabilitation program 10

Q7. Explain decompressive surgery of spinal cord. Write down post operative PT management 10

Q8. Write down about causes and complications of hydrocephalus and its rehabilitation management and prognosis 10

Q9. Explain birth injuries of brachial plexus and its total rehabilitation program 10

Q10. Explain pre and post physiotherapy assessment and treatment in tumors in spinal cord 10

DISSERTATION

Course Code MPT 7020

Student will select a topic in his/her area of interest, in consultation with a supervisor/Guide qualified for the purpose as recommended by the council/University, and carry out an independent dissertation, which will involve making research proposal, conduct of the work as per the documented methodology, statistical analysis, dissertation writing. The work will build on the knowledge acquired through study of research methodology and Biostatistics. Each candidate shall submit three type written copies of a dissertation and it should be submitted well in advance before the date of written, oral, clinical and practical examination, Evaluation of the dissertation will be done by the examiner (s) appointed by Vice Chancellor of the University.

Selection of Elective Courses during MPT course duration

Every student has to select any one elective subject out of four elective subjects mentioned below at the beginning of the academic year during his/her MPT course duration. The Examination of these subjects shall be conducted at the college level.

Sr. No.	Subject	Teaching hours		
		Theory	**Practical**	**Total**
1	Diagnostic Radiology	20	30	50
2	Clinical Nutrition	35	15	50
3	Yoga	25	25	50
4	Constitution of India	50	-	50

Distribution of marks

Sr. No.	Subject	Marks Distribution		
		Theory	**Internal Assessment**	**Total**
1	Diagnostic Radiology	70	30	100
2	Clinical Nutrition	70	30	100
3	Yoga	70	30	100
4	Constitution of India	70	30	100

A candidate can appear in the elective subject examinations to be conducted at the college level before the University examinations at the end of MPT-I year or MPT-II year. Only such candidates shall be eligible to fill University examination form of MPT- II year (final year) who have passed their elective subject. It shall be mandatory to obtain 50% marks in the aggregate of prescribed total marks (i.e. 50 out of 100) to pass the elective subjects. Marks of all such candidates who have passed their elective subject shall be sent in the following format by the Principal of the college to the University while sending their examination forms of MPT-II year (final year) :

S. No.	University Roll No.	Name of the student	Father's Name	Name of elective subject	Marks obtained	Result

Those candidates who do not pass their elective subjects shall not be eligible to submit their MPT-II year (final year) University examination form and accordingly they will not be permitted to appear in the University examination of MPT-II year (final year) of the course.

Marks obtained by the candidates in their elective subject shall be mentioned separately in the marks sheets of the University examinations. These marks shall not be counted for preparing the merit list.

NOTE:- These four Elective courses will be included in the Curriculam of MPT from the academic year 2020-2021 onwards.

Elective Course -1

"DIAGNOSTIC RADIOLOGY"

Theory Hours: 20

Practical Hours:30

Total Hours: 50

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

A. explain different aspects of diagnosis and intervention in radiology.
B. explain use of imaging techniques like X Rays, ultra sonography, CT scan, MRI and
C. interventional radiology.
D. explain technical aspects of clinical radiology and applied radiology and post
E. treatment follow up in disease.
F. interpret radiological reports of X Rays, ultra sonography, CT scan, MRI related to
G. musculoskeletal system, neurological system and cardiorespiratory system.

Unit-I

Radiological studies in musculoskeletal, neurological, cardiovascular and respiratory conditions.

Unit-II

Basic principles of X-rays, instrumentation, observations related to musculoskeletal, neurological and cardiovascular and respiratory conditions

Unit-III

Ultrasonography- Principles, instrumentation, observations in vascular disorders, gynecological conditions, recent advances in musculoskeletal ultrasonograph.

Unit-IV

CT scan and MRI- Principles, instrumentation and observations related to musculoskeletal, neurological and cardiovascular and respiratory conditions.

Unit-V

Interventional Radiology

Unit-VI

Practical: Observation and interpretation of radiological investigations related to musculoskeletal, neurological and cardiovascular and respiratory conditions.

Reference Books:

1. Diagnostic and Interventional Radiology- Thomas J. Vogl, Wolfgang Reith, Ernst J. Rummeny.

2. Learning Radiology- William Herring.

3. Vascular and Interventional Radiology- Karim Valj
4. Textbook of Radiology and Imaging- David Sutton.

Elective Course -2

CLINICAL NUTRITION

Theory Hours: 35

Practical Hours: 15

Total Hours: 50

COURSE OBJECTIVE:

The objective of this course is that after 30 hours of L, D, P the student shall be able to understand the basic knowledge about Diet, balanced diet, metabolism, malnutrition, under nutrition, over nutrition, deficiency disease.

