



PRAVARA INSTITUTE OF MEDICAL SCIENCES (DEEMED TO BE UNIVERSITY)

Loni, Tal. Rahata, Dist. Ahmednagar 413736
NAAC Re-accredited with 'A' Grade

SYLLABUS

PG Programme- Master of Physiotherapy (MPT)

(Programme Outcomes (PO's) & Course Outcomes (CO's) Post Graduate Revised Curriculum will be implemented from the Academic Year 2024-25)

MASTER OF PHYSIOTHERAPY (MPT) SYLLABUS

- Preamble:** The Master of Physiotherapy is a dynamic academic course offered for qualified physiotherapists. It is a 2 year full time program .It creates the opportunity for qualified and experienced clinicians to broaden their knowledge, clinical skills in Physiotherapy field. The course recognizes the need to adopt principles of learning and emphasizes the importance of facilitating graduates to develop independent, self-directed and critical philosophies in the field of Physiotherapy.

The MPT course is offered for 5 specialties. Orthopaedic Physiotherapy, Neuro Physiotherapy, Cardiovascular and Respiratory Physiotherapy and Community Physiotherapy and Pediatric Physiotherapy. The contents of these subjects are chosen critically so as to support the physiological basis of physiotherapy practice, provide a framework for evaluation of evidence for physiotherapy and develop advanced communication skills and awareness of professional and ethical issues in physiotherapy and the broader healthcare community.

The course contents present advanced knowledge and understanding the current issues in Physiotherapy and their application to clinical practice. It also provides opportunities for students to acquire cutting edge information and skills related to treatment and management in Physiotherapy. The clinical placement allows students to broaden or deepen their clinical practice experience and expertise.

A high level of expert tuition is provided for all units and clinical placements. This course focuses on the integration between evidence based practice and current clinical practice. Throughout the course, students review the literature critically and apply this information in the evaluation and management of Physiotherapy. Research projects will be completed and manuscripts will be submitted to a peer-review journal.

- Objectives:** The objectives of this Master degree program offered by Pravara Institute of Medical Sciences;

 - Integrate the use of basic principles of research in critical analysis of concepts and findings generated by self and others.
 - To enhance clinical competency in evaluation, treatment planning and implementation.
 - Function as competent physiotherapist in any health care setting.

- Possess the theoretical and practical skills required to teach the undergraduate students.
 - Inculcate the quality of patient care handling with ethical values.
3. **Eligibility:** A candidate who has passed Bachelor of Physiotherapy (BPT/ BPhT/ BPT/ B.Physio/ BSc Physiotherapy) or any equivalent degree examination of a recognized Indian university by law in India or any other degree course in physiotherapy recognized as equivalent by PIMS, Association of Indian Universities or Indian Association of Physiotherapists and who has scored not less than 50% of maximum marks in prescribed qualifying examination shall be eligible for the Masters of Physiotherapy.
 4. **Total intake of students:** The total intake of students will be as per norms of the Pravara Institute of Medical Sciences, Deemed University, Loni-413736 India.
 5. **Course fee structure:** The tuition fee and other fee structure will be as per the notifications by Pravara Institute of Medical Sciences, Deemed University from time to time. The fee structure is different for resident Indians, non-resident Indian and foreign students.
 6. **Course duration:** The course duration shall be 2 years. This duration includes also includes submission of dissertation on the research topic. No additional time is given for the submission of the dissertation.
 7. **Course Subjects:**

I Year MPT

Subject Code PGIPHY01	Paper I	Applied Physiotherapeutics I	Section I	Professional Practice
			Section II	Research Methodology & Biostatistics

Subject Code PGIPHY02	Paper II	Applied Physiotherapeutics II	Section I	Biomechanics & Clinical Kinesiology
			Section II	Exercise Physiology & Electro Physiology

Subject Code PGIPHY03	Paper III	Applied Physiotherapeutics III	Section I	Physiotherapy Diagnosis & clinical decision making
			Section II	Advanced Physiotherapeutics

II YEAR MPT

Subject Code		Speciality I
PGIIPHY01	Paper I	

Subject Code	Paper II	Speciality I
PGIIPHY02		

8. **Medium of instructions:** The medium of instructions for this course shall be only English. This includes theory lectures, practicals, laboratory works and assignments and clinical training.
9. **Course location:** This course is offered at Dr. A.P.J. Abdul Kalam College of Physiotherapy, Pravara Institute of Medical Sciences, Loni, Taluka: Rahata, District: Ahmednagar, Maharashtra, India-413736.
10. **Course:** The courses should define learning objectives and learning outcomes. A course may be designed to comprise lectures/ tutorials/laboratory work/ field work/ outreach activities/ project work/Journal club/viva/seminars/Academic debate/Microteaching /assignments/ case presentations/ self-study etc. or a combination of some of these.
11. **Clinical postings:** Clinical postings will be at various Physiotherapy Departments, Pravara rural Hospital wards and Pravara rural public health centers. Since the teaching clinics operate 48 weeks per year, students will be required to attend clinical sessions on a rotation basis to maintain public service and provide continuity of patient care.
12. **Monitoring process:** A candidate pursuing M.P.T. course shall study in the concerned department of the college of physiotherapy, Pravara Institute of Medical Sciences, Loni for the entire period as full time student. No candidate is permitted to work in any other hospital, clinic, college etc., while studying this postgraduate course. No candidate should join another course of study or appear for any other examination conducted by this university or any other university in India or abroad during the period of registration. Each year shall be taken as a unit for the purpose of calculating attendance. Every student shall attend lectures, practicals, laboratory works, seminars, research clubs, journal clubs, review meeting, tele-physiotherapy sessions and state level conferences, national level conferences or occasionally international conferences during each year as prescribed by the Pravara Institute of medical Sciences, Deemed University, Loni. Candidate who has put in a minimum of 80% of attendance in the theory and practical assignments separately shall be

permitted to appear for M.P.T. examination. There will be no condonation of attendance Candidate who has put in a minimum of 80% of attendance in Second year of M.P.T. shall only be eligible to submit the dissertation. Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the University examination. Every candidate shall maintain a work diary and record of his/her participation in the training programs conducted by the department such as journal reviews, seminars, etc. The work diary shall be scrutinized and certified by the Head of the Department and the Principal, College of Physiotherapy, and presented in the university practical examination if called for. Every clinical case discussion, case presentation, seminars, journal clubs and research clubs will be monitored by faculty members, guide and peers using relevant checklists.

13. **Dissertation:** Every candidate pursuing M.P.T. 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 a dissertation. The dissertation is aimed to train a postgraduate student in research methods and techniques. It includes identification of the problem, formulation of a hypothesis, review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results, drawing conclusions and evaluation of research project. Every candidate shall submit a research proposal or synopsis containing particulars of proposed dissertation to the Registrar of the university in the prescribed Performa within 6 months from the date of commencement of the course on or before the dates notified by the university. The research proposal or synopsis shall be sent through the proper channel. Such synopsis will be reviewed and the university will register the dissertation topic. No change in the dissertation topic or guide shall be made without prior approval of the university. The dissertation should be written under the following headings;

1. Introduction
2. Aims or objectives of study.
3. Research question
4. Review of literature.
5. Material and methods.
6. Outcome measures
7. Results.
8. Discussion
9. Conclusion
10. Summary
11. References
12. Tables
13. Annexure.

The Dissertation 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 & Principal, college of Physiotherapy shall certify the dissertation. Four copies of dissertation thus prepared shall be submitted to the Controller of Examinations, three months before final examination on or before the dates notified by the university. The examiners appointed by the university shall value the dissertation. Approval of dissertation work is an essential precondition for a candidate to appear in the university examination.

14. **Assessment:** Assessment of the student in this course will be by written, oral and practical examination at the completion of the each year. However, the student should submit the research dissertation prior to appearing for the final university examination. Student's dissertation should be accepted by the examiners prior to appearing for the final examination.

15. Scheme of Examination

I Year MPT

S. no		Total Marks	Minimum Marks required for Passing
1.	Theory	300	150
2.	Practical	150	75

Theory Examination

- There shall be three theory papers of 100 marks each
- Each paper shall be of three hours duration
- All the questions are compulsory

Section I	Long Essay Question 1 x 20	20 Marks
	Short Essay Questions 3 x 10	30 Marks
Section II	Long Essay Question 1 x 20	20 Marks
	Short Essay Questions 3 x 10	30 Marks

Practical Examination - 150 Marks

Short Case I - Speciality	50marks
Short Case II - General	50marks
Spots(Based Screening of various Systems)	30marks
Teaching skills	20 marks

Scheme of Examination

II Year MPT

S. no		Total Marks	Minimum Marks required for Passing
1.	Theory	200	100
2.	Practical	350	175

Theory Examination

- There shall be two theory papers of 100 marks each
- Each paper shall be of three hours duration
- All the questions are compulsory

Qn.1	Long Answer Question	1 x30	30 Marks
Qn.2	Long Answer Question 1 x 30	30 Marks	30 Marks
Qn.3	Solve any four out of five SAQ	4 X 10	40 Marks

Practical Examination - 350 Marks

Long Case Speciality I	150 Marks
Long Case Speciality II	150 Marks
Dissertation VIVA	50 Marks
Total	350 Marks

16. **Schedule of examination:** The examination for M.P.T. course shall be held at the end of each academic year. The university shall conduct two examinations in a year such as regular and supplementary at an interval of six months between the two examinations. No more than two exams shall be conducted in one academic year.
17. **Criteria for passing:** The criteria for passing includes, minimum of 50% of total marks in theory aggregate and minimum of 50% of total marks in clinical and Viva-Voce aggregate.
18. **Declaration of class:** The declaration of class shall be as follows;
1. First class with distinction: 75% & above in aggregate provided the candidate passes the examination in first attempt.
 2. First class: 60% & above in aggregate provided the candidate passes the examination in first attempt.
 3. Pass: 50% of maximum marks in theory aggregate and 50% of maximum marks in clinical and Viva-Voce aggregate
19. **Guide:** The criteria for recognition of guide shall be as follows;
- A PG guide with five year's post PG full time teaching experience in a recognized teaching institute.
 - The age of guide shall not exceed 60 years.
 - The guide student ratio should be 1: 3.
- Considering the shortage of qualified teachers, relaxation may be given to the teachers with three years of post PG teaching experience till 2015 or until further amendments by the university in this regard.
20. **Change of Guide:** In the event of registered guide leaving the college for any reason or in the event of death, guide may be changed with prior permission from the university.

I YEAR
Code: IMPT

Programme Outcomes (PO)s:7

PO No.	Attributes	By the end of course student will have/be able to
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyze and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme

To be rated on a scale of zero (0) to three (3):

- 0- No correlation
- 1- Low correlation
- 2- Moderate correlation
- 3- High correlation

Paper I: Applied Physiotherapeutic I
No. of Course Outcomes (CO)s/Competencies: 6
CODE: AP1

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
AP1.1	Acquire knowledge of basic concept of research, design, problems & sampling techniques of research, professional practice and administration	1	0	1	3	3	3	3
AP1.2	Describe various types of study designs and planning for the same	3	0	1	3	3	3	3
AP1.3	Apply the terminologies in research, ethical issues in research process	3	0	1	3	3	3	3
AP1.4	Describe important sources, and steps in reviewing of literature	0	1	0	3	3	3	3

AP1.5	Describe the nature, meaning and principals of bioethics	3	3	3	3	3	3	3
AP1.6	Describe human dignity and human rights and professional practice.	3	3	3	3	1	3	3

SYLLABUS

APPLIED PHYSIOTHERAPEUTICS - I

i. PROFESSIONAL PRACTICE -

(History, Laws, Ethics, Administration, Education)

1. Development of Physiotherapy Profession

2. Laws governing physiotherapy practice

3. Ethical issues in practice of physiotherapy-Clinical, Research and Academics.

Ethics in Physiotherapy practice, clinical and research, code of conduct for safe disciplined practice – legal aspect, Rights and responsibility of physiotherapist and client, PWD Act .

Rules and regulations governing physiotherapy practice- National & International

Administration, legislation, rules and regulations governing physiotherapy practice- National & International.

4. Administration -

Physiotherapy Management in Hospital, community & Industry.

Principles of management, planning, organisation, budget, policy procedures and quality assurance.

Communication skills, leadership quality & teamwork

Importance of documentation, types of documentation systems, documentation of professional assessment including International Classification of Functioning Disability & Health (ICF) format.

5. Scope of Physiotherapy in Hospital, Community & Industry.

6. Roles of the physiotherapist as per WCPT/WHO

7. Standards for practice for physiotherapist and the criteria as competency statements

8. Education – Formal and non-formal – Philosophy of health education, curricular planning.

Teaching technology – teaching learning methods, interactive learning, methods to facilitate learning, use of audio-visual aids, clinical teaching, methods of assessment of student competencies

9. Documentation of rehabilitation assessment and management using International Classification of Functioning Disability and Health (ICF)

10. Future challenges in physiotherapy.

11. Evidence Based Practice: Practice of evidence-based physiotherapy, source of evidence, appraisal of evidence, evidence in practice under Professional Practice

ii. RESEARCH METHODOLOGY AND BIOSTATISTICS

1. Basic Concepts of Research: Meaning, Objectives, Purpose, Characteristics, Barriers of Research
2. Types of Research: Descriptive, Analytical, Applied, Exploratory, Qualitative, Quantitative, Conceptual, Empirical, Longitudinal, Field, Diagnostic Research.
3. Research Process: Assessment phase, Diagnosis Phase, Planning phase, Implementation phase, Evaluation phase.
4. Research Ethics: Good Clinical Practice, Boundaries between Practice and Research (Belmont Report), Moral Principles of Action, Informed Consent, Research Codes of Ethics (Nuremberg Code, Helsinki Declaration), Research Risks.
5. Research Proposal: Writing Research Proposal, Guidelines for Research Proposal, Components of Research Proposal
6. Research Designs: Descriptive (Case Report, Case Series, Cross Sectional, Longitudinal) Analytical (Case Control, Cohort, Analytical Cross Sectional) Experimental Design (Group Design, Single System Design)(Classical Experimental Design, Quasi Experimental Design), Qualitative (Interviews and Questionnaires, Design of Surveys).
7. Research Variables: Independent, Dependent, Extraneous, Intervening, Active, Attribute, Discrete, Continuous.
8. Sampling: Designs, Techniques, Laws of Sampling Significance of Sampling, Populations and Samples, Probability/Non Probability Sampling, Assignment to groups, Sample size.
9. Descriptive and Inferential Statistics: Mean Median, Mode, Range, Standard Deviation, and Percentage. Probability, Hypotheses Testing, Type 1 Error, Type 2 Error.
10. Correlation: Meaning, Rank order, Product Moment correlation, Pearson's product moment, Spearman's Regression analysis.
11. Scales of Measurement : Nominal Scale ,Ordinal Scale ,Ratio Scale ,Interval Scale
12. Concepts of Measurement: Principles of measurements, Reliability, Validity, Specificity, Sensitivity, Accuracy and other Psychometric Tests.
13. Data Collection: Technique of data collection, Process of data collection.
14. Parametric Tests: Paired "t" test, Unpaired "t" test, ANOVA, ANCOVA Multistage ANOVA.
15. Non-Parametric Tests: Chi-square test, Mann Whitney U test, 'Z' test, Wilcoxon's matched pairs test.
Data Management: Coding, Entry, Editing, Classification, Tabulation.
16. Statistical Softwares: SPSS, My STAT, InStat, GraphStat.
17. Interpretation & Presentation of Data: Quantitative & qualitative analysis, Graphical representation of data, Conclusion and Discussion.
18. Research Reports: Writing Research Report, Components of Research Report (Introduction, Methodology, Data analysis and Results, Discussion).
19. Research publication: Journal search, writing manuscript, Publication bias, Plagiarism.

Paper II: Applied Physiotherapeutics II
No. of Course Outcomes (CO)s/Competencies: 6
CODE:AP 2

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi- cator	PO4 Professi- onal	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
AP2.1	Acquire an in depth knowledge of musculoskeletal system to help assess and manage musculoskeletal impairments. .	3	0	2	3	3	3	3
AP2.2	Understand the role of applied mechanics as an essential skill for Physiotherapist	3	0	1	3	3	3	3
AP2.3	Develop the ability to predict and prevent secondary impairments and/or pathologies across systems.	3	0	1	3	3	3	3
AP2.4	Develop the ability to diagnose the cause of biomechanical impairments and activity limitations	0	1	0	3	3	3	3
AP2.5	Understand the role of various energy systems and different metabolic pathways during exercises in exercise physiology	3	0	3	3	3	3	3
AP2.6	Develop an in the knowledge of Electrophysiology & Electro Diagnosis skills, instrumentation and clinical applications.	3	3	0	3	3	3	3

i. BIOMECHANICS & CLINICAL KINESIOLOGY

1. Biomechanics of Tissues and structures of the musculoskeletal system and clinical application.
2. Normal and applied Biomechanics of Spine, Upper extremity and Lower extremity.
3. Clinical kinesiology of posture.
4. Biomechanics and patho-mechanics of respiration, circulation, hand function and gait.
5. Methods of kinetics and kinematics investigation
6. Patient Positioning, Body Mechanics and Transfer Techniques
7. Ergonomic Approach to lifting and handling, workspace and Environment

ii. EXERCISE PHYSIOLOGY & NUTRITION

1. Sources of Energy, Energy Transfer and Energy Expenditure at rest and various physical activities.
2. Physiology of Movement
3. Responses and Adaptations of various systems to Exercise and training.
4. Environmental influence on Performance.
5. Body composition, nutrition and caloric balance and performance
6. Considerations of age and sex in exercise and training.
7. Exercise prescription for health and fitness with special emphasis to cardiovascular disease, Obesity and Diabetes.
8. Fatigue assessment and scientific organization of work-rest regimes to control fatigue.
9. Supplementary nutrition

ii. ELECTROPHYSIOLOGY & ELECTRO DIAGNOSIS

1. Characteristics and components of Electro therapeutic stimulation systems and Electro Physiological assessment devices.
PAIN (neuro biology, modulation and management of pain)
Biophysical measurements
Physiotherapy modalities techniques and approaches
2. Electromyography (EMG) and Nerve Conduction Velocity (NCV), Bio Feedback.
3. Instrumentation for neuromuscular electrical stimulation.
4. Anatomy and physiology of peripheral nerve, muscle and neuromuscular junction.
5. Electrical properties of muscle and nerve.
6. Muscles plasticity in response to electrical stimulation.
7. Electrical stimulation and its effects on various systems.
8. Clinical Electro physiological testing and clinical interpretation.
9. Safety considerations in electrotherapy

Paper III: Applied Physiotherapeutics III
No. of Course Outcomes (CO)s/Competencies: 6
CODE: AP3

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi cator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
AP3.1	Acquire an in depth knowledge of musculoskeletal system to help assess and manage musculoskeletal impairments. .	3	0	2	3	3	3	3

AP3.2	Understand the role of applied mechanics as an essential skill for Physiotherapist	3	0	1	3	3	3	3
AP3.3	Develop the ability to predict and prevent secondary impairments and/or pathologies across systems.	3	0	1	3	3	3	3
AP3.4	Develop the ability to diagnose the cause of biomechanical impairments and activity limitations	0	1	0	3	3	3	3
AP3.5	Understand the role of various energy systems and different metabolic pathways during exercises in exercise physiology	3	0	3	3	3	3	3
AP3.6	Develop an in the knowledge of Electrophysiology & Electro Diagnosis skills, instrumentation and clinical applications.	3	3	0	3	3	3	3

PAPER - III : APPLIED PHYSIOTHERAPEUTICS III

i. PHYSIOTHERAPY DIAGNOSIS AND CLINICAL DECISION MAKING

1. Clinical examination in general and detection of movement dysfunction.
2. Principles of pathological investigations and imaging techniques related to neuromuscular, Musculoskeletal Skeletal and cardiopulmonary disorders with interpretation.
(X ray, Computerized Tomography, Magnetic Resonance Imaging, Intracranial Pressure monitoring
Lumbar puncture, Common Laboratory tests, ABG, PFT, ECG)
3. Developmental screening, motor learning -motor control assessment.
4. Anthropometric measurements.
5. Physical fitness assessment - Body composition, Flexibility, Muscle strength, endurance, Cardio-respiratory endurance. Skills, testing of agility- balance, co-ordination.
6. Evaluation Methods, Special tests used in Musculoskeletal, Neurological and Cardiopulmonary disorders.
7. EMG and Biofeedback.
8. Biophysical measurements, physiotherapy modalities, techniques and approaches.
9. Evaluation of aging.
10. Aids and appliances, adaptive functional devices to improve movement dysfunction.
11. Exercise ECG testing and monitoring.
12. Pulmonary function tests and Spirometry.
13. Physical disability evaluation and disability diagnosis.
14. Posture and Gait analysis and diagnosis.
15. Clinical decision making in electrotherapeutics

ii. ADVANCED PHYSIOTHERAPEUTICS -

1. Pain (neurobiology, various theories, assessment, modulation and management of pain)
2. Maternal and child care in general physiotherapy.
2. Applied embryology, Neuro-anatomy and neurophysiology
3. Growth and Development of neuromusculoskeletal system
4. Scales for evaluation pediatric developmental disorders
5. Theories of motor control and motor learning.
3. Effect of medications on activity performance.
4. Exercise planning and prescription.
5. Use of Exercise therapy techniques and application on various types of cases.
6. Effect of aerobic, anaerobic, Isometric, Isotonic and Isokinetic exercises on muscle and cardio-pulmonary function
7. Application of advanced electrotherapy modalities & techniques on patients, monitoring of dosages and winding up procedure.
8. Ergonomic aspects of exercise on oxygen, energy consumption MET value of various exercises and activity.
9. Physiotherapy for health and stress management.
10. Massage, Mobilization and Manipulation
11. Manual therapy – different schools of thought
12. Principles of Neurological approaches.
13. Facilitation and inhibition techniques.
14. General Guidelines to be followed in Cardiac Rehabilitation, Pulmonary Rehabilitation, Burns Rehabilitation and Cancer Rehabilitation Protocol.
15. CPR, monitoring systems and defibrillators and artificial respirators.
16. Physiotherapy in Disaster management
17. Physiotherapy in common conditions of skin.
18. Physiotherapy following Plastic Surgery.
19. Physiotherapy following Obstetric and Gynecological Disorders.
20. Integration of Yoga in Physiotherapy for Health promotion and Dysfunction

PRACTICAL -

1. Introduction to Screening for Referral In Physiotherapy
 - a. Reasons to Screen
 - b. Screenings and Surveillance
 - c. Diagnosis by the Physiotherapist
 - d. Differential Diagnosis versus Screening
 - e. Direct Access
 - f. Decision-Making Process Case Examples and Case Studies.
2. Introduction to the interviewing process
 - a. Concepts in Communication
 - b. Cultural Competence
 - c. The Screening Interview
 - d. Subjective Examination
 - e. Core Interview
 - f. Hospital Inpatient Information

3. Overview of the physiology of pain and systemic causes of pain
 - a. Mechanisms of Referred Visceral Pain
 - b. Multi-segmental Innervations
 - c. Assessment of Pain and Symptoms
 - d. Sources of Pain
 - e. Types of Pain
 - f. Comparison of Systemic Versus Musculoskeletal Pain
 - g. Patterns
 - h. Characteristics of Viscerogenic Pain,
 - i. Screening for Emotional and Psychologic Overlay
 - j. Screening for Systemic Versus Psychogenic Symptoms
4. Physical assessment as a screening tool
 - a. General Survey
 - b. Techniques of Physical Examination
 - c. Integumentary Screening Examination
 - d. Nail Bed Assessment
 - e. Lymph Node Palpation
 - f. Musculoskeletal Screening Examination
 - g. Neurologic Screening Examination
 - h. Regional Screening Examination
 - i. Systems Review
5. Screening for hematologic disease
 - a. Signs and Symptoms of Hematologic Disorders
 - b. Classification of Blood Disorders
6. Screening for cardiovascular disease
 - a. Signs and Symptoms of Cardiovascular Disease
 - b. Cardiac Pathophysiology
 - c. Cardiovascular Disorders
 - d. Laboratory Values.
6. Screening for pulmonary disease
 - a. Signs and Symptoms of Pulmonary Disorders
 - b. Inflammatory/Infectious Disease
 - c. Genetic Disease of the Lung
 - d. Occupational Lung Diseases
 - e. Pleuropulmonary Disorders

PRACTICAL CONTENT:

- Application of principles of Neurodevelopmental therapy
- Facilitation and inhibition techniques.
- Early intervention program
- Sensory Integration

Recommended Books:

- 1) Public Power And Administration – Wilenski, Hale And Iremonger, 1986
- 2) Physical Therapy Administration And Management – Hickik Robert J
- 3) Management Principles For Physiotherapists – Nosse Lorry J.
- 4) Medical Education: Principles and Practice: Published by the National teacher Training Center, JIPMER, Pondicherry: latest Edition
- 5) Medical Education: Trainer’s Manual : Published by the National teacher Training Center, JIPMER, Pondicherry: latest Edition
- 6) Basics in Medical Education : Zubair Amin &HoonEngKhoo: World Scientific: 2009
- 7) A Practical Guide for Medical Teachers : John A Dent& Ronald M Harden: Elsevier Health Sciences: 2009
- 8) International Handbook of Medical Education : Abdul W Sajid, Christie H McGuire et al: Greenwood Press 1994
- 9) PRINCIPLES OF MEDICAL EDUCATION, Tejinder Singh, Piyush Gupta, Daljit Singh.year: 2009. Edition: 3 rdeditionPublisher: JAYPEE brothers
- 10) Carolyn Hicks. Research Methods for Clinical Therapists. Applied Project design and Analysis. Fourth Edition. London: Elsevier; 2004.
- 11) Elizabeth Domholdt. Rehabilitation research: Principles and applications. ThirdEdition.St.Louis : Elsevier Saunders; 2005.
- 12) Portney LG, Watkins MP. Foundations of Clinical Research. Applications and Practice.3rd Edition. New Jersey: Pearson; 2007.
- 13) Kothari CR. Research Methodology Methods and Techniques.2nd Revised edition. New Delhi: New Age International Publishers; 2004.
- 14) GoyalRC.Research Methodology for Health Professionals. New Delhi.Jaypee Publishers; 2013.
- 15) KulkarniAP. Basics of Research Methodology.Kolkata.Power Publishers; 2013.
- 16) Ranjit Kumar. Research Methodology a step-by- step guide for beginners.3rd Edition.London.Sage Publications; 2011.
- 17) Prabhat Pandey, Meenu Mishra Pandey. Research Methodology: Tools and Techniques.Buzau.Bridge Center.2015.
- 18) Mahajan B K. Methods in Biostatistics. For Medical Students and Research Workers.7th Edition. New Delhi: Jaypee Publishers; 2010.
- 19) Ian Scott, Debbie Mazhindu. Statistics for health Professionals. An Introduction.2nd Edition.London.Sage Publication; 2014
- 20) American Physical Therapy Association: Guide To Physical Therapy Practice, 2nd Edition 2001.
- 21) Physical Rehabilitation (4& 5th Edition) By Susan B O Sullivan And Thomas J Schmitz. (Jaypee Publication)
- 22) International Classification Of Functioning, Disability And Health: Short Version. (IT’S Publication)
- 23) Professionalism In Physical Therapy: History, Practice And Development By Laura Lee Swisher And Catherine G.Page, (Elsevier Publication 2005)
- 24) Effective Documentation For Physical Therapy Professionals, By Eric Shamus And Debra (McgrawHill Company2004)
- 25) Physical Therapy Documentation: From Examination To Outcome By Mia Erickson, Ralph Utzman(Slack Incorporated 2008)
- 26) Writing SOAP Notes With Patient / Client Management Formats By GingeKettenbach, Ph. D., PT, 3rd Edition, 2004 ,F.A. DAVIS COMPANY. Philadelphia
- 27) Practical Evidence-Based Physiotherapy Rob Herbert, Grojamtvedt, Judy Mead,

- Kare Birger Hagen Elsevier Butter Worth Heinemann; Oxford UK (2005)
- 28) Guide To Evidence-Based Physical Therapy Practice By Dianne V. Jewell, PT, Phd, Virginia Commonwealth University, Virginia
 - 29) Concern Specialty Books For Physical Therapy Assessment And Outcome Measures
 - 30) Electromyography In Clinical Practice By Michael J. Aminoff, 3rd Edition (Churchill Livingstone)
 - 31) Clinical Neurophysiology By UK Misra And Kalita, 2nd Edition (Churchill Livingstone)
 - 32) Electro Diagnosis In Diseases Of Nerve And Muscle: Principles And Practice By Jun Kimura (Oxford University Press)
 - 33) The ABC Of EMG: A Practical Introduction To Kinesiological Electromyography By Peter Conrad (Noroxon Inc. USA 2005)
 - 34) Integrating Physical Agents In Rehabilitation By Bernadette Hecox And John Sanko, 2nd Edition (Pearson Prentice Hall 2006)
 - 35) Integrating Physical Agents In Rehabilitation By Bernadette Hecox And John Sanko, 2nd Edition (Pearson Prentice Hall 2006)
 - 36) Physicals Agents In Rehabilitation: From Research To Practical By Michell H. Cameron, 2nd Edition (Saunders And Elsevier, 2003)
 - 37) Therapeutic Modalities For Allied Health Professionals By William E. Prentice And Frank Underwood (Mcgraw-Hill, 1998)
 - 38) Therapeutic Exercise: Treatment Planning For Progression By Francis E. Huber, Christly. Wells (W.B. Saunders Company, 2006)
 - 39) Therapeutic Exercise: Foundations And Techniques By Carolyn Kisner And Lynn Allen Colby (W.B. Saunders Company, 2007)
 - 40) Therapeutic Exercise, Moving Towards Function By Carrie M. Hall And Lori Thein Brody (Lippincott Williams & Wilkins, 2004)
 - 41) Grieve's Modern Manual Therapy: The Vertebral Column By Jeffrey Boyling And Grad Dip Man Ther (Churchill Livingstone)
 - 42) Exercise Physiology By Mc Ardle, Katch & Katch (Lippincott Williams And Wilkins, 2000)
 - 43) Exercise Physiology: Exercise, Performance, And Clinical Applications By Robert A. Roberts And Scott O Roberts William C Brown, 1997)
 - 44) Clinical Exercise Testing And Prescription Theory And Applications By Scott O. Roberts, Peter Hanson (C RC Press, 1997)
 - 45) Basic Biomechanics Of The Musculoskeletal System By Margareta Nordin And Victor H. Frankle, 2nd Edition (Lea And Febiger)
 - 46) Kinesiology Of The Human Body: Under Normal And Pathological Condition By Arthur Steindler, 5th Edition (Charles C Thomas, 1977)
 - 47) Joint Structure & Function : A Comprehensive Analysis By Cynthia C Norkin, Pamela K Levangie (Jaypee Brothers, 2006)
 - 48) Brunnstrom's Clinical Kinesiology By Laura K. Smith & Don Lehmkuh, 5th Edition (F A Davis, 1996)
 - 49) The Physiology Of The Joints By Kapandji & Matthew J Kendel (Churchill Livingstone, 2008)
 - 50) Clinical Biomechanics Of The Spine By Augustus A White & Manohar M Panjabi, 2nd Edition (Lippincott Williams & Wilkins; 1990)
 - 51) Kinesiology : The Mechanics And Pathomechanics Of Human Movement By Carol Oatis (Lippincott Williams & Wilkins; 2008)
 - 52) Kinesiology: Application To Pathological Motion By Soderberg, 2nd Edition (Williams & Wilkins, 1997)

Elective Subject 1

Intellectual Property rights: 30 hours

Course Objectives:

- To introduce fundamental aspects of Intellectual property Rights to students who are going to play a major role in development and management of innovative projects in industries.
- To disseminate knowledge on patents, patent regime in India and abroad and registration aspects
- To disseminate knowledge on copyrights and its related rights and registration aspects
- To disseminate knowledge on trademarks and registration aspects
- To disseminate knowledge on Design, Geographical Indication (GI), Plant Variety and Layout Design Protection and their registration aspects
- To aware about current trends in IPR and Govt. steps in fostering IPR

Course Outcomes

- The students shall gain adequate knowledge on patent and copyright for their innovative research works
- During their research career, information in patent documents will provide a useful insight on novelty of their idea from state-of-the art search. This provide further way for developing their idea or innovations
- Pave the way for the students to catch up Intellectual Property(IP) as an career option
- Facilitate students to become successful entrepreneurs

Overview of Intellectual Property rights: 5 hours

1. Introduction and the need for intellectual property right (IPR) - Kinds of Intellectual Property Rights: Patent, Copyright, Trade Mark, Design, Geographical Indication, Plant Varieties and Layout Design – Genetic Resources and Traditional Knowledge – Trade Secret
2. IPR in India : Genesis and development , IPR in other countries
3. Major International Instruments concerning Intellectual Property Rights: Paris Convention, 1883, the Berne Convention, 1886, the Universal Copyright Convention, 1952, the WIPO Convention, 1967, the Patent Co-operation Treaty, 1970, the TRIPS Agreement, 1994

Patents: 6 hours

1. Elements of Patentability: Novelty , Non Obviousness (Inventive Steps),
2. Industrial Application - Non - Patentable Subject Matter - Registration Procedure, Rights and Duties of Patentee, Assignment and license ,
3. Restoration of lapsed Patents, Surrender and Revocation of Patents,
4. Infringement, Remedies & Penalties - Patent office and Appellate Board

Copyrights: 6 hours

1. Nature of Copyright - Subject matter of copyright: original literary, dramatic, musical, artistic works; cinematograph films and sound recordings
2. Registration Procedure, Term of protection, Ownership of copyright, Assignment and licence of copyright
3. Infringement, Remedies & Penalties – Related Rights - Distinction between related rights and copyrights

Trademarks: 6 hours

1. Concept of Trademarks - Different kinds of marks (brand names, logos, signatures, symbols, well known marks, certification marks and service marks)
2. Registration of Trademarks - Rights of holder and assignment and licensing of marks, Non Registrable Trademarks
3. Infringement, Remedies & Penalties
4. Trademarks registry and appellate board

Other forms of Intellectual Property: 5 hours

1. **Design:** meaning and concept of novel and original - Procedure for registration, effect of registration and term of protection
2. **Geographical Indication (GI):** Geographical indication: meaning, and difference between GI and trademarks - Procedure for registration, effect of registration and term of protection
3. Plant variety protection: meaning and benefit sharing and farmers' rights – Procedure for registration, effect of registration and term of protection
4. Layout Design protection: meaning – Procedure for registration, effect of registration and term of protection

Current policies regarding IPR: 2 hours

India's New National IP Policy, 2016 – Govt. of India step towards promoting IPR – Govt. Schemes in IPR – Career Opportunities in IP - IPR in current scenario with case studies

References:

Text book:

1. Nithyananda, K V. (2019). *Intellectual Property Rights: Protection and Management*. India, IN: Cengage Learning India Private Limited.
2. Neeraj, P., & Khusdeep, D. (2014). *Intellectual Property Rights*. India, IN: PHI learning Private Limited.

Reference book:

1. Ahuja, V K. (2017). *Law relating to Intellectual Property Rights*. India, IN: Lexis Nexis.

E-resources:

1. Subramanian, N., & Sundararaman, M. (2018). *Intellectual Property Rights – An Overview*. Retrieved from <http://www.bdu.ac.in/cells/ipr/docs/ipr-eng-ebook.pdf>
2. World Intellectual Property Organisation. (2004). *WIPO Intellectual property Handbook*. Retrieved from https://www.wipo.int/edocs/pubdocs/en/intproperty/489/wipo_pub_489.pdf

Reference Journal:

1. Journal of Intellectual Property Rights (JIPR): NISCAIR

Useful Websites:

1. Cell for IPR Promotion and Management (<http://cipam.gov.in/>)
2. World Intellectual Property Organisation (<https://www.wipo.int/about-ip/en/>)
3. Office of the Controller General of Patents, Designs & Trademarks (<http://www.ipindia.nic.in/>)

Elective Subject 2

HOSPITAL ADMINISTRATION 30 Hours

Intended learning objectives:

- To understand the basic concepts in hospital administration.
- Students should be able to analyze and assess various situations in the hospital.
- To plan and organize developmental policies and implement strategies.
- To get acquainted with administrative issues pertaining to rehabilitation and research.
- Students should be able to identify problem areas and integrate practices that help towards quality improvement

UNIT 1: (5 Hours)

1. Basic concepts

- Planning
- Organizing
- Directing
- Controlling
- Coordination

2. Human resources

- Hospital staff
- Job descriptions
- Recruitment
- Training
- Promotions

UNIT 2: (5 Hours)

Financial concepts and Hospital Administrative tools

- Basic accounts
- Financial statements
- Ratio analysis
- Service cost
- Budget, profit & depreciation
- Policies & Standard Operating Procedures
- Hospital Information System (HIS)
- Management Information System (MIS)

UNIT 3:(5 Hours)

Hospital utilization statistics and Patient relation management

- Average length of stay
- Bed occupancy rate
- Turn over interval
- Satisfaction
- Follow up
- Complaints
- Survey
- Daily reports

Unit 4: (5 hours)**Marketing**

- Overview
- Methods of marketing
- Advantages
- Limitation
- Camps & public participation

Unit 5: (5 Hours)**Hospital committees and Hospital security**

- Types
- Composition
- Role of committee members
- Frequency & minutes
- Follow up
- Patient
- Staff
- Newborn
- Store
- Crisis situation

Unit 6: (5 Hours)**Hospital waste management**

- Overview
- Classification of hospital waste
- Hazards
- Safety measures
- Segregation & Disposal

Suggested Readings

1. Hospital Planning & Administration – WHO Monograph Series 54 – By R. Llewelyn, Davis & H.M.C. Macaulay – Indian Edition – Jaypee Brothers, New Delhi.
2. Hospital & Nursing Homes : Planning, Organisation, & Management – By Syed Amin Tabish – Jaypee Brothers, New Delhi.
3. Principles of Hospital Administration & Planning – By B.M. Sakharkar – Jaypee Brothers.
4. Hospital Administration – By C.M. Francis & Marioc Desouza – Jaypee Brothers, New Delhi.
5. Hospital Administration & Planning – By A.G. Chandorkar – Paras Medical Publisher.
6. Hospitals Planning, Design & Management – By Kunders & Gopinath.
7. Healthcare System & Management – By S.L. Goel – Deep & Deep Publisher.
8. Management of Hospital – By S.L. Goel & R. Kumar – Deep & Deep Publisher.
9. Hospital Waste Management & its Monitoring – By Madhuri Sharma – Jaypee Brothers, New Delhi.
10. Medical Stores Management – By Shakti Gupta & Sunil Kant - Jaypee Brothers, New Delhi.

II YEAR
Master of Physiotherapy in Musculoskeletal Sciences
Code: MS
Programme Outcomes (PO)s:

PO No.	Attributes	By the end of course student will have/be able to
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyse and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme

To be rated on a scale of zero (0) to three (3):

- 0- No correlation
- 1- Low correlation
- 2- Moderate correlation
- 3- High correlation

PAPER I: MUSCULOSKELETAL SCIENCES I : CODE MS1
Programme Outcome - Course Outcome (PO-CO) Mapping

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Commu- nicator	PO4 Profess i-onal	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
MS1.1	Assess and manage different movement dysfunctions, musculoskeletal health and sports related injuries of upper quadrant	3	0	2	3	3	2	2

MS1.2	Develop Clinical decision making skills in evaluation & management of various pediatric & geriatrics dysfunctions of the upper quadrant	3	0	2	3	3	2	2
MS1.3	Perform recent advances in functional diagnostic procedures of upper quadrant	3	1	1	3	3	3	3
MS1.4	Practice recent advances in Manual Therapy for Upper Quadrant	3	1	1	3	3	3	2
MS1.5	Practice evidence based practice to formulate effective assessment and treatment program for upper quadrant	3	0	1	3	3	3	2
MS1.6	Evaluate disability and plan assistive technology used for stability and mobility for upper quadrant	3	1	1	3	3	3	2
MS1.7	Assess and Plan various ergonomic advices for different industries	3	2	2	3	3	2	2
MS1.8	Perform recent advances in evaluation and management of various musculoskeletal pains	3	1	2	3	3	3	2
Total		3	1	1	3	3	3	2

(Musculo-skeletal Dysfunctions of the Upper Quadrant)

(Upper Quadrant includes occiput, cervical spine, thoracic spine, shoulder girdle and upper extremities)

1. Anatomical, Physiological and Biomechanical basis for assessment of movement dysfunctions of the upper quadrant
2. Pathophysiological and Pathomechanical basis for management of movement dysfunctions of the upper quadrant
3. Clinical decision making skills in evaluation & management of all pediatric, adult and geriatric dysfunctions of the upper quadrant
4. Advances in functional diagnostic procedures & various outcome measures relevant to musculo-skeletal dysfunctions of the upper quadrant
5. Pathobiological mechanisms of pain; Recent advances in pain evaluation and management
6. Advances in the field of Manual Therapy (joint manipulation, MFR, MET, Neural mobilization – Cyriax, Maitland, butler, McKenzie, Kaltenborn, Mulligan)
7. Principles of musculo-skeletal health and performance related fitness and Physiotherapeutic management of musculo-skeletal injuries & dysfunctions in various sports
8. Principles of assessment of industrial fitness and assessment & management of musculoskeletal dysfunctions related to various industries.
9. Principles of Assessment and Management of Neuromuscular dysfunction of upper quadrant
10. Ergonomics in Musculo-skeletal dysfunction of the upper quadrant
11. Assistive technology used for stability and mobility to enhance function.
12. Evidence based practice to formulate effective assessment and treatment program
13. Evaluation of disability
14. Legislation and social care.
15. Assessment, clinical reasoning and management of Integumentary impairments due to musculoskeletal dysfunction
16. Pharmacotherapeutics in musculoskeletal conditions and its relevance in physiotherapy
17. Clinical decisions for lower quadrant function in presence of upper quadrant dysfunction.