COURSE OUTCOME:

(1) Become familiar about the nutritive values of food.
(2) Explain about the food sources from which we obtain vitamins.
(3) Become familiar with various compositions of food.
(4) Well versed with digestion at each stages of digestive system.
(5) Become familiar with different cooking methodologies.
(6) Know and explain about food preparations by food manufacturer.
(7) Explain thoroughly about the advantages and disadvantages of various convenience foods.

UNIT ISOURCES OF FOOD

1. Nutritive value of foods,
2. Food Sources from which key vitamins are derived

UNIT II DIGESTIVE SYSTEM

(1) Digestion and absorption –Digestion at each stage of the digestive system
(2) Dietary guidelines- Factors affecting food requirements. Planning and serving of family meals. Meals for all ages and occupations.

UNIT III COMPOSITION OF FOOD

Composition and value of the main foods in the diet - Milk, meat, fish, cheese, eggs, margarine and butter cereals (wheat, rice, maize, millets, oats) fruits and vegetables

UNIT IV PROCESSING OF FOOD

1. Cooking of food -Transfer of heat by conduction, convection and radiation.
2. Principles involved in the different methods of cooking – boiling, stewing, grilling, baking, roasting, frying, steaming, pressure cooking, cooking in a microwave oven.

FOOD PREPARATION

1. Convenience foods- Foods partly or totally prepared by a food manufacturer – dehydrated, tinned, frozen, ready to eat. Intelligent use of these foods.
2. Advantages and disadvantages

Text Book:

1. Agarwal, Textbook of human nutrition, JP, 1 Ed, 2014

Reference:

1. Kenneth F. Kiple, KriemhildConeè Ornelas, The Cambridge world history of food, Cambridge University Press,Ist ed,2000.

Elective Course -3

YOGA

Theory Hours: 25

Practical Hours: 25

Total Hours: 50

COURSE OBJECTIVE:

The objective of this course is that after 30 hours of lectures & demonstrations, the student will be able to understand the basic concepts about Asanas and its effects, therapeutics effects of Yoga

COURSE OUTCOME:

1. Demonstrate the introduction and principles of yoga.
2. Knowledge of history of yoga and yoga in modern India.
3. Outline of yoga background and importance of yoga in modern world.
4. Learning the types and forms of Asanas and description of physiological effect of yoga.
5. Understanding the role of yoga in Occupational Therapy

UNIT-I Introduction to Yoga

1. Introduction to Yoga
2. Principles of Yoga

UNIT- II Patanjali

1. History of Yoga
2. Yoga in Ancient and Modern India

UNIT- III Folds of Yoga

1. Types & Forms of Yoga
2. Asanas & its physiological effects

UNIT- IV Yogic Science

1. Scientific background of Yoga
2. Yoga in modern world

UNIT -V Advantages of Yoga

1. Physiological Effects of Yoga
2. Therapeutic Uses of Yoga

Textbook:

1) BKS Iyengar, Light of Yoga, JP, 1st Ed, 2012.

Reference:

1. PayalGidwaniTiwari, Body Gaurders, CBS, 2nd Ed, 2009

Elective Course -4

CONSTITUTION OF INDIA

Theory Hours: 50

Total Hours: 50

Unit-I:

Meaning of the term 'Constitution'. Making of the Indian Constitution 1946- 1950.

Unit-II:

The democratic institutions created by the constitution Bicameral system of Legislature at the Centre and in the States.

Unit-III:

Fundamental Rights and Duties their content and significance.

Unit – IV:

Directive Principles of States Policies the need to balance Fundamental Rights with Directive Principles.

Unit – V:

Special Rights created in the Constitution for: Dalits, Backwards, Women and Children and the Religious and Linguistic Minorities.

Unit-VI:

Doctrine of Separation of Powers legislative, Executive and Judicial and their functioning in India.

Unit – VII:

The Election Commission and State Public Service commissions.

Unit – VIII:

Method of amending the Constitution.

Unit – IX:

Enforcing rights through Writs:

Unit – X:

Constitution and Sustainable Development in India.

Reference Books:

a) J. C. Johari: The Constitution of India- A Politico-Legal Study-Sterling Publication, Pvt. Ltd. New Delhi.
b) J. N. Pandey: Constitution Law of India, Allahbad, Central Law Agency, 1998.
c) Granville Austin: The Indian Constitution – Corner Stone of a Nation-Oxford, New Delhi, 2000.