Practical Contents:

1. Surface anatomical landmarks in spinal cord, heart, lungs and brain.
2. Exercise testing.
3. Posture assessment.
4. Evaluation/assessment procedures.
5. Gait assessment and retraining.
6. Physical fitness, Assessment and Training.

Paper II: Musculoskeletal Sciences II CODE:MS 2
No. of Course Outcomes (CO)s/Competencies: 08
Programme Outcome - Course Outcome (PO-CO) Mapping

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long learner
MS2.1	Assess and manage different movement dysfunctions, musculoskeletal health and sports related injuries of lower quadrant	3	0	2	3	3	2	2
MS2.2	Develop Clinical decision making skills in evaluation & management of various pediatric & geriatrics dysfunctions of the lower quadrant	3	0	2	3	3	2	2
MS2.3	Perform recent advances in functional diagnostic procedures of lower quadrant	3	1	1	3	3	3	3
MS2.4	Practice recent advances in Manual Therapy for lower Quadrant	3	1	1	3	3	3	2
MS2.5	Practice evidence based practice to formulate effective assessment and treatment program for lower quadrant	3	0	1	3	3	3	2
MS2.6	Evaluate disability and plan assistive technology used for stability and mobility for lower quadrant	3	1	1	3	3	3	2
MS2.7	Assess and Plan various ergonomic advices for different industries	3	2	2	3	3	2	2
MS2.8	Analyze cause and effect of various orthopedic implants and other materials used in musculoskeletal dysfunctions	3	1	2	3	3	3	2
Total		3	1	1	3	3	3	2

PAPER II: MUSCULOSKELETAL SCIENCES II**(Musculoskeletal Dysfunctions of the Lower Quadrant)****(Lower Quadrant includes lumbar spine, sacrum, pelvis and lower extremities)**

1. Anatomical, Physiological and biomechanical basis for assessment of movement dysfunctions of the lower quadrant
2. Pathophysiological and Pathomechanical basis for management of movement dysfunctions of the lower quadrant
3. Clinical decision making skills in evaluation & management of all pediatric, adult and geriatric dysfunctions of of the lower quadrant
4. Advances in functional diagnostic procedures & various outcome measures relevant to musculo-skeletal dysfunctions of the lower quadrant
5. Pathobiological mechanisms of pain; Recent advances in pain evaluation and management
6. Advances in the field of Manual Therapy
7. Principles of musculo-skeletal health and performance related fitness and Physiotherapeutic management of musculo-skeletal injuries & dysfunctions in various sports
8. Principles of assessment of industrial fitness and assessment & management of musculoskeletal dysfunctions related to various industries.
9. Principles of Assessment and Management of Neuromuscular dysfunction of lower quadrant
10. Ergonomics in Musculo-skeletal dysfunction of the lower quadrant
11. Assistive technology used for stability and mobility to enhance function.
12. Assistive technology used for stability and mobility to enhance function.
13. Evidence based practice to formulate effective assessment and treatment program
14. Evaluation of disability
15. Legislation and social care.
16. Assessment and management of Integumentary impairments due to musculoskeletal dysfunction.
17. Orthopaedic implants, design, material. External aids, appliances, adaptive self help devices
17. Clinical decisions for upper quadrant function in presence of lower quadrant dysfunction

Practical Contents:

1. Peripheral and spinal joints mobilization techniques.
2. Peripheral and spinal joints manipulation techniques.
3. Strength, Endurance, Balance & Proprioception.
4. Orthotics and Prosthetics prescription, checkouts and Training.
5. Taping, bandaging and strapping techniques.
6. Application of electro physical agents.
7. Compression and Traction intervention/procedure/techniques.
8. Physical Assessment - History, physical examination, special tests and outcome Measures.

CLINICAL POSTING:

Orthopedic ward,Physiotherapy OPD,burns ward

Recommended Books:

1. Standring, Susan. Gray's anatomy : the anatomical basis of clinical practice.41st edition. United States New York : Elsevier Limited; 2016.
2. Richard Snell. Clinical Anatomy: By Regions. 9th edition. Philadelphia, PA: Lippincott Williams & Wilkins;2014.
3. Guyton and Hall. Textbook of Medical Physiology.10th Edition. Philadelphia: Elsevier; 2016.
4. Sembulingam K, Prema Sembulingam. Essentials of Medical Physiology. 6th Edition.New Delhi: Jaypee Brothers Medical Publishers Ltd; 2012.
5. Clifford Morgan, King Richard. Introduction to Psychology. 7th Edition, Tata Mcgraw-Hill,1986.
6. ACSM's: Guidelines for exercise testing and prescription, 9th edition,Lippincott Williams & Wilkins;2013.
7. McArdle W ,Katch F. Exercises Physiology energy, Nutrition, & Human Performance. 8th Edition, North America: Wolters Kluwer Health;2015.
8. Carolyn Kisner, L N Colby. Therapeutic Exercises: Foundation and techniques , 6th edition. Philadelphia E. A. Davis Company;2013.
9. Pamela Levangle, Cynthia Norkin. Joint Structure and Function: A Comprehensive Analysis. 5th edition. Philadelphia. F. A. Davis Company;2011.
10. Frownfelter Donna, Cardiovascular And Pulmonary Physical Therapy Evidence And Practice, 4th edition, St. Louis, Missouri, Mosby Elsevier, 2006.
11. Boyling J, Jull G.Grieve's modern manual therapy: The vertebral column.
12. Churchill Livingston ;3rd edition 2005.
13. Magee D.J ,Orthopaedic Physical therapy assessment,university of Alberta:Elsevier;2014
14. Williams PL, Warwick R, Dyson M, Bannister LH. Gray's anatomy. 37th ed. Edinburgh: Churchill Livingstone; 1989.
15. Grants JC.Grant's Method of Anatomy:A Clinical problem-solving Approach. Philadelphia, United states: Willams and Wilkins;1989
16. Hall JE.Guyton and Hall textbook of medical Physiology.Philadelphia:Elsevier;2016
17. KumarV,Fausto N,Abbas A.Robbins and cotran:Pathologic Basic of Disease.Philadelphia: 7th edition,WB Saunders; 2004
18. Sutton D.Text Book of Radiology and imaging.University of Michigan:Churchill Livingstone;1998
19. GoodmanLS,BromtonLL,ChabnerB.The Pharmacological basis of Therapeutics Newyork:McGraw-Hill;2011
20. Hay JG .The Biomechanics of Sports Techniques.University of Michigan: Prentice Hall;1993.
21. Brunnstrom SL,Lehmkuhl D,Smith LK. Brunnstrom Clinical Kinesiology. Philadelphia:F.A. Davis Co;1983
22. Chaitow L. Positional release techniques.3rd ed.London: Churchill Livingstone; 2007.

Elective subject 1**Manual therapy****Total hours: 60hrs****Course Outcomes:****CO1:** Develop understanding of background of Manual Therapy**CO2:** Perform and practice manual therapy for upper extremities**CO3:** Perform and practice manual therapy for lower extremities**CO4:** Perform and practice manual therapy for cervical spine**CO5:** Perform and practice manual therapy for thoracic spine**CO6:** Perform and practice manual therapy for lumbar spine and SI joint**Content**

Unit	Topic	Subtopics	Theory	Practical
1	Introduc tion of Manual therapy	Introduction ,History& Background	1	0
		Concepts of Manual therapy	1	0
		Different schools of thought	1	0
2	Joints of Upper extremity	Sternoclavicular Acromioclavicular joint& Scapulothoracic joint	1	1
		Glenohumeral joint	1	1
		Humeroulnar joint	1	1
		Humeroradial joint		1
		Superior radio ulnar joint	1	1
		Inferior radio ulnar joint		1
		Radiocarpal joint	1	1
		Inter carpal joint		1
		Carpometacarpal, intermetacarpal		1
		Metacarpophalangeal joint & Interphalangeal joint	1	1
3	Joints of Lower extremity	Hip joint	1	2
		Tibiofemoral articulation	1	1
		Patello femoral joint		1
		Proximal tibiofibular articulation	1	1
		Distal tibiofibular articulation		1
		Talocrural joint (Upper ankle joint)	1	1
		Talocalcaneal joint		1
		Intertarsal & Tarsometatarsal joint		1
Interphalangeal joint		1		
4	cervical spine	Anatomy ,Allocation ,Palpation & surface marking of spinous process & facet joint	1	1
		Techniques of applications for Upper cervical region	1	2
		Techniques of applications for Lower cervical region		2

	Tempromandibular joint	Anatomy ,Palpation&surface markings of joint components	1	1
		Techniques of applications for tempromandibular joint		2
5	Thoracic spine	Anatomy ,Allocation ,Palpation & surface marking of spinous process & facet joint	1	1
		Techniques of applications for Thoracic vertebra		2
	Thorax	Anatomy ,Allocation ,Palpation & surface marking of ribs & Costochondral joint	1	1
		Techniques of applications for Costochondral joints & Ribs		2
6	Lumbar region	Anatomy ,Allocation ,Palpation & surface marking of spinous process & facet joint	1	1
		Techniques of applications for Lumbar vertebra		2
	Pelvic region	Sacroiliac joint allocation, palpation & Anatomy	1	1
		Techniques of applications for Sacroiliac joints		2
			20	40

LEARNING OBJECTIVES

After completing this course, students are expected to

1. Describe the basic theories and concepts of various types of manual therapy
2. Identify the scope of manual therapy at clinical level in peripheral joints
3. Use the anatomical rationale for the clinical tests used in different conditions of extremities through manual therapy.
4. Learn the ability to perform an appropriate subjective and physical examination, with development of suitable analytical skills to evaluate data obtained.
5. Understand the indications and contra-indications, treatment efficacy, and clinical applications of manual therapy techniques.
6. Demonstrate basic techniques of orthopedic physical therapy assessment
7. Identify the indications, limitations, and contra-indication of joint mobilization
8. Use Manual Therapy Technique/ approaches to treat & train patients with musculo-skeletal ailments in extremities.
9. Explicit and perform the steps of each manual therapy skills
10. Explicit interpretations and principles of orthopedic physical therapy assessment
11. Distinguish the differences in core concepts among various schools of thought

Text books

1. Carolyn Kisner, L N Colby. Therapeutic Exercises: Foundation and techniques , 6th edition. Philadelphia E. A. Davis Company;2013
2. Magee D.J ,Orthopaedic Physical therapy assessment, university of Alberta:Elsevier;2014
3. Maitland's – Peripheral manipulation 4th Edition
4. Text book of Orthopaedic Medicine, James Cyriax, 11th Edn
5. Carolyn Kisner, L N Colby. Therapeutic Exercises: Foundation and techniques , 6th edition. Philadelphia E. A. Davis Company;2013
6. Boyling J, Jull G. Grieve's modern manual therapy: The vertebral column.
7. Magee D.J ,Orthopaedic Physical therapy assessment, university of Alberta:Elsevier;2014
8. Cervical and Thoracic Spine Mechanical diagnosis and therapy- R A McKenzie.
9. Maitland's – Vertebral manipulation 7th Edition
10. Lumbar Spine Mechanical diagnosis and therapy- R A McKenzie
11. Text book of Orthopaedic Medicine, James Cyriax, 11th Edn

Reference books

1. Management Principles for Physical therapists, Noose Larry J.
2. Colour atlas of skeletal landmark definitions; Serge Van Sint Jan. Churchill Livingstone
3. Diagnostic imaging for Physical therapist- James S
4. Differential diagnosis for Physical therapists screening for referral, Goodman, 4th ed.
5. Functional Anatomy; Musculoskeletal Anatomy, kinesiology and Palpation for Manual therapist-Christy Cael.
6. Grieve's modern manual therapy
7. Joint mobilization and Manipulation, Edmond Susan L.
8. Manual Therapy, NAGs, SNAGs, MWM etc by Brian R Mulligan, 5th edn.
9. TMJ joint dysfunction –Essentials, Jagger R G.
10. Combined movement theory-Rational mobilization and manipulation of the vertebral columns; Chris McCarthy. Churchill Livingstone
11. Colour atlas of skeletal landmark definitions; Serge Van Sint Jan. Churchill Livingstone
12. Diagnostic imaging for Physical therapist- James S
13. Differential diagnosis for Physical therapists screening for referral, Goodman, 4th ed.
14. Functional Anatomy; Musculoskeletal Anatomy, kinesiology and Palpation for Manual therapist-Christy Cael.
15. Grieve's modern manual therapy
16. Joint mobilization and Manipulation, Edmond Susan L.
17. Management Principles for Physical therapists, Noose Larry J.
18. Manual Therapy, NAGs, SNAGs, MWM etc by Brian R Mulligan, 5th edn

Elective Subjects 2

SPORTS INJURY PREVENTION

COURSE DESCRIPTION:

The course discusses risk factors and problems relevant to physical activities and sports, ranging from exercise to Elite Sports. This entails a wide perspective ranging from preventive and rehabilitation to biomechanical factors, injury mechanisms and healing processes in the musculoskeletal system, from an evidence-based perspective.

COURSE LEARNING OBJECTIVES:

Upon completion of this course, the student will be able to:

- Appraise current literature regarding sport-related injury prevention and management.
 - Risk factors, injury mechanism and healing processes at Exercise and sports activities.
 - Factors of importance to prevention of exercise-induced and sports injuries.
- Differentiate common signs and symptoms between common sports-related injuries.
- Differentiate injury mechanisms between common sports-related injuries.
- Recognize the importance of prevention strategies used to reduce sport-related injuries.
- Describe the proper first aid and management of common sports-related injuries

Course Outcomes:

CO1: Assess and evaluate risk of injury in sports

CO2: Plan strategy for risk management

CO3: Plan strategy for strain and sprain prevention

CO4: Plan strategy for prevention of overuse injury

CO5: Plan load management to prevent injury

CO6: Propose protective equipment and can apply functional bandages

COURSE CONTENT:

SR.No	Unit Wise Topic	Total Didactic Theory Hours (40 Hrs)	Total Didactic Practical Hours (20 Hrs)
Unit 1	A conceptual approach to injury prevention	7 hrs	-
Unit 2	Risk management: applying prevention models	7 hrs	-
Unit 3	Preventing strain & sprain	7hrs	10 hrs
Unit 4	Preventing overuse injuries	7 hrs	-
Unit 5	Managing load to prevent injury	6 hrs	-
Unit 6	Protective equipment Appropriate surfaces Functional Bandages	6 hrs	10 hrs

SYLLABUS

SR. No	Topic	Theory Hrs (54 Hrs)	Practical Hrs (18 Hrs)
Unit 1	Introduction to Sports Injury Prevention i) Introduction ii) Intrinsic and Extrinsic Risk Factors iii) Inciting Events iv) Overreaching and Overtraining v) Epidemiological Sport Injury Models: The Biomechanical Perspective vi) Primary, Secondary, and Tertiary Sport Injury Prevention vii) Objective Appraisal of Individual Characteristics	7 1 1 1 1 1 1	
Unit 2	Risk management: applying prevention models i) Risk identification and assessment ii) Developing an injury surveillance program within the team iii) Season analysis-risk profiling the training and competition program iv) The periodic medical assessment-mapping current problems and intrinsic risk factors v) Developing and initiating a targeted prevention program	7 2 1 1 1 2	
Unit 3	Sports Rehabilitation and Therapeutic Exercises i) Define Rehabilitation, Goals and Objectives of Rehabilitation in Sports, Clinical Evaluation phases of rehabilitation. (multidisciplinary approach) ii) Pre Rehabilitation iii) Definition, details of effects and uses of therapeutic exercises:a. Dynamic Exercises b. Plyometric training c. Isokinetic Exercises d. Kinetic chain exercises e. Agility training f. Circuit training	7 2 2 3	10

Unit 4	Preventing strain, sprain& Overuse injuries i) Injury mechanisms ii) Risk factors iii) Prevention programs iv) Structured training programs v) Technique modification vi) Modification of extrinsic risk factors vii) Stretching	7 1 1 1 1 1 1	
Unit 5	Nutrition of the Athlete i) Energy Needs ii) Calculating & Meeting Energy Needs iii) Specific recommendations for Sport and Nutrient Intake a) The role of carbohydrates and carbohydrates loading b) Pre-Exercise carbohydrate & Glycemic Index c) carbohydrate intake during Exercise d) carbohydrate intake after exercise e) Glycemic Index & Post-Exercise carbohydrate consumption f) Adding protein to carbohydrate post-exercise g) Protein Needs of Athlete iv) Fluid Needs & Intake Guidelines for Athletes a) Protein Needs of Endurance Athletes – Before, During, & After exercise. v) Ergogenic Aids	6 1 1 2 1 1	
Unit 6	Protective Equipment's & Functional Bandages i) Principles of protective equipment ii) Safety standards and legal concerns for protective equipment iii) Head, Face, Neck, Thorax, Trunk, Upper & Lower Extremities iv) History and uses of functional bandages v) classification according to the time of application, types of bandages vi) Bandaging techniques and bandaging material, Indications, contraindications vii) Taping Techniques viii) athletic shoes and modifications	6 1 1 1 1 1 1	 5 5

TEXTBOOKS:

1. Brukner and KarimKhan: Clinical Sports Medicine, McGraw Hill.
2. William Prentice: Essentials of Athletic Injury Management (10th ed.). McGraw Hill Education, Boston, MA, 2013
3. McKeag, Douglas B. Moeller, James L:ACSM's Primary Care Sports Medicine, 2nd Edition, Lippincott Williams & Wilkins
4. Darren Johnson and scottMair: Clinical Sports Medicine, 1st ed, Mosby
5. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.
6. Lillegard, Butcher & Rucker: Handbook of Sports Medicine: A symptom – Oriented Approach, Butterworth & Heinemann
7. Baker: The Hughston Clinic Sports Medicine Book, Williams & Wilkins
8. Morris B. Mellion: Office Sports Medicine, Hanley &Belfus.
9. Richard B. Birrer: Sports Medicine for the primary care Physician, CRC Press.
10. Torg, Welsh &Shephard: Current Therapy in Sports Medicine III - Mosby. 10. Zulunga et al: Sports Physiotherapy, W.B. Saunders

REFERENCES:

1. Paul Grimshaw et.al, Sports & Exercise Biomechanics, Taylor & Francis Group, 2007.
2. Susan J.Hall, Basic Biomechanics, McGraw Hill Education, 2004.
3. Peter McGinnis, Biomechanics of Sport and Exercise, Human Kinetics, 2005.
4. Kathryn Lutgens et al. Kinesiology (Scientific Basis of Human Motion), Brown and Benchmark, 1992.
5. Essentials of Exercise Physiology: McArdle, WD, Katch, FI, and Katch, VL. 2nd edn, Lippincott Williams and Wilkins (2000).
6. Physiology of Sport and Exercise: Wilmore, JH and Costil, DL. Human Kinetics (1994)
7. Exercise Physiology- Human Bioenergetics and its Application: Brooks, GA, Fahey, TD, White, TP. Mayfield Publishing Company (1996)
8. Willmore, JH &Costill, DL (1999) Physiology of Sport and Exercise. 2nd ed. Human Kinetics.
9. Guyton, A.C. Textbook of Medical Physiology (7th Ed.). Philadelphia: Saunders, 1986, pp. 382-386, 472-476.
10. Perspectives in Nutrition (6 th ed.) by Wardlaw
11. Nutrition for sport and exercise (2 nd ed.) by Berning and Steen Morgan and King:
12. Suinn: Psychology in Sports: Methods and applications, Surjeet Publications. 13. Grafiti: Psychology in contemporary sports, Prentice Hall. 14. Sanjiv P. Sahni: Handbook of Sports Psychology – A comprehensive manual of Mental Training

II YEAR
MASTER IN Neurophysiotherapy
Code: NU

Programme Outcomes (PO)s:

PO No.	Attributes	By the end of course student will have/be able to
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyse and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme

To be rated on a scale of zero (0) to three (3):

- 0- No correlation
- 1- Low correlation
- 2- Moderate correlation
- 3- High correlation

Paper I: NEUROPHYSIOTHERAPY I

No. of Course Outcomes (CO)s/Competencies: 10

CODE: NU1

Programme Outcome - Course Outcome (PO-CO) Mapping

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
NU1.1	Neurodevelopmental and neurophysiological approaches in Adult Neurological condition	3	3	2	3	3	3	3
NU1.2	Basic and Advance skills in assessment in adult neuropathological, neuropsychological and neurosurgical condition	2	2	2	3	3	3	3

NU1.3	Various outcome measures and assessment methods used in adult neurological condition	3	3	3	2	3	3	3
NU1.4	Brain diseases and disorders- Definition,causes, clinical features,Pathophysiology and General Investigations	3	2	3	2	2	3	3
NU1.5	Physiotherapy in Cranial nerve disorder	3	2	2	3	2	3	3
NU1.6	Spinal cord injury/ diseases (Traumatic/non Traumatic- Infective,Degenerative and Demyelinating , Tumor)	3	3	3	3	2	3	3
NU1.7	Peripheral nerve injury (Traumatic/non-Traumatic)	3	2	3	3	3	3	3
NU1.8	Muscle disorder and Neuromuscular disorder	3	2	3	3	3	3	3
NU1.9	Autonomic nervous system disorders	3	2	2	3	3	3	3
NU1.10	Psychosomatic disorders	2	2	2	2	3	3	3

PAPER I: NEUROPHYSIOTHERAPY I

This paper will focus on advances in theory and practices in adult neurological conditions

1. Neurodevelopmental and neurophysiological approaches in Adult neurological condition.

Neuro-anatomy and neurophysiology-

- Development of nervous system, Peripheral nerves and ganglia, receptors and effectors, dermatomes and muscular activity, CNS an overview, spinal cord, brainstem.
- Blood supply of the brain
- Meninges, cerebrospinal fluid and Fluid compartments and fluid balance in the CNS
- Autonomic nervous system
- Reflex maturation- Neurophysiologic basis
- Normal sequential physiological changes throughout the developmental age
- Physiology of pain: Models of pain, Basic molecular biology, neurobiology, stress biology and pain, Peripheral and central pain mechanisms, theory of modulation of pain.

2. Basic and Advance skills in assessment of adult neuro-pathological, neuropsychological and neurosurgical conditions
3. Various outcome measures and assessment methods used in adult neurological condition

Physiotherapy in following condition:-

4. **Brain diseases and disorders-** Definitions, Causes, Clinical features, Pathophysiology & General Investigation
5. **Physiotherapy in cranial nerve disorders:-** Bell's Palsy, Trigeminal Neuralgia, Facial nerve Palsy, Glossopharyngeal Nerve Injury, Vestibular system dysfunction and other Cranial Nerve Disorders
6. **Spinal cord injury/diseases (Traumatic / non Traumatic- Infective, Degenerative & Demyelinating, Tumor**
7. **Peripheral nerve injury(Traumatic/non Traumatic)**
8. **Muscle disorders-** Myotonic disorders, progressing muscular dystrophy, Duchenne muscular dystrophy, Becker muscular dystrophy, Limb-girdle muscular dystrophy, Spinal muscular atrophy,
9. **Neuromuscular disorders-** Myasthenia gravis, Lambert-Eaton syndrome,
10. **Autonomic nervous system disorders-** Acute Autonomic Paralysis, Primary Autonomic Failure, Peripheral Neuropathy with Secondary Orthostatic Hypotension, Autonomic Failure, Horner and Stellate Ganglion Syndromes, Sympathetic and parasympathetic paralysis in tetraplegia and paraplegia
11. **Psychosomatic disorders:-** Anxiety disorder, Mood disorder, Psychotic, Personality, Sleeping, Eating Disorder, Drug addiction, Identity disorder, Memory and cognitive disorder

Practical content:

1. Neurophysiologic approaches Proprioceptive neuromuscular facilitation, Rood's approach, Bobath/NDT approach, Motor re-learning program, Brunnstrom
2. Functional re-education
3. Balance retraining
4. Sensory integration & re-education
5. Wheelchair Prescription, assessment and Wheelchair skills
6. Neuromuscular electrical stimulation
7. Coma stimulation program
8. Neurogenic pain management
9. Theories of Motor Control
10. Theories of Motor learning
11. Relaxation techniques

Paper II: Neurophysiotherapy II
No. of Course Outcomes (CO)s/Competencies: 10
CODE:NU2
Programme Outcome - Course Outcome (PO-CO) Mapping

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi- cator	PO4 Professi-onal	PO5 Critical Thinker	PO6 Researc her	PO7 Life-long Learner
NU2.1		3	2	1	3	3	3	3
NU2.2	Advanced Neuro-therapeutic skills for management	2	1	2	3	3	3	3
NU2.3	Evaluation,Asses-ment and Acute/long term goals for Physiotherapy management in neurological condition	3	3	2	3	3	3	3
NU2.4	Role of Physiotherapy in progressive neurological condition,mana-gement of terminally ill patient	3	3	2	3	3	3	3
NU2.5	Pharmacothera-peutics in neurological conditions,and its relevance in Physiotherapy	2	2	2	3	3	3	3
NU2.6	Recent Advances/ techniques in Physiotherapy	2	1	2	3	3	3	3
NU2.7	Recent advances in Neuro-surgeries and role of physiotherapy in neurological condition	2	1	2	2	3	3	3
NU2.8	Orthoses used in neurological condition : Material used ,Assessment,Presc-ription of splints and Braces, Orthosis for upper and lower limb	3	1	2	2	3	3	3

NU2.9	ICU management of a neurologically ill patient	3	2	2	3	3	3	3
NU2.10	Neuro-Rehabilitation : Introduction,team, equipments, Phases,exercise testing,exercise prescription and Exercise intervention in neurological condition	3	1	3	2	2	3	3

PAPER II: NEUROPHYSIOTHERAPY II

1. Advanced Neuro-therapeutic skills for management
2. Evaluation, Assessment and Acute/long term goals for Physiotherapy management in neurological conditions
3. Role of Physiotherapy in progressive neurological conditions, management of terminally ill patient.
4. Clinical decision making and evidence based practice to formulate effective assessment and treatment program
5. Pharmacotherapeutics in neurological conditions and its relevance in physiotherapy
6. **Recent Advances/ techniques in Physiotherapy**
7. **Recent Advances in Neuro-surgeries and role of physiotherapy in neurological conditions**
8. **Orthoses used in neurological conditions** :-Material used, Assessment, Prescription of Splints and Braces, Orthosis for Upper limb and lower limb
9. ICU management of a neurologically ill patient
10. **Neuro- Rehabilitation**:-Introduction, team, Equipments, phases, exercise testing, exercise prescription and Exercise interventions in neurological conditions.

CLINICAL POSTING:

Adult Neuro-medical, neurosurgical ,Physiotherapy OPD,Medicine & Surgical ICU, SCI Rehabilitation Unit

Recommended Books:

1. Martin &kessler:Neurologic Interventions for Physical Therapy.2ndEdition. Elsevier,Evansville;2006.
2. Anneshumway-cook:Motor Control: Translating Research into Clinical Practice.4thEdition. North American;2011.
3. Susan Herdman: Vestibular Rehabilitation.3rdEdition.Atlanta US:F.A. Davis Company;2007.
4. Susan O'Sullivan:Physical Rehabilitation.5thEdition. New Delhi, India:Jaypee brothers;2007.
5. Kerb D: Bio-feed back - A practitioners guide.Guiford press, North Carolina.
6. Wilkins,Rengachar:Neurosurgery Update I: Diagnosis, Operative Technique and Neuro. 1stEdition. San Francisco: McGraw-Hill Professional;1990.
7. Brian T. Andrews: Neurosurgical Intensive Care. 1stEdition. San Francisco:McGraw-Hill Professional;1993.
8. Philip L. Gildenberg:Textbook of Stereotactic and Functional Neurosurgery. 1stEdition.San Francisco:McGraw-Hill Professional Publishing;1997.

9. Lindsay Kenneth: Neurology and neuro surgery illustrated. 1st Edition. Churchill Livingstone; 1986.
10. Setti Rengachary Richard Ellenbogen: Principles of Neurosurgery. 2nd Edition. Mosby; 2004.
11. Kasper Hauser, Harrison's: Principle of internal Medicine. 16th Edition. San Francisco USA: McGraw Hill Medical; 2005.
12. Maureen Salter, Lynn Cheshire: Hand Therapy Principles and Practice. Oxford, Middlesex UK; 2000.
13. Arturo Leis: Atlas of Nerve conduction studies and Electromyography. Oxford University Press. New York USA; 2013.
14. Michael J. Aminoff: Electromyography in clinical practice. 3rd Edition. Amsterdam Netherlands: Elsevier Health Sciences; 1998.
15. Greenberg: Hand book for neurosurgery. 8th Edition. Florida; 2016.
16. Andrew H. Kaye: Essential of Neurosurgery. 3rd Edition. Hoboken New Jersey: Published by Blackwell Publishing Ltd; 2005.
17. Vincet Thamburaj: Textbook of contemporary Neurosurgery. 1st Edition. New Delhi India: Jaypee brothers; 2012.
18. David C. Preston, E. Shapiro: Electromyography and neuromuscular disorders. 2nd Edition. Amsterdam Netherlands: Elsevier Health Sciences; 2005 March 11.
19. Michael E. Selzer Stephanie Clarke: Textbook of Neural repair and rehabilitation: Medical Neurorehabilitation. New York : Cambridge University Press; 2006.
20. Umphred DA, Lazaro RT, Roller M, Burton G: Neurological Rehabilitation E-Book. Elsevier Health Sciences. 6th Edition. Amsterdam Netherlands; 7th Aug 2013
21. Adams RD, Victor M, Ropper AH, Daroff RB: Principles of neurology. 10th Edition. San Francisco USA: McGraw Hill Education; 2014.
22. Young PA, Young PH, Tolbert DL: Basic clinical neuroscience; 2008.
23. Wiener C, Fauci A, Braunwald E, Kasper D, Hauser S, Longo D, Jameson J, Loscalzo J, Brown C: Harrison's Principles of Internal Medicine Self-Assessment and Board Review. 18th Edition. San Francisco USA: McGraw Hill Professional; 17 Jul 2012.
24. Katirji B, Kaminski HJ, Ruff RL: Neuromuscular disorders in clinical practice. Springer Science & Business Media. 2nd Edition. Berlin Germany; 11 Oct 2013.
25. Amato and Richard Barohn: Neuromuscular disorders. 1st Edition. San Francisco USA.
26. Wadia NH, Khadilkar SV, editors. Neurological Practice: An Indian Perspective-E-Book. Elsevier Health Sciences. Amsterdam Netherlands; 5 Feb 2015.
27. Gardiner PF: Neuromuscular aspects of physical activity. Human Kinetics. 1st Edition. USA; 2001.
28. Brashear A, Elovic E: Spasticity diagnosis and management. Demos medical publishing. 2nd Edition. New York; 2011.
29. David Robertson: Primer on the Autonomic Nervous System. 2nd Edition. USA: Elsevier; 2004.
30. John pattern: Neurological differential diagnosis. 2nd Edition. New York ; 2005.
31. Michelle M. Lusardi & C. Nielsen: Orthotics and Prosthetics in Rehabilitation. 2nd Edition. Caroline PhD.
32. Susan O'Sullivan: Physical Rehabilitation. 5th Edition. New Delhi, India: Jaypee brothers; 2007.
33. Edwards S. Neurological Physiotherapy: A problem-solving approach. Amsterdam Netherland: Elsevier Health Sciences; 2002.
34. Critchley EM. Neurological emergencies. WB Saunders Company. Philadelphia; 1988.
35. Bryce TN. Spinal cord injury. Springer Publishing Company. Berlin Germany; 2009.

Elective Subject 1
PAIN ASSESSMENT AND MODULATION
(Total Hours 30+30 =60)

Sr No.	TOPIC	DIADATI C HOURS	PRACTICA L HOURS	TOTAL HOURS
1.	A)DEFINITION B)Anatomy of Pain i)Pain in cortex, Thalamus,Cerebellum,Medulla,differe nt nuclei & Tracts(Pathways of pain sensation and deeper structure) ii)Pain Receptors and its stimulation ,Pain signal reception iii)Classification of Nerve fibers (Fast and slow pain) B) Neurobiology and Molecular biology of Pain i) Specific Neurotransmitters and opiates in Biochemistry. ii) Nociceptors	4	2	6
2.	Physiology of Pain i) Mechanism of pain ii) Multisegmental innervations iii) Peripheral Sensitization Vs Central Sensitization iv) Allodynia Vs Hyperalgesia v) Wind up	4	1	5
3.	A)Types of Pain and sources of pain i) Somatic, Referred,Neurogenic pain and Visceral Pain ii) Components of Pain B) Pain pathways and Gate control theory i) What is Pain ii) How it works iii) Comparison of systemic Vs Musculoskeletal and Neuropathic pain and it's Significance.	5	3	8
4.	Subjective Assessment i) Location,Duration,progression,dist ribution ,quality,Variations ii) Severity,nature of pain,tissueirritability iii) Modifying and psychologic factors iv) Patterns and characteristics ; clinical manifestation of pain	5	7	12
5.	Objective measurement and Documentations i) VAS,FPS (self-Report measures) ii) NPRS iii) Mcgill's modified pain Questionnaire iv) Screening Systemic Vs Neurogenic pain	2	5	7

6.	Modulation of Pain i) Gate control theory and approaches ii) Different theories of pain iii) Periaqueductal and pharmacologic .	3	3	6
7.	Psychosomatic Pain and Paralysis i) Screening for emotional & psychological overview ii) Approaches	4	2	6
8.	Pain and its management A) As a fifth vital sign - Body temp., pulse, BP, RR, Pain i) Pharmacological treatment and NSAID's ii) Other medical intervention , Counter-irritation iii) Different Modalities B) Cognitive therapy C) Behavioral therapy D) Biofeedback /Muscle relaxation	5	5	10
				TOTAL 60 HOURS

COURSE OUTCOME :

At the end program course outcome will be

Cognitive:

- Know determinancy of health and chronic disease management principles related to neurological health and patient care.
- Understand about etiology, pathophysiology, signs, symptoms and management of various neurological condition as well as acquire skill of history taking and clinical examination of Neurological condition.

Psychomotor :

#Describe the tool and also acquire the skills and actual concept of PT assessment and treatment protocol.

Affective:

- Select appropriate assessment techniques to facilitate safety ,sensitive practices in patient comfort and effectiveness.
- Demonstrate safe, respectful and effective performance of physical therapy ,its handling techniques taking into account pt's clinical condition, need for privacy, resource available and the environment.
- Follow the principle handling technique , hand placement, lifting and transfer techniques.
- Communicate with patients and their families regarding the need and use of various assessment technique.

Elective Subjects 2
WHEELCHAIR SKILL ASSESSMENT AND TRAINING

SR NO.	TOPIC	DIADATIC HOURS	PRACTICAL HOURS	TOTAL HOURS
1.	Introduction Wheelchair Definition Appropriate wheelchair Need for wheelchair Right to wheelchair Benefits of wheelchair Types of wheelchair	5	5	10
2.	Wheelchair Assessment <ul style="list-style-type: none"> • Design: Introduction of wheelchair design General consideration about wheelchair design • Functional Performance: Wheelchair stability, pushing efficiency Evaluating functional performance • Seating and posture in wheelchair: Seat bases, cushions, Backrest, footrest, armrest, rear wheels Evaluating seating and postural support • Strength , durability and safety: Requirements, evaluating strength, durability and safety 	5	10	15
1.	<ul style="list-style-type: none"> • Introduction: General background on motor skills learning Wheelchair prescription • Wheelchair mobility skills (pushing, turning, up slop, down slop, up stairs with assistance ,down stairs with assistance, Partial wheelie) • Wheelchair transfer • Specific issues with wheelchair learning • Skill individual , skills in groups and Games 	7	10	17

4.	Services and delivery: <ul style="list-style-type: none"> Introduction: Steps in service delivery, understanding individual user needs Funding and ordering, fitting, training of users, families and caregivers 	4	4	8
5.	Policy and planning: WHO guideline on the provision of manual wheelchairs in less resource settings. <ul style="list-style-type: none"> ADIP scheme Links with other sectors (Health services and community outreach campaigns ,education,social and infrastructure) 	2	2	4
6.	Maintenance, repair and follow up: Cost effectiveness Wheelchair modification Good practice and follow up.	2	4	6
			Total	60 Hours

COURSE OUTCOME :

At the end program course outcome will be

Cognitive:

#Know determinancy of health and chronic disease management principles related to neurological health and patient care.

Psychomotor :

#Describe the tool and also acquire the skills and actual concept of PT assessment and treatment protocol.

Affective:

#Select appropriate assessment techniques to facilitate safety ,sensitive practices in patient comfort and effectiveness.

#Demonstrate safe,respectful and effective performance of physical therapy ,its handling techniques taking into account pt's clinical condition,need for privacy,resource available and the environment.

#Follow the principle handling technique , hand placement,lifting and transfer techniques.

#Communicate with patients and their families regarding the need and use of various assessment technique.

II YEAR**Master of Physiotherapy in Cardiovascular and Respiratory Physiotherapy**

Code: CR

Programme Outcomes (PO)s:

PO No.	Attributes	By the end of course student will have/be able to
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyse and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme

To be rated on a scale of zero (0) to three (3):

- 0- No correlation
- 1- Low correlation
- 2- Moderate correlation
- 3- High correlation

Paper I: Cardiovascular and Respiratory Physiotherapy I :CODE:CR 1

No. of Course Outcomes (CO)s/Competencies: 11

Programme Outcome - Course Outcome (PO-CO) Mapping

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Commu- nicator	PO4 Professi- onal	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
CR1.1	Describe structural, functional and biomechanical basis for assessment and management of respiratory dysfunctions	3	0	1	3	3	3	3

CR1.2	Acquire assessment and PT management skills in obstructive and restrictive diseases, chest trauma, pulmonary fibrosis, atelectasis, ILD, GB syndrome, pulmonary embolism, ARDS, ventilator associated pneumonia, respiratory failure, OP poisoning	3	1	1	3	3	3	3
CR1.3	Apply clinical reasoning in physiotherapeutic evaluation and management of neonatal, pediatric and geriatric respiratory dysfunctions	3	1	1	3	3	3	3
CR1.4	Describe and apply advances in functional diagnostic procedures and outcome measures in assessment of respiratory dysfunctions	3	1	0	3	3	3	3
CR1.5	Interpret and apply investigations related to respiratory dysfunctions	3	0	0	3	3	3	3
CR1.6	Apply evidence-based practice in respiratory and thoracic impairments	3	0	0	3	3	3	3
CR1.7	Describe pulmonary Rehabilitation, team, equipment, exercise testing and exercise prescription	3	3	2	3	3	3	3
CR1.8	Acquire knowledge and skill of ergonomics and energy conservation in respiratory dysfunction	3	1	3	3	3	3	3

CR1.9	Acquire knowledge and skill of pain evaluation and management in medical and post-surgical conditions	3	1	2	3	3	3	3
CR1.10	Acquire knowledge and PT management skills in pulmonary surgery	3	1	1	3	3	3	3
CR1.11	Acquire knowledge of surgical, microbiological, pathological and radiological investigations and recent advances in these investigations	3	1	1	3	3	3	3

PAPER I: CARDIOVASCULAR AND RESPIRATORY PHYSIOTHERAPY I

1. Structural, functional and Biomechanical basis for assessment and management of dysfunctions of the respiratory system and thorax throughout the life span. Assessment and Physiotherapy Management in Obstructive diseases: Chronic obstructive pulmonary disease, chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic fibrosis. Assessment and Physiotherapy Management in Restrictive diseases: Pleural disorders, Pneumonia, lung abscess, Empyema, Pulmonary tuberculosis. Assessment, Acute and long term Physiotherapy management in acute chest trauma, pulmonary fibrosis, atelectasis, interstitial lung disease, Guillain Barre syndrome, pulmonary embolism, acute respiratory distress syndrome, ventilator associated Pneumonia, respiratory failure, organophosphorous poisoning.
2. *Clinical reasoning* in physiotherapeutic evaluation & management of all neonatal, pediatric, adult and geriatric dysfunctions of the respiratory system and thorax in acute care and in rehabilitation.
3. Advances in functional diagnostic procedures & various outcome measures relevant to assess intervention to dysfunctions of thorax and respiratory system.
4. Interpretation and application of Investigations related to Respiratory and thoracic dysfunction and its relevance to physiotherapy.
5. Evidence based practice in management of Respiratory & Thoracic impairments & dysfunction.
6. Pulmonary rehabilitation: Introduction, team, equipments, phases, exercise interventions, exercise testing and exercise prescription in respiratory conditions
7. Ergonomics and energy conservation in Respiratory dysfunction and use of assistive devices to enhance function and performance.
8. Pathology of pain in medical and Post-surgical conditions related to thoracorespiratory dysfunction and advances in its evaluation and management

9. Pulmonary Surgery: Classification of Pulmonary surgeries, Complications and Role of Physiotherapy in Pulmonary Surgeries.
10. Surgical investigations: Microbiological investigations, Pathological investigations, Radiological investigations, recent advances in pulmonary surgical investigations .
11. Clinical decision making and evidence based practice in physiotherapeutic evaluation & management of all medical , surgical and traumatic disorders across the life span in a critical care (ICU) setting.
12. Respiratory Physiotherapy in intensive Care Unit: Mechanical Ventilation, initiation of Mechanical ventilation, modes of mechanical ventilation, complications during mechanical ventilation, monitoring during mechanical ventilation, weaning criteria, post-extubation care, lung recruitment maneuvers, non invasive mechanical ventilation, oxygen therapy, aerosol therapy and nebulization, bronchial hygiene techniques, humidification, suctioning methods .
13. Principles of health and performance, Risk stratification, Prevention and health promotion
14. Pharmacotherapeutics in respiratory condition and its relevance with physiotherapy

Practical Contents:

1. Physiotherapy techniques in Obstructive diseases
2. Physiotherapy techniques in Restrictive diseases
3. Management of patient in ICU
4. Application of Pulmonary rehabilitation
5. Disease specific approach for pulmonary rehabilitation
6. Handling of ICU equipments
7. Handling of Monitors and other Life support equipment

Paper II: Cardiovascular and Respiratory Physiotherapy II: CODE: CR2

No. of Course Outcomes (CO)s/Competencies: 14

PO-CO Mapping

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi- cator	PO4 Professi-onal	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
CR2.1	Describe structural, functional and biomechanical basis for assessment and management of dysfunctions of circulatory system	3	0	1	3	3	3	3
CR2.2	Acquire clinical decision- making skills in PT evaluation and management of neonatal, paediatric, adult and geriatric cardiovascular dysfunctions	3	2	0	3	3	3	3

CR2.3	Apply physiotherapy and cardiac rehabilitation in cardiac disorders	3	1	0	3	3	3	3
CR2.4	Acquire skills of exercise testing and prescription in clinical population other than cardiac disease	3	0	0	3	3	3	3
CR2.5	Interpret and apply investigations of cardiac and peripheral vascular dysfunctions Acquire knowledge and skills of advances in functional diagnostic procedures in cardiovascular and peripheral vascular disorders	3	1	0	3	3	3	3
CR2.6	Apply evidence-based practice in assessment and management of cardiovascular and peripheral vascular system	3	0	0	3	3	3	3
CR2.7	Acquire knowledge and skill of ergonomics and energy conservation in cardiovascular dysfunction and use of assistive devices to enhance function	3	0	1	3	3	3	3
CR2.8	Describe types, complications and role of in physiotherapy in cardiac surgeries	3	1	1	3	3	3	3
CR2.9	Acquire knowledge and skill of post-surgical intensive care and management of critically ill	3	1	0	3	3	3	3
CR2.10	Acquire knowledge and PT management skills in peripheral vascular diseases	3	1	0	3	3	3	3

CR2.11	Apply lifestyle modifications for cardiac patients, cardiorespiratory fitness testing and training in sports and diseases	3	1	2	3	3	3	3
CR2.12	Acquire knowledge of pharmacotherapeutics in cardiac conditions	3	2	0	3	3	3	3
CR2.13	Acquire clinical decision-making skills in evaluation and management of lifestyle disorders, integumentary and other system impairments due to cardiovascular and respiratory conditions	3	3	0	3	3	1	3
CR2.14	Apply cardiopulmonary resuscitation and post resuscitation care	3	1	0	3	3	3	3

PAPER II: CARDIOVASCULAR AND RESPIRATORY PHYSIOTHERAPY II

1. Structural and functional and Biomechanical basis for assessment and management of dysfunctions of the circulatory system including peripheral vessels and mediastinum throughout the life span.
2. Clinical decision making skills in physiotherapeutic evaluation & management of all neonatal ,pediatric, adult and geriatric dysfunctions of the cardiovascular including peripheral vasculature system and mediastinum in acute care and rehabilitation
3. **Physiotherapy and Cardiac Rehabilitation in Cardiac Disorders** : Myocardial Infarction, Congestive Cardiac failure, Ischemic heart disease, Physiotherapy after cardiac surgery, Physiotherapy after angioplasty.
5. **Exercise testing and prescription in clinical population other than cardiac disease:** Exercise testing and prescription in Hypertension, Diabetes mellitus, Cancer, Dyslipidemia, Metabolic syndrome. Advances in functional diagnostic procedures & various outcome measures relevant to assess intervention to dysfunctions of cardiovascular and peripheral vascular system. Evidence based practice in assessment and management of cardiovascular and peripheral vascular dysfunction and failure
6. Ergonomics and energy conservation in cardiovascular dysfunction and use of assistive devices to enhance function and performance.
7. Classification of surgeries, Complications of surgeries and role of Physiotherapy in Cardiac Surgeries
7. Post-surgical intensive care: Overview, Patient's Monitoring, Airway clearance , Prevention of complications & Physiotherapy Management in Cardiac Intensive Care Unit.
8. Management of the critically ill: knowledge of Airways -types & management Mechanical ventilator, use of Oxygen therapy; Physiotherapeutic Interventions in intensive care, weaning and ICU monitoring
9. Physiotherapy in Peripheral vascular Disorders: Peripheral arterial diseases, venous disorders, lymphatic diseases.
10. Life style modification for Cardiac Patients: Teaching patient to monitor heart rate, for unsupervised exercise, incorporation of physical activity in daily schedule, methods to motivate for regular physical activity. Interpretation and application of Investigations related to Respiratory, cardiac and thoracic dysfunction and its relevance to physiotherapy. Pharmacotherapeutics in cardiac condition and its relevance with physiotherapy.
11. Clinical decision-making skills in physiotherapeutic evaluation & management of Lifestyle disorders.
12. Cardio-Respiratory fitness testing and training in sports and diseases
13. Cardiopulmonary Resuscitation: Chest Compression, Airway, Breathing, BLS for adults and pediatric age group, ACLS, Post Resuscitation care.
14. Clinical reasoning, assessment and management of Integumentary and other system impairments due to cardiovascular and respiratory diseases.

Practical contents:

1. ECG monitoring during exercise
2. Exercise testing with application of various maximal and sub maximal tests
3. Exercise Prescription
4. Application of Cardiac rehabilitation
5. Disease specific approach for cardiac rehabilitation
6. Handling of ICU equipment
7. Handling of Monitors and other Life support equipment

CLINICAL POSTING:

Medicine ICU, Surgical ICU, Respiratory ICU, Coronary Care Unit, Medicine Ward , Surgery Ward, Burn Ward, OPD.

Recommended Books:

1. Donna Frownfelter, Elizabeth Dean. Principles and practices of Cardiopulmonary Physical therapy. 3rd edition. USA. Mosby; 1996.
2. Jennifer A Pryor, S Ammani Prasad. Physiotherapy for Respiratory and Cardiac Problems. 3rd edition, Churchill Livingstone, Edinburgh; 2005.
3. Eleanor Main, Linda Denehy. Cardiorespiratory Physiotherapy: Adult and Paediatrics. 5th edition. Elsevier; 2016.
4. Downie Patricia A. Cash's Textbook of Chest Heart and Vascular Disorders for Physiotherapists, 4th edition. New Delhi. Jaypee Publishers; 1993.
5. Ellen Hillegass. Essential of Cardiopulmonary Physical Therapy. 3rd edition. Saunders. USA; 2011.
6. Smith Mandy, Val Ball. Cash's Textbook of Cardiovascular Respiratory Physiotherapy. 2nd edition. Mosby; 2005.
7. Alexandra Hough. Physiotherapy in Respiratory Care. 4th edition. USA. Cengage Learning EMEA; 2014.
8. Colin F. Mackenzie, P. Cristina Imle, Nancy Ciesta. Chest Physiotherapy in the Intensive Care Unit. 2nd edition. USA. Williams & Wilkins; 1989.
9. AACVPR Guidelines for Pulmonary Rehabilitation Programs, 4th edition. USA. Human Kinetics; 2011.
10. Beverley Harden, Jane Cross, Mary Ann Broad, Matthew Quint, Sandy Thomas. Respiratory Physiotherapy: An On-Call Survival Guide. 2nd Edition. USA. Elsevier; 2008.
11. G B Madhuri: Textbook of Physiotherapy for Cardio Respiratory Cardiac Surgery and Thoracic Surgery Conditions. New Delhi. Jaypee Publishers. 2008.
12. Pushpal K Mitra: Textbook of Physiotherapy in Surgical Conditions. New Delhi. Jaypee Publishers.
13. Douglas J. Mathisen, Christopher R. Morse: Thoracic Surgery. Lung resections, Bronchoplasty. Wolter Kluwer. 2014.
14. ACSM's Guidelines for Exercise Testing and Prescription. 9th edition. USA. Lippincott Williams and Wilkins; 2013.
15. Scot Irwin, Jan Stephen Tecklin. Cardiopulmonary Physical therapy, a guide to practice. 3rd edition. USA. Elsevier; 2005.
16. Stuart Porter. Tidy's Physiotherapy. 15th Edition. USA. Elsevier; 2013.
17. Dhalavi Girinath: Cardiac Rehabilitation for Physiotherapist, Paras Medical Publisher, 2000.
18. Narain Moojrani, Sunil K. Ohri, Andrew S. Wechsler. Cardiac Surgery. Recent Advances and Techniques. Taylor & Francis. 2012.

Elective Subject 1

EMERGENCY MEDICINE AND AIRWAYS MANAGEMENT

Theory Total Teaching Hours: 30

Course objectives:

General Objectives:

Upon completion of the course the student is expected to:

- a. Demonstrate knowledge, clinical and technical skills and decision-making capabilities pertinent to the management of various emergency conditions.
- b. Develop a systemic approach to the assessment and treatment of the acutely ill/injured patient.
- c. Develop appropriate knowledge of therapeutic interventions and procedural skills required in an emergency medicine department.

Specific Objectives

At the completion of the course the student will have acquired the competencies required to function effectively as a medical expert in dealing and assisting with various medical emergencies, a collaborator to participate effectively in an interdisciplinary healthcare team, a manager to effectively utilise hospital resources for patient management and a professional by demonstrating commitment towards patients and a lifelong learner through continuous learning.

Course contents:

Unit I: Introduction to Emergency Services

5 hours

1. Structure and organisation of a hospital, its departments and functioning of an ideal emergency medical department.
2. Concept of Triage, multiple and mass casualties.
3. Ambulance services: A. Preparation:
 - i. Emergency medical equipment- basic supplies, patient transfer equipment, airways, suction equipment, artificial ventilation device, oxygen inhalation device, cardiac compression equipment, basic wound care supplies, basic medications, splints, automated external defibrillator (AED).
 - ii. Non-medical- personal safety equipment, pre-planned routes and street maps.
- B. Personnel and techniques:
 - i. Responding to a call, patient position, lifting and transfer techniques(up in bed, bed to wheel chair, bed to stretcher).
 - ii. Loading patient to an ambulance (wheeled ambulance stretcher, portable ambulance stretcher, scoop stretcher, long spine board), transferring patients.
 - iii. Disinfection of ambulance, air ambulance.

Unit II: Basic principles, types and usage of following devices:6 hours

1. Endotracheal Tubes, Tracheostomy tubes, Ambu Bag and Mask, Oxygen Masks, Oropharyngeal and Nasopharyngeal airways, Suction Apparatus, ICD Tubes, bags and jars.
2. Oxygen Pipeline, Medical gas cylinders and pipelines.
3. Nasogastric tube and Foley's catheter.
4. Cervical and Philadelphia collars, other splinting and immobilisation devices.
5. Monitoring devices and ECG.
6. Routine bedside investigations.
7. Mechanical ventilators.

Unit III: Emergency Pharmacology:**3 hours**

1. Indications, contraindications, dosage and routes of administration of common medications given by the following routes: subcutaneous, intramuscular, intravenous, intra-arterial, epidural, intranasal, intra and transdermal.
2. Knowledge of INJ 25% and 50% Dextrose, IVF DNS, IVF NS, IVF RL, IVF 5% Dextrose, Anti-Tetanus immunization, Anti-Snake Venom, Anti-Rabies immunization, Lidocaine, Lidocaine +Adrenaline, Diclofenac, Paracetamol, Fentanyl, Pethidine, Morphine, Tramadol, Atropine, Adrenaline, Nitro glycerine.

Unit IV: Cardiovascular and Pulmonary Emergencies:**8 hours****Cardiovascular Emergencies:**

1. Approach to Chest pain - Differential diagnosis, clinical assessment and point of care investigations in the emergency department.
2. Acute coronary syndrome - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, emergency management, ACLS protocols.
3. Acute decompensated heart failure - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management.
4. Bradyarrhythmia and Tachyarrhythmia - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, ACLS protocols.
5. Deep vein thrombosis- presenting symptoms, clinical assessment and point of care investigations in the emergency department, basic initial management.
6. Pulmonary thromboembolism- presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management.

Pulmonary Emergencies:

Approach to the patient with breathlessness and possible differential diagnosis; presenting symptoms, clinical assessment and point of care investigations in the emergency department of:

1. Respiratory failure
2. Upper airway obstruction
3. Pneumothorax
4. Acute asthma
5. Acute exacerbation of COPD
6. Haemoptysis
7. Pleural effusion and empyema
8. Pneumonia

Unit V: Principles of Cardiopulmonary Resuscitation in adults and neonates: 4 hours

1. Basic and advanced cardiac life support
2. Specific resuscitative procedures- airway management, breathing and ventilatory management, defibrillation and cardioversion, fluid and blood resuscitation, thoracocentesis, ICD tube insertion, insertion of ET and Tracheostomy tube.

Unit VI: Airway Management: 4 hours

1. Review of Airway Anatomy, Ventilation, Oxygenation, Respiration and Pathophysiology of Respiration
2. Patient Assessment: Airway Evaluation, Quantifying Ventilation and Oxygenation
3. Airway Management and Suctioning
4. Airway Adjuncts and Pharmacologic adjuncts to Airway Management and Ventilation
5. Airway Obstructions
6. Supplemental Oxygen Therapy
7. Ventilatory Support
8. Continuous Positive Airway Pressure
9. Special Patient Considerations
10. Advanced Airway Management
11. Alternative Advanced Airway Devices
12. Surgical and Nonsurgical Cricothyrotomy

Practical Topics:**30 hours**

1. Preparation of ambulance
2. Patient lifting and transfer techniques
3. Basic and advanced life support skills
4. Interpreting patient monitors, ECG
5. Airway management of adults, infants and neonates
6. Application of supplemental oxygen
7. Demonstration of Insertion of artificial airways, ICD tube, Nasogastric tube and Foley's catheter
8. Demonstration of Ventilator and ventilator modes, alarms and care of tracheostomy tubes in ventilated patients
9. Use of Respiratory support devices
10. Interpretation of routine bedside investigations
11. Biomedical waste management
12. Documentation and hospital management systems

Reference Books (latest edition)

1. Handbook of Emergency Care - Suresh David
2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchill
5. Fundamentals of Respiratory Care- Egan's - Craig I. Scanlon

**ELECTIVE SUBJECT 2:
OCCUPATIONAL HEALTH AND LIFESTYLE DISORDERS**

Theory

Total Teaching Hours: 30

Course objectives:

General objectives:

Upon completion of the course the student is expected to know:

1. Concept of Occupational health and safety to prevent accidents at workplace.
2. Ergonomical considerations at workplace.
3. Lifestyle disorders and their effect on patients' health.
4. Principles of nutrition and nutritional recommendations for health and common lifestyle disorders.
5. Acquire knowledge and skills in prescribing physical activity in health and common illnesses.

Specific objectives:

At the completion of the course the student will have acquired the competencies required to function effectively as a medical expert in dealing with various aspects of occupational health and lifestyle disorders, a collaborator to participate effectively in an interdisciplinary healthcare team to manage occupational health and lifestyle disorders, a manager to effectively utilise hospital resources for ergonomically designing workplaces to prevent occupational injuries, and a professional by identifying lifestyle disorders and effectively managing them, and a lifelong learner through continuous learning and upgrading knowledge about occupational health and lifestyle disorders.

Course contents:

Unit I: Basic concepts of Occupational Health and Safety Principles 4 hours

1. WHO Definition of Occupational health, objectives of occupational health, Occupational Safety, National Safety Policy, Occupational Safety and Health Act (OSHA), Laws governing OSHA, occupational health services and programs.
2. Accidents at workplace – causation, investigation, investigation plan, strategies of accident prevention, role of physiotherapist in accident prevention.
3. The ESI Act, Workmen's Compensation Act and other relevant Labour Laws governing occupational health and compensation of workplace injuries in India.

Unit II: Ergonomics at Work Place: 6 hours

1. Definition of Ergonomics, Muscular work including dynamic and static work, nervous control of movement, skilled work and ways to improve work efficiency.

2. Anthropometry and use of anthropometric data in ergonomics.
3. Principles of workspace design, including seated work, standing work, work reaches and working heights, the office environment and visual work.
4. Activity related Soft Tissue Disorders (ASTD), pathology of disorders, work-relatedness, psychosocial factors, risk factors (repetition, awkward posture, forceful exertions, hand-arm vibration, etc.) defined, and guidelines in literature for risk factors.
5. Ergonomic Task analysis, Ergonomic Evaluation, Preventing Ergonomic Hazards.
6. Psychosocial and organisational aspects of work.
7. Analysis and assessment of risk for neck and back injuries at workplace.
8. Developing appropriate ergonomic programs.

Unit III: Health Considerations at Work Place: 4 hours

1. Types of diseases and their spread, Health Emergency. Personal Protective Equipment (PPE) – types and advantages and use.
2. Effects of exposure and treatment for industrial and municipal solid waste.

Unit IV: Introduction to Lifestyle Disorders: 6 hours

1. Lifestyle diseases – Definition, Risk factors – Eating, smoking, drinking, stress, physical activity, substance abuse, Obesity, diabetes, hypertension, cardiovascular diseases, respiratory diseases, osteoporosis, cancer, Prevention – Diet and exercise.
2. Cardiovascular Diseases- Coronary atherosclerosis – coronary artery disease, causes -fat and lipids, Alcohol abuse -Diagnosis – Electrocardiograph, echocardiograph, Treatment, Exercise and Cardiac rehabilitation.
3. Types of Diabetes mellitus; Blood glucose regulation; Complications of diabetes – Paediatric and adolescent obesity – Weight control and BMI.
4. Obesity – epidemiology, environmental and genetic factors, obesity in children, regulation of food consumption, complications, prevention and treatments. BMI, Body composition and its analysis.

Unit V: Disease Prevention and Healthy Lifestyle

4hours

1. Introduction to nutrition – energy requirements and energy balance.
2. Macronutrients: basic concepts, essential nutrients.
3. Micronutrients: vitamins, minerals and water.
4. Indications for the use of nutritional supplements.
5. Nutritional recommendations for common illnesses – heart disease, diabetes, hypertension, osteoporosis, malignancies.
6. Types of diets: Mediterranean, DASH and others.
7. Disease Prevention and levels of prevention. Strategies to prevent lifestyle disorders.

Unit VI: Physical Activity, Exercise Testing and Prescription for Lifestyle Disorders: 6 hours

1. The effect of physical activity level on morbidity and mortality, prevention and treatment of chronic diseases.
2. The importance of integrating exercise in lifestyle.
3. Basic concepts of physical activity, physical training and physical fitness.
4. Basic concepts of exercise physiology.
5. Source of energy supply as related to the type of activity – aerobic and anaerobic metabolism.
6. Physical fitness and its components.
7. Aerobic fitness and maximum oxygen consumption, VO₂ max.
8. Graded Exercise Testing protocols.
9. Exercise Prescription by heart rate reserve, BORG scale, MET. FITT principle.

Practical Topics:

30 hours

1. Fitness testing- testing for strength, endurance, flexibility, balance and coordination, devising a fitness program.
2. Tests for the anaerobic system.
3. Testing aerobic fitness and maximum energy consumption, calculation of VO₂ max.
4. Submaximal and maximal aerobic testing protocols.
5. Exercise prescription for lifestyle disorders- cardiovascular diseases, diabetes, obesity.
6. Estimation of BMI, percent body fat and body composition analysis.
7. Application of FITT principle, calculation of HRR, Target Heart Rate (THR).
8. Ergonomic task analysis and evaluation.
9. Devising an Ergonomic program.
10. Assessing risk and practical tools to promote physical activity- General assessment, PARQ.
11. Preventive strategies for lifestyle disorders.

Recommended Books: Recent Edition:

1. Lifestyle medicine textbook; second edition. J Rippe. CRC press.
2. Textbook of Medical Physiology, by Arthur C Guyton, John E Hall Prism Saunders.
3. Exercise Physiology: Nutrition, Energy and Human Performance by William d McArdle, Katch et al.
4. Ergonomics for therapists by Karen Jacobs, Carl M. Bettencourt.

II YEAR
Master of Physiotherapy in Paediatrics Physiotherapy
Code: PP
Programme Outcomes (PO)s:

PO No.	Attributes	By the end of course student will have/be able to
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyse and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme

To be rated on a scale of zero (0) to three (3):

- 0- No correlation
- 1- Low correlation
- 2- Moderate correlation
- 3- High correlation

Paper I: Pediatrics Physiotherapy I :CODE:PP 1
No. of Course Outcomes (CO)s/Competencies: 10
Programme Outcome - Course Outcome (PO-CO) Mapping

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi-icator	PO4 Professi-onal	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
PP1.1	Acquire assessment skills and physiotherapy management in obstructive diseases: emphysema, bronchial asthma, bronchiectasis, cystic fibrosis, inhaled foreign tracheal esophageal fistula	3	1	1	3	3	3	3
PP1.2	Acquire assessment and PT management skills in restrictive diseases: pneumonia, lung abscess, empyema, pulmonary tuberculosis, acute respiratory failure	3	1	1	3	3	3	3
PP1.3	Acquire skills in assessment in respiratory physiotherapy in NICU and PICU : meconium aspiration syndrome, respiratory distress syndrome, pulmonary fibrosis, atelectasis, ventilator associated pneumonia, respiratory failure	3	1	1	3	3	3	3
PP1.4	Describe and acquire skills in physiotherapy management in cardiac conditions acyanotic and cyanotic heart diseases, rheumatic heart diseases, cardiac arrhythmia and pericarditis, cardiac failure	3	1	1	3	3	3	3

PP1.5	Describe and acquire assessment skills and physiotherapy management in pulmonary and cardiac surgeries: pneumonectomy, lobectomy, pleural tapping, intercostal drainage, heart transplantation, pericarditis, cardiac failure	3	1	1	3	3	3	3
PP1.6	Describe assessment skills and management of congenital disorders - congenital talipes equinovarus. Congenital dislocation of hip, idiopathic scoliosis, congenital muscular torticollis, arthrogryposis, osteogenesis imperfecta	3	1	1	3	3	3	3
PP1.7	Describe physiotherapy management of infection and joints: osteomyelitis, Tom Smith arthritis, pyogenic arthritis, Pott's spine	3	3	2	3	3	3	3
PP1.8	Acquire knowledge and skill in physiotherapy for inflammatory conditions: Juvenile rheumatoid arthritis	3	1	3	3	3	3	3
PP1.9	Acquire knowledge and physiotherapy skill in traumatic conditions : limb and spinal fractures	3	1	2	3	3	3	3
PP1.10	Acquire knowledge of clinical decision making in prosthetic and orthotic prescription in pediatrics	3	1	1	3	3	3	3

PAPER I: PEDIATRIC PHYSIOTHERAPY I

Theory Contents:

1. **Physiotherapy in Obstructive diseases:** Emphysema, bronchial Asthma, Bronchiectasis, Cystic fibrosis, Inhaled foreign tracheal esophageal fistula.
2. **Physiotherapy in Restrictive diseases :** Pneumonia, Lung abscess, Empyema, Pulmonary Tuberculosis, acute respiratory distress syndrome.
3. **Respiratory Physiotherapy In NICU and PICU-** Meconium aspiration syndrome, respiratory distress syndrome, Pulmonary fibrosis, Atelectasis, Ventilator Associated Pneumonia , Respiratory failure.
4. **Physiotherapy in cardiac conditions-** Acynotic and cyanotic heart diseases, Rheumatic heart diseases, cardiac arrhythmia and pericarditis, cardiac failure.
5. **Pulmonary and cardiac surgeries-** Pneumonectomy, Lobectomy, Pleural tapping, Intercostal drainage, Heart transplantation, Pericardiocentesis, valve replacement surgery, congenital heart surgeries.
6. **Congenital disorders and Physiotherapy-** Congenital talipesequinovarus (CTEV), Congenital dislocation or dysplasia of hip, Idiopathic scoliosis, congenital muscular torticollis, arthrogryposis, osteogenesis imperfect,
7. **Infection of bones and joints and Physiotherapy-** Osteomyelitis, Tom smith arthritis, Pyogenic arthritis, Pott's spine
8. **Inflammatory conditions and Physiotherapy-**Juvenile rheumatic arthritis.
9. **Traumatic-**Limb and spinal fracture
10. Clinical decision making in prosthetic and orthotic prescription in pediatrics

Practical Contents:

1. Physiotherapy techniques in Obstructive diseases and Restrictive diseases (Bronchial hygiene therapy, Breathing exercises, Self and assisted cough techniques, Lung expansion therapy,)
2. Management of patient in NICU and PICU (Monitoring of ventilator and telemetry monitors, Broncial hygiene, prevention of complications associated with prolonged bed rest and patient on ventilator, Weaning techniques,)
3. Application of Pulmonary rehabilitation (Setting up of program, functioning as a pulmonary rehabilitation team member, Application and/or interpretation of maximal and submaximal exercise tolerance tests,
4. Cardiac rehabilitation
5. Exercise prescription.
6. Mobilization and manipulation
7. Stretching and strengthening
8. Deformity correction
9. Gait and balance training
10. Orthosis and prosthesis prescription.

Paper II: Paediatric Physiotherapy II: CODE:PP2
No. of Course Outcomes (CO)s/Competencies:10
Programme Outcome - Course Outcome (PO-CO) Mapping

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
PP2.1	Describe high risk infant-low birth weight, prematurity, spina bifida, seizures disorders	3	0	1	3	3	3	3
PP2.2	Acquire clinical decision-making skills in PT evaluation and management in central nervous system and peripheral nervous system: cerebral palsy, hydrocephalous, syringomyelia, facial palsy, obstetrics Erb's palsy	3	2	2	3	3	3	3
PP2.3	Apply physiotherapy in inherited disorders, traumatic injuries, infectious diseases: myopathies and dystrophies, traumatic brain injury, spinal cord injury, meningitis, encephalitis & GBS	3	1	2	3	3	3	3
PP2.4	Acquire skills of Physiotherapy in neurosurgical conditions: nerve repair and grafting, neurovascular surgeries, rhizotomies, stereotactic surgeries, surgeries for cerebral palsy, surgeries for poliomyelities	3	1	2	3	3	3	3
PP2.5	Describe and acquire physiotherapy skills in psychological and behavioural disorder: learning disabilities,	3	1	0	3	3	3	3

	autism 7 pervasive disorder, ADHD, developmental coordination disorder, perception and sensory disorder							
PP2.6	Apply evidence-based practice in clinical decision making in fitness and exercise prescription for special paediatric population: cerebral palsy, Down's syndrome, poilo, muscular Dystrophies, obesity	3	0	0	3	3	3	3
PP2.7	Acquire knowledge and skill of physiotherapy for physical and functional diagnosis in oncology and palliative care	3	0	1	3	3	3	3
PP2.8	Describe recent advances in paediatric physiotherapy	3	1	1	3	3	3	3
PP2.9	Acquire knowledge and skill of functional assessment in paediatric physiotherapy	3	1	2	3	3	3	3
PP2.10	Acquire knowledge and Physiotherapy skillsin current concept in paediatric science: Hippotherapy, kangaroo mother care, Botox and physiotherapy management, stem cell therapy and physiotherapy	3	1	2	3	3	3	3

PAPER II: PEDIATRIC PHYSIOTHERAPY II

Theory Contents:

1. **High risk infants-** Low birth weight, prematurity, spina bifida, seizures disorder.
2. **Physiotherapy in central nervous system and peripheral nervous system-** cerebral palsy, hydrocephalus, Syringomyelia, Facial palsy, Obstructed Erb's palsy..
3. **Physiotherapy in inherited disorders, traumatic injuries, infectious diseases-** Myopathies & Dystrophies, Traumatic brain injury, Spinal cord injury, Meningitis, Encephalitis & GBS.
4. **Neurosurgeries-** Nerve repair and grafting, Neurovascular surgeries, Rhizotomies, Stereotactic surgeries, Surgeries for cerebral palsy, Surgeries for poliomyelitis
5. **Psychological and behavioral disorder-** Learning disabilities, Autism & pervasive disorder, ADHD , Developmental Coordination Disorder, Perception and sensory disorder.
6. **Clinical decision making in fitness and exercise prescription for special pediatric population:** Cerebral palsy, Down's syndrome, Polio, Muscular dystrophies, Obesity
7. **Tumors and physiotherapy:** physical and functional diagnosis in oncology and palliative care
8. **Recent advances in pediatric physiotherapy**
9. **Functional assessment**
10. **Introduction of current concept in pediatric science-** Hippotherapy, Kangaroo mother care, Botox and physiotherapy management, stem cell therapy and physiotherapy management.

Practical Contents:

1. Physiotherapy techniques in neurological conditions- Stretching, strengthening, balance training, gait training, posture correction
2. Management of patient in NICU and PICU (Bed side physiotherapy, coma stimulation program, positioning)
3. Application of treatment- neurodevelopmental technique, sensory integration, CIMT
4. Handling techniques.
5. Early intervention therapy.
6. Integrated approaches in management of pediatric disorders.
7. Adaptive equipments prescription. (crutches, walkers, standing frames etc.)
8. Community based rehabilitation in pediatric physiotherapy.
9. Assessment of spasticity in upper extremity, lower extremity and trunk.
10. Bowel- bladder training planning and management.

CLINICAL POSTING: Pediatric OPD, PICU, NICU, Pediatric ward, Burns ward, Surgery ward, Onco Ward, Ortho ward.

Recommended Books:

1. Frownfelter D & Dean E Principles and practices of cardiopulmonary physical therapy. Third Edition. USA: Mosby;1996.
2. PryorJ. and Prasad A. Physiotherapy for Respiratory and Cardiac Problems. Third Edition.Edinburgh:Churchill Livingstone;2005.
3. Creenough A. Neonatal respiratory disorder. Second Edition. Great Britain: Arnold publication;1996.
4. Paul V,Bagga A. Ghai Essential Pediatrics. Eight Edition. Delhi: CBS publisher; 2016.
5. Behrman R. Nelson textbook of pediatrics. Eight Edition. Philadelphia: W.B. Saunders; 2003.
6. Dr. Agrawal M. Textbook of Pediatrics. Second Edition, New delhi: CBS publisher; 2017.
7. Tecklin J. Pediatric Physical Therapy. Fourth Edition, Philaldephia: Lippincott Williams &wilkins; 2008.
8. Campbell S. Physical Therapy for Children, Fourth Edition. USA: Elsevier saunders; 2012.
9. Walsh B. Prenatal and Pediatric Respiratory Care, Third Edition. USA: Elsevier saunders; 2009.
10. Dranch m. The Clinical Practice of Pediatric Physical Therapy.First Edition, Philaldephia: Lippincott Williams & Wilkins; 2008
11. Bret E. Pediatric Neurology. Third Edition. Edinburgh New York: churchillivingstones; 1997.
12. Kenneth, Swaiman. Pediatric Neurology(Principles & Practice) Third Edition. Toronto: ST, Loui; 1989.
13. BehrmanR . Nelson textbook of pediatrics., Eight Edition. Philadelphia, W.B. Saunders Co 2003.
14. Shepherd R. Physiotherapy in Pediatrics. Third Edition. London united kingdom:Elsevier health sciences; 1990.
15. Fenichel G. Neonatal Neurology. Fourth Edition. China: Churchill Livingstone Elsevier; 2007.
16. Miller F. Physical Therapy for Cerebral Palsy. Second Edition. New Delhi: Springer publication; 2007.
17. Bundy A, Murray E. Sensory Integration theory and practice. Second EditionPhilaldephiA: F.A. Devis; 2002.
18. UmphredD . Neurological Rehabilitation, Sixth Edition. USA: Elsevier; 2012.
19. Brett EM. Pediatric neurology, 3rded. New york; 1997.
20. Creenough A. Neonatal respiratory disorder, Great Britain; 1996.
21. Swaiman KF, Ashwal S, Ferriero D, Scor N. Pediatric neurology- Principles & Practice, (5thed). Toronto; 1989.
22. Ghai OP, Gupta PK, Paul VK. Essential pediatrics, 6th ed.. Delhi: 1994.

23. Kliegman RM , Behrman R, Jrnson H, Stannton B. Nelson textbook of pediatrics,(8thed), Philadelphia; 2007.
24. Oneill JA. Principles of Pediatricsurgery. 6thed: Mosby; 2006.
25. Glick PL. Pediatricsurgery secrets,1sted; 2000.
26. Menkes JH, Sarnat HB, Maria BL. Child neurology,7thed. Lippincott Williams & Wilkins; 2005.
27. Tunnessen WW. Signs and symptoms in pediatrics, 2ndedlippincottcompany: Philadelphia.
28. Agarwal M. Text books of pediatrics, 1stedBhalani publishers; 2008.
29. Wilhelm IJ. Physical therapy assessment in early infancy. New York: Churchill Livingstone; 1993.
30. Makenzie CF, Imle PC, Ciesla N. Chest physiotherapy in Intensive Care Unit. 2nded Baltimore Willams& Wilkins.
31. Cohen M, Sidney. Cardio pulmonary symptoms in physiotherapy. (Principles and practice in physical therapy), London, Churchil, Livingstone; 1988.
32. Schwartz MS, Andrasik F. Biofeed back - A practitioners guide. Guiford press; 2005.
33. Knott M, Voss DE. Proprioceptive neuromuscular facilitation: pattern and techniques. 2nd ed, New york. Harper and Row; 1972.
34. Pamela ME. Elements of pediatric physiotherapy. Churchill livingstone; 1993.
35. Garry LL. Play therapy- The art of the relationship.2nded; 2002.

Elective Subject 1
Breastfeeding and lactation Therapy
Content

	Percentage	Teaching Hours
Knowledge	50	30
Skill Training	50	30
	100%	60

S. No.	Competency	Learning Domain	Level in Miller's Pyramid	T-L Methods	Assessment Methods	Teaching Hours
1.	Breast Anatomy and Physiology	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning Student-Directed Learning, Simulation Based Learning, Self study	SAQ	02
2.	Technique of breastfeeding	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning Student-Directed Learning, Self study	SAQ	02
3.	Problems in breastfeeding	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning Student-Directed Learning Role Play, Self study	SAQ	02
4.	Infant assessment for breastfeeding	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning, Student Directed Learning, SelfStudy	SAQ	02
5.	Breastfeeding technique and baby positioning	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning, Student Directed Learning, Self Study	SAQ	07
6.	Management of feeding problems & Lactation therapy	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning Self-Directed Learning	SAQ	15

II. Skill Component

S. No.	Competency	Learning Domain	Level in Miller's Pyramid	T-L Methods	Assessment Methods	Teaching Hours
1.	Newborn assessment	S	SH	Demonstrations, Case Presentations, Practicals	Viva voce, OSCE/OSPE	10
2.	Oromotor and feeding assessment	S	SH	Demonstrations, Case Presentations, Practicals	Viva voce, OSCE/OSPE	05
3.	Breastfeeding positions & lactation therapy	S	SH	Demonstrations, Case Presentations, Practicals	Viva voce, OSCE/OSPE	15

Course Outcomes

S. No.	Themes	CO. No.	Inclusions
1.	Breast Anatomy and Physiology	CO 1.1	Discuss Anatomy of breast
		CO 1.2	Discuss the physiology of milk secretion
		CO 1.3	Milk secretion reflex
2.	Technique of breastfeeding	CO 2.1	Discuss technique of breastfeeding
		CO 2.2	Discuss effective latching
3.	Problems in breastfeeding	CO 3.1	Discuss problems in breastfeeding
		CO 3.2	Describe problems faced by premature infant for feeding
4.	Infant assessment for breastfeeding	CO 4.1	Discuss infant assessment
		CO 4.2	Discuss oromotor assessment for new born

		CO 4.3	Discuss assessment of neonatal reflexes
5.	Breastfeeding technique and baby positioning	CO 5.1	Discuss correct technique of breastfeeding
		CO 5.2	Describe advantages of breastfeeding technique
		CO 5.3	Discuss baby positioning for breastfeeding
6.	Management of feeding problems & Lactation therapy	CO 6.1	Discuss physiotherapy management of feeding problems
		CO 6.2	Discuss lactation therapy
		CO 6.3	Discuss problem wisemanagement

Scheme of Examination

Total 50 Marks Examination at end of session will be conducted

SR NO	HEAD OF ASSESSMENT	% WEIGHTAGE	Marks
Formative Examination			
1	Seminars	20 %	10
Summative Examination			
3	Theory	40%	20
4	Practical	40%	20

Elective Subject 2
Early Intervention Therapy and Handling Techniques
 Content

	Percentage	Teaching Hours
Knowledge	50	30
Skill Training	50	30
	100%	60

S. No	Competency	Learning Domain	Level in Miller's Pyramid	T-L Methods	Assessment Methods	Teaching Hours
1.	Introduction to Early intervention therapy	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning Student-Directed Learning, Simulation Based Learning, Self study	SAQ	02
2.	Causes of NICU stay and High-risk infant	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning Student-Directed Learning, Self study	SAQ	03
3.	Role of tactile, visual, vestibular, auditory, oromotor stimulation	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning Student-Directed Learning Role Play, Self study	SAQ	05
4.	Multidisciplinary approach and parental role	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning, Student Directed Learning, SelfStudy	SAQ	05
5.	Role of Early intervention in NICU	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning, Student Directed Learning, Self Study	SAQ	10
6.	Baby handling techniques	K	KH	Didactic Lectures, Seminar, Discussion Case Based Learning Self-Directed Learning	SAQ	05

II. Skill Component

S. No.	Competency	Learning Domain	Level in Miller's Pyramid	T-L Methods	Assessment Methods	Teaching Hours
1.	Newborn assessment	S	SH	Demonstrations, Case Presentations, Practicals	Viva voce, OSCE/OSPE	10
2.	Early intervention therapy	S	SH	Demonstrations, Case Presentations, Practicals	Viva voce, OSCE/OSPE	10
3.	Handling techniques	S	SH	Demonstrations, Case Presentations, Practicals	Viva voce, OSCE/OSPE	10

Course Outcomes

S. No.	Themes	CO. No.	Inclusions
1.	Introduction to Early intervention therapy	CO 1.1	Discuss early intervention therapy
		CO 1.2	Discuss importance of early intervention therapy
		CO 1.3	Indications of early intervention therapy
2.	Causes of NICU stay and High-risk infant	CO 2.1	Discuss high risk infant
		CO 2.2	Discuss causes of NICU stay
3.	Role of tactile, visual, vestibular, auditory, oromotor stimulation	CO 3.1	Discuss role of tactile, visual, vestibular, auditory
		CO 3.2	Describe oromotor stimulation
4.	Multidisciplinary approach and parental	CO 4.1	Discuss Multidisciplinary approach

	role	CO 4.2	Discuss parental role
		CO 4.3	Discuss assessment of neonatal reflexes
5.	Role of Early intervention in NICU	CO 5.1	Discuss role of early intervention in NICU
		CO 5.2	Describe advantages of early intervention therapy
6.	Baby handling techniques	CO 6.1	Discuss baby handling techniques
		CO 6.2	Discuss uses of handling techniques

Scheme of Examination

Total 50 Marks Examination at end of session will be conducted

SR NO	HEAD OF ASSESSMENT	% WEIGHTAGE	Marks
Formative Examination			
1	Seminars	20 %	10
Summative Examination			
3	Theory	40%	20
4	Practical	40%	20

Content of Theory paper will be as follows:

There will be only one paper of 20 marks of one hour duration details are as follows

The pattern of theory paper: Maximum Marks 20

4 Short answer questions (SAQs) 05 Marks Each- All Compulsory: 20 Marks

II YEAR
Master Of Physiotherapy In Community Based Rehabilitation
Code: CBR
Programme Outcomes (PO)s:

Programme Outcomes (PO)s: PO No.	Attributes	By the end of course student will have/be able to
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyse and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme

To be rated on a scale of zero (0) to three (3):

0- No correlation

1- Low correlation

2- Moderate correlation

3- High correlation

Paper I: COMMUNITY BASED REHABILITATION I:CODE:CBR1

No. of Course Outcomes (CO)s/Competencies: 9

Programme Outcome - Course Outcome (PO-CO) Mapping

PO-CO Mapping Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
CBR 1.1	Define health and fitness, describe levels of health and fitness	1	3	1	1	1	0	1
CBR 1.2	Understand and perform fitness related assessments in community. Apply principles of fitness training in various populations like, children's, adults and geriatric individuals.	3	3	2	2	0	1	1
CBR 1.3	Learn about basic concepts of rehabilitation. And gain insights of various aspects of community and Institute based rehabilitation process along with multi-disciplinary rehabilitation team and role of Physiotherapist.	1	3	3	3	0	1	1
CBR 1.4	Comprehend the structure of national healthcare delivery system and related community- based rehabilitation process and stakeholders for effective planning of CBR.	2	3	3	3	2	1	1

CBR 1.5	Know the roles of national and local healthcare agencies in rehabilitation process and highlight the role of Physiotherapists in their functioning.	0	3	2	2	0	1	2
CBR 1.6	Define and classify the disabilities, identifying the various communication strategies, policies and legislation of United Nations and Indian Government for information dispersal in community related to disability and rehabilitation with prevention	1	3	2	3	1	1	1
CBR 1.7	Perform the evaluation of disability and plan early intervention	0	2	2	3	1	1	1
CBR 1.8	Learn about various assistive devices and technologies to be used for improving stability and mobility in various physical disorders.	3	1	0	1	2	1	0
CBR 1.9	Identify and plan the home exercise programs for various physical disabilities.	3	1	1	1	3	3	1

PAPER I: COMMUNITY BASED REHABILITATION I

1. Health and Illness; Levels of Healthcare & Fitness
2. Principles and practice of fitness training for health promotion in community
3. Basic Concepts of rehabilitation and foundations of rehabilitation
4. Institute based rehabilitation services and multi-disciplinary approach.
5. Methodology of CBR with reference to National Health Delivery system.
6. Role of National Institutes, District Rehabilitation Centre and Primary Health Centre (with appropriate exposure).
7. Public awareness to the various disabilities. Communications, Message generation and dissipation.
8. National and UN (United Nations) Legislations for persons with disability.
9. Disability detection and early intervention.
10. Appropriate Technology, Assistive devices used for Stability & Mobility to enhance function
11. Home exercise programs for various classifications of disabilities.
12. Physical fitness, stress management through yoga and psychosomatic approaches.
13. Principles and practice of Rehabilitation and outreach services including domiciliary services
14. Role of Government in CBR, inter-sectoral programs and co-ordination. Implementation of the Act.
15. Role of Non-Government organizations in CBR.
16. Community dynamics & scope of community physiotherapy.
17. Physiotherapist as a Master Trainer in CBR.
18. Disaster management team ,Disaster cycle ,Role of physiotherapist in Disaster management , Advances in Disaster management

**Paper II: COMMUNITY PHYSIOTHERAPY II (Geriatrics, Women's
Health, Industrial Therapy): CODE: CBR 2**

No. of Course Outcomes (CO)s/Competencies:

PO-CO Mapping Course Outcomes (CO)s					Program Outcomes (PO)s			
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
CBR 2.1	To learn various theoretical bases of ageing process, and perform assessment of geriatric cases through various aspects.	3	1	3	3	2	2	1
CBR 2.2	To understand various physical and psychosomatic issues in elderly and prescribe the appropriate exercises for elderly patients.	3	2	3	3	3	3	3
CBR 2.3	Acquire the knowledge about various holistic approaches for geriatric patients.	3	2	2	3	2	3	2
CBR 2.4	To identify and use various electrotherapy modalities in geriatric care.	3	1	1	2	3	3	2
CBR 2.5	Assess and evaluate various health disorders in mother and child care, and apply Physiotherapeutic management.	3	2	3	3	3	3	3
CBR 2.6	Learn anatomical and physiological aspects of reproductive and women health.	3	1	0	1	3	3	1

CBR 2.7	Assess and diagnose various health issues in antenatal, natal and postnatal care and provide Physiotherapeutic management with exercise prescription. Evaluate and manage musculoskeletal pain and dysfunctions during pregnancy.	3	2	3	3	2	2	2
CBR 2.8	Assess, diagnose and manage musculoskeletal pain and dysfunction during post-menopausal care.	3	2	3	3	3	3	3
CBR 2.9	Evaluate the pelvic floor function and incontinence, provide exercise prescription for pelvic floor dysfunction.	3	2	3	3	3	3	3
CBR 2.10	To identify and classify various occupational hazards and issues in occupational health. To understand the approaches to maintain the industrial hygiene. Study the labor laws about vulnerable worker groups at national and international levels.	1	2	3	2	2	2	2

CBR 2.11	Learn principles of ergonomics, appropriate methods of material handling and lifting with postural correction measures, along with ergonomical workplace management and occupational stress management.	1	2	3	2	2	2	2
CBR 2.12	Assessment, diagnosis and exercise prescription in various physical disorders and problems in Cancer rehabilitation.	3	2	3	3	3	3	2
CBR 2.13	Evaluation of various wounds and ulcers, using appropriate Physiotherapeutic approaches for early healing and prevention.	3	2	3	3	3	3	2
CM 2.14	Familiarizing with community health issues by visiting various local healthcare delivery settings, including primary health centres, elderly care centres, women care centres, child care centres, etc. Working at artificial limb centre and studying the utility of various assistive devices and technologies in physical rehabilitation management.	3	3	3	3	2	3	3

PAPER II COMMUNITY BASED REHABILITATION II**(Geriatrics, Women's Health, Industrial Therapy) :**

1. Evaluation and theories of aging; Assessment of the elderly;
2. Exercise prescription for the elderly; Psychosocial and safety issues in elderly
3. Geriatric Rehabilitation
4. Holistic physiotherapy for the aged.
5. *Electrotherapy in geriatric conditions*
6. Physiotherapy in maternal and child health care.
7. Women's, Health: Women's reproductive health and health care;
8. Assessment and exercise prescription for antenatal and post- natal females
9. Diagnosis and treatment of musculoskeletal pain and dysfunction during pregnancy
10. Diagnosis and treatment of musculoskeletal pain and dysfunction during post menopause.
11. Treatment of Incontinence and Pelvic floor dysfunction; Special problems related to women
12. *Clinical reasoning and recent advances in Electrotherapy in obstetrics and gynecological conditions.*
13. Occupational Health, Occupational Hazards, Industrial Hygiene, Vulnerable workers group and labor law;
14. Industrial therapy, Injury prevention and returning the worker to productivity
15. Ergonomics, Principles, Issues related to hand tools, posture, material handling and lifting
16. Prevention of work related Injuries and redesigning workspace, Designing auditory and visual displays for workers; Occupational stress; Environmental Pollution - noise, vibration etc.
17. Physiotherapy role in industry - preventive, intervention, ergonomic and rehabilitative.
18. Recent Advances in Women's Health, Industrial Health and Geriatric Health in Community Physiotherapy.
19. Evidence Based Practice in Community Health.
20. Vocationalrehabilitation: Overview, Indications, Types of employment, Role of vocational counselor, Role of physiotherapist
21. Oncology rehabilitation: Overview, Types of cancer, screening and diagnosis, Treatment of cancer, Physiotherapy Management of cancer, Palliative care, Recent advances
22. Wound Healing: Overview, Stages of healing, Assessment of wound, Management of wound, Recent advances in wound healing

Practical contents

1. Assessment tools in Community Health
2. Antenatal postnatal OPD and IPD *Assessment and exercise prescription for antenatal and postnatal females* postmenopausal and post hysterectomy females,
3. Evaluation and Fitness training for geriatric population
- 4 Visit to Industries: Assessment of environmental health hazards and prevention Assessment of Occupational Health Hazards, Assessment Of Anthropometric Measures in Industrial Workers, Job Site Analysis, Functional Capacity Evaluation, Job Site Modifications, Ergonomic Evaluations and Workstation Modifications.
9. Health promotion and lifestyle modifications for various population
8. Assessment & Evaluation of Disabled Children.
11. Visit to NGO's / voluntary health organization
13. Assessment and exercise prescription for cancer patients
14. Wound assessment and use of different modalities for wound healing

Clinical Posting:**Second year**

Geriatric OPD, PHCs, Gynecology and Obstetrics OPD and IPD, Visits to Urban slums, Industry, Old Age Homes, Physical Rehabilitation Centers ,*artificial limb centre*

RECOMMENDED BOOKS:

1. Rebecca G. Stephenson, Linda J. O' Connor, "Obstetric And Gynecologic Care In Physical Therapy", 2000, Slack Incorporated 2 Edition.
2. Carolyn Kisner, Colby Allen Lynn, "Therapeutic Exercise Foundations And Techniques, 5th Edition.
3. Bo, Kari; Berghmans, Bary, "Evidence-Based Physical Therapy For The Pelvic Floor: Bridging Science And Clinical Practice", 2007, Churchill Livingstone (London)
4. Irion, Jean M.; Irion, Glenn, " Women's Health In Physical Therapy: Principle And Practices For Rehabilitation Professional", 2009, Lippincott Williams And Wilkins (Philadelphia).
5. Park, K. "Park's textbook of preventive and social medicine." (2007).
6. Pruthivsh S: Community based rehabilitation of persons with disabilities:2006
7. Michelle Lusardi; orthotic & prosthetics in rehabilitation: Woburn, USA:2000
8. Harder HG: Comprehensive Disability Management: 2005.
9. Demeter Stephen: Disability evaluation: 2nd ed: 2003.
10. Ratan Vidya: Community medicine viva in preventive and social medicine (Hygiene and public health) : 4th ed: 2000.

11. Compton Ann: Community care for health professionals: 2nd ed: 2000.
12. Higgs Joy: Clinical reasoning in the health professions: 2nd ed: 2000.
13. Dhaar G.M.: Foundations of community medicine: 2006.
14. Braddom R.L.: Handbook of physical medicine and rehabilitation: 2006.
15. Sunder S. Textbook of rehabilitation. Jaypee Brothers, Medical Publishers Pvt. Limited; 2008.
16. Guccione AA, Avers D, Wong R. Geriatric Physical Therapy-eBook. Elsevier Health Sciences; 2011 Mar 7.
17. Compton Ann: Community care for health professionals: 2nd ed: 2000.
18. Sapsford R, Bullock-Saxton J, Markwell S, editors. Women's health: a textbook for physiotherapists. WB Saunders; 1998.
19. Polden M, Mantle J. Physiotherapy in obstetrics and gynaecology. Elsevier Health Sciences; 1990.
20. Brotzman S. Brent: Clinical Orthopaedic Rehabilitation, 2nd Ed, MosbyInc 11830 Westline Industrial Drive St. Louis, 2003.
21. Park K: Parks Textbook of preventive and social medicine: Publisher Bhanot, 2007
22. Ratan Vidya: Community medicine viva in preventive and social medicine (Hygiene and public health) : 4th ed: 2000.
23. Khatri: Basics of Electrotherapy Jaypee Brothers, Medical Publishers, 2003
24. Clayton EB, Forster A, Palastanga N. Clayton's electrotherapy: theory and practice. Baillière Tindall; 1981.
25. Bonder BR, Dal Bello-Haas V. Functional performance in older adults. FA Davis; 2017 Dec 4
26. Menckel Ewa: Evaluation in occupational health practice : 1999
27. Hendrick David J: Occupational disorders of the lung: 2002.
28. Snashall David: ABC of work related disorders: 1997.
29. Key GL, editor. Industrial therapy. Mosby Incorporated; 1995.
30. Park, K. "Park's textbook of preventive and social medicine." (2007).
31. Gardiner MD. The principles of exercise therapy. Bell; 1957. 1
32. Detels R, Holland WW, Knox GE, editors. Oxford textbook of public health. New York: Oxford University Press; Jan 2002.
33. Brotzman SB, Manske RC. Clinical Orthopaedic Rehabilitation E-Book: An Evidence-Based Approach-Expert Consult. Elsevier Health Sciences; 2011 May 6.
34. David Hober: Health promotion and aging, 4th ed., Springer, Newyork 2007.
35. McArdle WD, Katch FI, Katch VL. Exercise physiology: nutrition, energy, and human performance. Lippincott Williams & Wilkins; 2010.

36. Comoss P, Hillegass EA, Sadowsky HS, Jewell DV. Essentials of Cardiopulmonary Physical Therapy. Journal of Cardiopulmonary Rehabilitation and Prevention. 1994 Mar 1;14(2):138.
37. Jacobs K, editor. Ergonomics for therapists. Elsevier Health sciences; 2008.
38. Dhaar GM, Robbani I. Foundations of community medicine. 1st ed., Elsevier, New Delhi, 2006.
39. Edeleman C.L.: Health promotion throughout Lifespan, 8th ed., Elsevier, Newyork. 2014.
40. ACSM's Guidelines for Exercise Testing and Prescription, 9th edition. Lippincott Williams and Wilkins.2013.
41. Subhash Khatri:Basics Of Orthopedic Physiotherapy,Jaypee,New Delhi,2013.
42. Geriatric Rehabilitation Manual By Timothy L. Kauffman (1999)
43. Manual Of Geriatric Rehabilitation By David X. Cifu (2003)
44. Functional Fitness For Older Adults By Patricia A. Brill (2004)
45. Developing Cultural Competence In Physical Therapy Practice, Jill Black Lattanzi, Larry D. Purnell (2006 F.A. Davis).
46. Physiotherapy In The Community , Gibson, Ann. 1988, Woodhead-Faulkner (Cambridge, Wolfeboro, N.H., USA)
47. Community Care For Health Professionals, Ann Crompton And Mary Ashwin, (Butterworth - Heinemann 2000)
48. Rehabilitation. 2.Disabled Persons. 3.Community Health Services. 4.Health Policy. 5.Human Rights.6.Social Justice. 7.Consumer Participation. 8.Guidelines.
49. WHO Library Cataloguing-in-Publication Data
50. I.World Health Organization. II.UNESCO.
51. III.International Labour Organisation. Iv.International Disability Development Consortium.
52. © World Health Organization 2010.

Elective Subject 1**APPLICATION OF YOGA IN PHYSIOTHERAPY**

Course Outcome:

CO1: To learn Traditional Indian Yoga systems and the physiology of Yoga Systems.

CO2: Will gain in-depth understanding of fundamental and applied scientific concepts and methods of Yogic Science and allied Science

CO3: To explain underlying mechanism of changes in body due to Yoga practice

CO4: To teach the concept of yoga and psychology, personality development and stress management

CO5: To teach the concept of Yoga education and values

Sr. No.	Content	Theory (25)	Practical (35)
	General Introduction to YOGA	02	
	Brief about origin of Yoga History and Development of Yoga	01	—
	Definition of Yoga, Aims and Objectives of Yoga Principles and Importance of Yoga	01	—
	Foundations and Methods of Yoga therapy	07	09
	Classification of Yoga/Types of Yoga	01	—
	Effect of Yoga on Musculoskeletal, Neurological and Cardio-respiratory conditions, Women's health- Antenatal Post natal health and Geriatrics	04	03
	Meaning of Pranayama, its types and principles. (Anulomvilom, Bhastrika, Bhramri, Nadishuddhi, Kapalbharti, Omkar, Suryabhedana), Difference between Pranayama and deep breathing	01	03

	Introduction to Suryanamaskar	01	03
	Principles of Yogic Therapy on Conditions	04	05
	Stress –Etiological (Causes) Clinical Features (Signs & Symptoms) and Principles of Yogic Therapy in Stress Disorders.	01	—
	Definition, Etiological (Causes) Clinical Features (Signs & Symptoms) and Yogic Treatment of Disorders: Bronchial Asthma, Bronchitis, Hypertension, Hypothyroidism.	01	01
	Definition, Etiological (Causes) Clinical Features (Signs & Symptoms) and Yogic Treatment of Disorders: Arthritis, Cervical Spondylosis, Lumbago, Sciatica, Migraine, Insomnia, Indigestion, Constipation, Ulcer, Obesity, and Diabetes.	01	02
	Issues and Problems in Yoga Therapeutics – Yoga as an Adjustment Therapy –Research Findings on Therapeutic Applications of Yoga.	01	02
	Applied YOGA	12	21
	Yoga Asnas: Asnas in Standing Asnas in Sitting Asnas in Prone Asnas in Supine	06	10
	Yoga and Health (Definition of Health, Guidelines for Health in Yoga) –Health Related Fitness and Yoga –Yoga and Aging - Yoga for Handicapped people –Yoga as a remedy for addictions –Yoga and Social problems.	02	04

	Yoga and Sports - Sports as an instinctive need - Special recognition for sports- Varieties of sports - Efficiency in basic skills for sports - Psychophysiological basis for the improvement of sports career and the role of Yogic practices to enrich the qualities required for different sports.	02	03
	Yoga and Executive Jobs - Problems of Executives - life of constant stress and strain, anxiety, conflicts resulting in fatigue - Use of artificial stimulants and their side effects - contribution of Yoga to solve the problems of the Executives.	01	04
	Recent Advances	01	—

Recommended Textbooks:

1. Timothy B McCall: Yoga as Medicine: The Yogic Prescription for Health and Healing 2007: Bantam Publisher: 1st Edition
2. PP Mohanty, Monalisa Pattnaik: Managing Common Musculoskeletal Conditions by Physiotherapy and Yoga: Jaypee Brothers Medical Publishers Pvt. Limited, 01-Dec-2008
3. Arlene A. Schmid: Yoga Therapy for Stroke: A Handbook for Yoga Therapists and Healthcare Professionals: Singing Dragon Publisher 2018: 1st Edition
4. Prakash Malshe: Medical Understanding of Yoga: Jaypee Brothers Medical Publishers: 3rd Edition
5. M. M. Gore: Anatomy and Physiology of Yogic Practices: Understanding of the Yogic Concepts and Physiological Mechanism of the Yogic Practices: Motilal Banarsidass Publishing House: 8th Edition

RECOMMENDED JOURNAL:

1. Journal of Yoga and Physiotherapy
2. Journal of Yoga, Physical Therapy and Rehabilitation

Elective Subject 2**ONCO-PHYSIOTHERAPY****Course Outcomes:**

CO1: Provide students with detailed training in oncology physiotherapy theory and Practice, including the use of other physiotherapy modalities.

CO2: Ensure that students practice from oncology physiotherapy, whilst integrating medical information as appropriate, to ensure that graduates are safe and competent in the practice of oncology physiotherapy universally.

CO3: Provide students with quality clinical experience in hospitals

CO4: Provide students with opportunities for research in oncology physiotherapy

CO5: To inculcate the quality of patient care handling with ethical values.

S.N.	Content	HOURS	
		Theory (30)	Practical(30)
	Introduction to Cancer	02	
	Oncology- Epidemiology, classification, symptomatology, pathophysiology and management of different oncological condition.	02	—
	Assessments aspect of cancer patients	03	05
	Clinical measures of cardiorespiratory fitness in cancer patients, Outcome measures used in oncological physiotherapy- for Cognitive impairment and disability, Focal disabilities, Global measures of disability, Motor impairment, ADL and extended ADL tests, quality of life, Pain scales, stress and anxiety scale.	03	05
	Physiotherapy Management of Cancers	15	17
	Physiotherapy interventions in Head Neck Cancer including oral cancers.	02	05
	Physiotherapy interventions in Breast and Reproductive cancer, Exercises for prevention and treatment of prostate cancer	05	05
	Physiotherapy intervention for Bone tumors	03	02

	Chemotherapy and post chemotherapy Physiotherapy intervention including Neuro-musculoskeletal complications	01	02
	Radiotherapy and post radiotherapy Physiotherapy management of Neuro musculoskeletal complications	01	02
	Physiotherapy management of Lung and respiratory tract cancer	03	01
	Palliative care and Rehabilitation	06	05
	Supportive, palliative therapy and hospice care in cancer patients	02	03
	Rehabilitation act and financial aid for cancer patients	01	—
	Institutional & community based rehabilitation for oncological patients, Self-treatment, Exercise precaution, management and exercise prescription for home program, Report writing.	03	02
	Recent advances	03	03
	Recent advances in oncological physiotherapy: Muscle reeducation approach, Biofeedback training, Sensory rehabilitation, Myofascial release technique, Inhibitory and facilitation technique, Functional re-education, skill training, A.D.L training in oncological conditions. Balance training 20 FES, NMES, Biofeedback, Various equipment used in oncology physiotherapy	03	03

Recommended Textbooks:

1. Cancer Rehabilitation: Principles and Practice by Michael Stubblefield & Michael O'Dell
1st Edition
2. Cancer Rehabilitation and Survivorship: Trans disciplinary approaches to Personalized care by Joanne L & Patricia Schmitt 1st Edition
3. Palliative Care & Rehabilitation of Cancer Patients (Cancer Treatment and research) by Charles F. VonGunten 1st edition
4. Textbook of Palliative Medicine and Supportive Care by Eduino Bruera 2nd edition
5. ACSM's Guide to Exercise and Cancer survivorship By American College of Sports medicine, Melinda Irvin

6. Fatigue in Cancer: A Multidimensional Approach by Maryl Lynne Winningham, Margaret Barton Burke
7. The Concise Guide to Physiotherapy - Volume 2: Treatment edited by Tim Ainslie. 113
8. Innovations in Cancer and Palliative Care Education by Lorna Foyle, Janis Hostad.
9. Practical Evidence-based Physiotherapy By Rob Herbert 1st edition
10. Oxford Textbook of Palliative Medicine By Geoffrey Hanks, Nathan I. Cherny, Nicholas A. Christakis, Stein Kaasa 4th Edition
11. Legal Aspects of Physiotherapy By Bridgit Dimond 2nd Edition
12. Rehabilitation and palliation of cancer patients: (Patient care) By Herrmann Delbrück 1st edition
13. Lymphedema: A Concise Compendium of Theory and Practice By Byung Boong Lee, John Bergan, Stanley G. Rockson 1st edition
14. Rehabilitation in Cancer Care by Rankin 1st Edition
15. Cancer Rehabilitation: An Introduction for Physiotherapists and Allied Professions by Patricia A. Downie 1st Edition

RECOMMENDED JOURNALS

1. Physical Therapy (APTA, America)
2. Physiotherapy (CSP, London)
3. American Journal of Physical Medicine & Rehabilitation
4. Physiotherapy (Canada)
5. Australian Journal Of Physiotherapy

II Year
Master of Physiotherapy in Sports Physiotherapy

Paper-I Sports Physiotherapy-I

Programme Outcome – Course Outcome (POCO) Mapping
Master of Physiotherapy in Sports Physiotherapy
Code: SP

Programme Outcomes (PO) s:

PO No.	Attributes	By the end of course student will have/be able to
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Acts as leader and member of the health care team and system with capabilities to collect, analyse and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme

To be rated on a scale of zero (0) to three (3):

- 4- No correlation
- 5- Low correlation
- 6- Moderate correlation
- 7- High correlation

Paper I: Sports Physiotherapy – I

Code – SP1

No. of Course Outcomes (CO) s/Competencies: 12
PO-CO Mapping

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Commu- nicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life- long Learner
CR1.1	Introduction to sports Medicine & exercise physiology	3	1	1	3	2	3	3
CR1.2	Indoor and outdoor games – Equipment's, Rules & Regulations	1	2	2	3	2	3	3
CR1.3	Body Composition and Analysis	3	1	2	3	3	3	3
CR1.4	Biomechanics of Sports Injuries	3	2	1	3	3	3	3
CR1.5	Fitness and Its Assessment in Sports	3	2	2	3	3	3	3
CR1.6	Sports specific Training principles	3	2	1	3	3	3	3
CR1.7	Protective, Adaptive and Assistive equipment's in sports	3	2	2	3	3	3	3
CR1.8	Introduction to sports soft tissue injuries	3	1	1	3	3	3	3
CR1.9	Introduction to sports Hard tissue injuries	3	1	1	3	3	3	3
CR1.10	Psychological aspects in Sports, Doping & Performance enhancing drugs	3	2	2	3	3	3	3
CR1.11	Head injury in Sports, Overuse	3	2	2	3	3	3	3

	injuries and injury prevention in sports							
CR1.12	Specific issues in females, paediatric & elderly athletes	3	2	3	3	3	3	3
CR1.13	On-field Assessment & Decision Making	3	2	3	3	3	3	3
CR1.14	Pharmacotherapeutics and its relevance with physiotherapy	3	2	3	3	3	3	3

Sr. No.	Topic	Didactic Hours (200)
1	Introduction to Sports sciences & exercise physiology	5 Hrs
2	Terminology, methodology, rules, equipment, infrastructure of some common sports like Cricket, Football, Basketball, Tennis, Hockey, Track & Field, Aquatic Sports.	10Hrs
3	Body composition & analysis. Kinanthropometric evaluation	5Hrs
4	Principles of Sports Biomechanics & Biomechanics of injury. Physics in sports: Biomechanics Of Running, Throwing, Swimming, Jumping. Advances In Biomechanics assessment: 2D, 3D	20 Hrs
5	Advanced Cardio Respiratory Exercise Physiology. Kinesiological EMG	10 Hrs
6	Principles of Strength training	5 Hrs
7	Fitness & strength testing in sports	10 Hrs
8	Sports specific conditioning, Sports specific Agility training	15 Hrs

9	Protective equipments in Sports including Orthotic aids. Functional Bandages - Bandaging techniques and material, Indications, contraindications for athletic shoes and the modifications	05 Hrs
10	Introduction to Sports Medicine	5 Hrs
11	Introduction to Sports Injuries, Principles of Tissue healing	5 Hrs
12	Soft tissue injuries of Lower limb (Hip, thigh, Knee, leg, ankle, foot problems & injuries)	10 Hrs
13	Soft tissue injuries of Upper limb (Shoulder, arm, elbow, forearm, wrist, hand problems & injuries)	10 Hrs
14	Fractures & Dislocations , Spinal injuries	10 Hrs
15	Psychological aspects in Sports, Doping & performance enhancing drugs.	10 Hrs
16	Introduction to Sports Medicine, Introduction to Sports Injuries	10 Hrs
17	Head injury in sports, Overuse injuries in Sports	10 Hrs
18	Specific issues in Females, pediatric & elderly athletes	10 Hrs
19	On-field assessment & decision making	10 Hrs
20	Injury prevention in sports	10 Hrs
21	Pharmacotherapeutics and its relevance with physiotherapy	05 Hrs

Practical Contents Paper -I

Sr. No.	Topic	Hrs (350)
1	Surface anatomy • Palpation of soft tissue & Bony landmarks of Upper extremity • Palpation of soft tissue & Bony landmarks of Lower extremity • Palpation of soft tissue & Bony landmarks of spinal column • Clinical and video graphic assessment of movement • Movement assessment (ROM, flexibility and strength) in child, adult and elderly	60 Hrs
2	Physical Assessment - History, physical examination, special tests and outcome. Assessment of lower limb: Pelvis, hip, thigh, knee, leg, ankle and foot, Assessment of upper limb: Shoulder girdle, shoulder, arm, elbow, forearm, wrist and hand	60 Hrs
3	Evaluation of Physical Fitness: Assessment of strength, power, endurance (muscular & cardiac), VO2 max, flexibility, reaction time and pulmonary functions. Kinanthropometric evaluation	50 Hrs
4	On and Off the field evaluation of head, neck and spine injuries in contact sports like football, field hockey, boxing and wrestling. Emergency on field assessment and management for head neck and spine injuries in sports, Basic life support.	80 Hrs
5	Orthotics and Prosthetics prescription, checkouts and Training.	40 Hrs
6	Compression and Traction Intervention/procedure/techniques. Application of electro physical agents	30 Hrs
7	Application of Kinesiotaping in various musculoskeletal impairments to improve joint alignment, Kinesiotaping for muscles and fascia to improve mobility and function	30 Hrs

Paper I: Sports Physiotherapy II

Code – SP2

No. of Course Outcomes (CO)s/Competencies: 11
PO-CO Mapping

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Commu- nicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life- long Learner
CR1.1	Principles of sports injury management	3	3	2	3	3	3	3
CR1.2	Management of sports emergencies, Acute Sports Injuries	3	2	2	3	3	3	3
CR1.3	Pharmacological management of sports injuries	1	2	2	3	3	3	3
CR1.4	Fluid Balance and electrolyte Disturbance correction	3	1	1	3	3	3	3
CR1.5	Surgical management of sports injuries	3	2	2	3	3	3	3
CR1.6	Sports injuries, Overuse injuries and their sports specific management	3	1	1	3	3	3	3
CR1.7	Electrophysiological agents in sports rehabilitation	3	2	2	3	3	3	3
CR1.8	Manual therapy techniques in sports physiotherapy and Rehabilitation of sports injuries	3	1	1	3	2	3	3
CR1.9	Management of special population – Paraplegic &	3	2	2	3	3	3	3

	Physically challenged athletes							
CR1.10	Sports medicine coverage during sports events	3	2	1	3	3	3	3
CR1.11	Travelling with sports team as a physiotherapist	3	2	2	3	2	1	3
CR1.12	Musculoskeletal Screening of Athletes – Pre-Season, In-Season and Post-season	3	2	1	3	3	3	3

Paper-II Sports Physiotherapy-II

Sr. No.	Topic	Didactic Hours (200)
1	Principles of Sports Injury Management	5 Hrs
2	Management of Sporting Emergencies including emergency procedures, advanced assessment skills, care & management	15 Hrs
3	Initial management of Acute sports injuries. Bleeding, Splinting, Stretcher use-Handling and transfer. Cardio pulmonary Resuscitation; Shock management, Internal and External	15 Hrs
4	Pharmacological management of Sports injuries.	15 Hrs
5	Fluid Balance & electrolyte disturbance correction. Heat stroke and Heat illness	10 Hrs
6	Overview of Surgical management (including Arthroscopic surgery) for Sports injuries.	10 Hrs
7	Injury & Sports specific management	15 Hrs
8	Management of overuse injuries in sports	15 Hrs
9	Electrophysiological Agents in sports rehabilitation	15 Hrs

10	Rehabilitation of Sports injuries.	20 Hrs
11	Manual Therapy Techniques in Sports Physiotherapy	20 Hrs
12	Management of special population - paraplegic & physically challenged athletes	15 Hrs
13	Sports medicine coverage during Sports events	10 Hrs
14	Traveling with a Sports team as a Physiotherapist.	10 Hrs
15	Musculoskeletal screening of Athletes - Pre season, In-season & Post -season	10 Hrs

Practical Contents Paper -II:

Sr. No.	Topic	Hrs (350)
1	Fitness evaluation of biometric abilities, performance mapping, preadolescent and post adolescent injury assessment and management for Pediatric & Adolescent	50 Hrs
2	Fitness evaluation of biometric abilities, performance mapping, preadolescent and post adolescent injury assessment and management for Geriatric and Female Athlete's	50 Hrs
3	Assessment of psychological indicators of sports performance using Stress inventory scales and achievement motivation scales	40 Hrs
4	Assessment of sports injuries , case documentation and presentations on medical aspects of sports injuries	80 Hrs
5	Case presentations on pain assessment using biopsychosocial model of pain , use of questionnaires in pain assessment, impact of patient education on pain perception, behavioral modification to pain	50 Hrs
6	Comprehensive fitness evaluation of school and college level athletes and prepare programs for their sports and/or health specific fitness, effects of contextual motor tasks on skill acquisition and learning	30 Hrs

7	Performance assessment: • Evaluate and prescribe Resistance training (weight training) on healthy and assess the response • Evaluate and prescribe high intensity training (functional training) on healthy and assess the response • Evaluate and prescribe aerobic training on healthy and assess the response. Sports biomechanics 2 D motion analysis of different sports movements including running, football, badminton etc. Technique analysis for badminton serves, football kick etc. to identify any trainable factors for injury prevention in Novice, Sub-elite and Elite players	30 Hrs
8	Skills Practice on mannequin: Adult and child CPR	20 Hrs

CLINICAL POSTING

Acute Care & Rehabilitation in Sports Injuries: Indoor and Outdoor patients.

Students will undergo Field Training with Sportsmen of the University.

They will attend Sports clinic in the College/hospital.

Field Training at other sports academy/centers.

The students will accompany sports team for National/State/University level sporting competitions.

Students will not refuse clinical postings even during the vacations.

Scheme of Examination**I Year MPT**

Sr. No.		Total Marks	Minimum Marks required for Passing
1.	Theory	300	150
2.	Practical	150	75

Theory Examination

- There shall be three theory papers of 100 marks each
- Each paper shall be of three hours duration
- All the questions are compulsory

Section I	Long Essay Question 1 x 20	20 Marks
	Short Essay Questions 3 x 10	30 Marks
Section II	Long Essay Question 1 x 20	20 Marks
	Short Essay Questions 3 x 10	30 Marks

Practical Examination - 150 Marks

Short Case I - Speciality	50marks
Short Case II - General	50marks
Spots(Based Screening of various Systems)	30marks
Teaching skills	20 marks

II Year MPT

Sr. No.		Total Marks	Minimum Marks required for Passing
1.	Theory	200	100
2.	Practical	350	175

Theory Examination

- There shall be two theory papers of 100 marks each
- Each paper shall be of three hours duration
- All the questions are compulsory

Qn.1	Long Answer Question	1 x30	30 Marks
Qn.2	Long Answer Question 1 x 30	30 Marks	30 Marks
Qn.3	Solve any four out of five SAQ	4 X 10	40 Marks

Practical Examination - 350 Marks

Long Case Speciality I	150 Marks
Long Case Speciality II	150 Marks
Dissertation VIVA	50 Marks
Total	350 Marks

Recommended Books & Journals

Books

- 1) Orthopedic Sports Medicine, DeleeDrez Miller, 3rd edition: 2009, Saunders Elsevier
- 2) Sports Physiotherapy, Maria Zuluaga, Christopher Briggs, John Carlisle.
- 3) Sports Injury Assessment and Management, David C Reid.
- 4) Orthopedic and sports physical therapy, Terry R.Macone:3rd edition, 1997: Mosby.
- 5) Post surgical orthopedic sports rehabilitation knee and shoulder, Robert C. Maske: 2006: Mosby Elsevier.
- 6) Sports injuries diagnosis and management, Christopher N. Norris: 2nd & 3rd edition: 1998: BH.
- 7) Sports medicine secrets, Hanley and beltors, 2nd edition: 2001: jaypee.
- 8) Sports injuries prevention and their treatment, Lass Peterson: 1st edition: 2001: Martin dunitz.
- 9) Sports medicine problem and practical management, Eugene sherry, 1st edition:1997: GMM.
- 10) Exercise and sports science, Garrett, Kirkendall: 2000: Lippincott Williams And Wilkins.
- 11) ACSM'S essentials of sports medicine, Robert E. salhi, fredymassimino: 1997: Mosby.
- 12) Sports medicine in primary care , Rob jonson M.D: 2000: saunders company.
- 13) Morris B. Mellion: Office Sports Medicine, Hanley & Belfus.
- 14) Richard B. Birrer: Sports Medicine for the primary care Physician, CRC Press.
- 15) Torg, Welsh & Shephard: Current Therapy in Sports Medicine III - Mosby
- 16) Zulunga et al: Sports Physiotherapy, W.B. Saunders
- 17) Brukner and Khan: Clinical Sports Medicine, McGraw Hill
- 18) Reed: Sports Injuries - Assessment and Rehabilitation, W.B. Saunders
- 19) Gould: Orthopaedic Sports Physical Therapy, Mosby
- 20) C. Norris: Sports Injuries - Diagnosis and Management for Physiotherapists, Heinmann
- 21) D. Kulund: The Injured Athlete, Lippincott
- 22) Nicholas Hershman: Vol. I The Upper Extremity in Sports Medicine.
 - a. Vol. II The Lower Extremity and Spine in Sports Medicine.
 - b. Vol. III The Lower Extremity and Spine in Sports Medicine.
 - c. Mosby.
- 23) Lee & Dress: Orthopaedic Sports Medicine - W.B Saunders
- 24) K. Park: Preventive and Social Medicine - Banarsi Dass Bhanot - Jabalpur

- 25) Fu and Stone: Sports Injuries: Mechanism, Prevention and Treatment, Williams and Wilkins
- 26) Scuderi, McCann, Bruno: Sports Medicine – Principles of Primary Care, Mosby
- 27) Lars Peterson and Per Renstron: Sports Injuries – Their prevention and treatment, Dunitz
- 28) Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders
- 29) White and Punjabi – Biomechanics of Spine – Lippincott
- 30) D. Kulund: The Injured Athlete, Lippincott.
- 31) Verma and Mokha: Nutrition, Exercise and Weight Reduction, Exercise Science Publication Society
- 32) Grafiti: Psychology in Contemporary Sports, Prentice Hall.

Journals

- 1) American Journal of Sports Exercises
- 2) Journal of Orthopaedic & Sports Physical Therapy (JOSPT).
- 3) American Journal of Sports Medicine.
- 4) British Journal of Sports Medicine.
- 5) American Journal of Sports Exercises.

DISSERTATION

1. Every candidate pursuing M.P.T 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 a dissertation.
2. The dissertation is aimed to train a postgraduate student in research method and techniques. It includes identification of a problem, formation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, statistical analysis of results, discussion and drawing conclusion.
3. Every candidate shall submit to the Registrar of the University in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within four 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.

4. Such synopsis will be reviewed and the dissertation topic will be registered by the University.
5. Thesis Topics will be submitted 4 months after admission.
6. The ethics committee (College level) approval is mandatory.
7. Complete dissertation should be submitted 4 months before final examination.
8. The dissertation should be written under the following headings:
 - i. Introduction
 - ii. Need for the study
 - iii. Aims or Objectives of study
 - iv. Review of Literature
 - v. Material and Methods
 - vi. Results
 - vii. Discussion
 - viii. Conclusion
 - ix. Limitation
 - x. Clinical Implication- Suggestion
 - xi. Summary
 - xii. Tables
 - xiii. Annexure
9. The written text of dissertation shall be not less than 50 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"), Times New Roman, size 12, and bound properly. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department and head of the institution.
10. Dissertation thus prepared shall be submitted to the controller of Examination, six months before final examination on or before the dates notified by the University.
11. The dissertation shall be valued by examiners appointed by the University. Approval of dissertation work is an essential precondition for a candidate to appear in the University examination.
12. The presentation and submission of dissertation will be as per the guidelines set by the Controller of Examinations.

Elective Subject 1**SPORTS PHYSIOTHERAPY
Physical Activity & Public Health****Theory Total Teaching Hours: 30****Course objectives:****General Objectives:**

The course aims at creating consciousness among the students towards health, fitness and wellness and in developing and maintaining a healthy life style. Health and physical activity constitute are major components of a healthy lifestyle and general health promotion and protection. The knowledge and experience gained from health and physical activity course will enable students to make informed decisions about their health as it relates to quality of life and longevity.

Specific Objectives:

Upon completion of this course, the student should be able to:

1. Understand the fundamental concepts of physical education, health and fitness.
2. Understand the health-related benefits of physical activity and risks associated with physical inactivity
3. Develop a general understanding on nutrition, first aid and stress management.
4. Comprehend the principles specific to attaining and maintaining good health and fitness throughout the lifespan

Course contents:

Unit I: Physical Activity & Health 10 hrs

1. Human anatomy & physiology
2. Health and Healthcare delivery system
3. Healthcare delivery system in Developing and Developed Countries
4. Basics of Nutrition
5. Physical fitness
6. Life style disorders

Unit II: Physical Activity & Fitness 10 hours

1. What is Physical activity, exercise, physical fitness.
2. Measurement of Physical Activity in individuals
3. Physical Activity – Theoretical Perspective: Self-determination, trans theoretical
4. Physical Activity and mental health – Body image, depression, problem with exercise
5. Barriers & Facilitators of Physical Activity

Unit III: Yoga & Stress Management 10 hours

1. Definition
2. Types of asanas and their effects
3. Benefits of yoga to various body systems
4. Benefits of yoga in for stress management
5. Yoga and life style disorders

Reference Books:

1. ACSM's "Health Related Physical Fitness Assessment Manual Lippincott Williams and Walkins USA
2. Principles of Physical Education: Com. Philadelphia: W.B.Sounders
3. Yoga and Rehabilitation - Nilima Patel
3. Psychology of physical activity. London: Biddle, S. J. H., & Mutrie, N.
4. B.C. Rai. Health Education and Hygiene Published by Prakashan Kendra
5. Concepts of Fitness and Welfare: Corbin.Charles Beetal. C.
6. Health and Physical Education. Puri. K. Chandra. S.S.

Elective Subject 2**SPORTS PHYSIOTHERAPY
EMERGENCY MEDICINE AND AIRWAYS MANAGEMENT****Theory Total Teaching Hours: 30****Course objectives:**

General Objectives:

Upon completion of the course the student is expected to:

- a. Demonstrate knowledge, clinical and technical skills and decision-making capabilities pertinent to the management of various emergency conditions.
- b. Develop a systemic approach to the assessment and treatment of the acutely ill/injured patient.
- c. Develop appropriate knowledge of therapeutic interventions and procedural skills required in an emergency medicine department.

Specific Objectives

At the completion of the course the student will have acquired the competencies required to function effectively as a medical expert in dealing and assisting with various medical emergencies, a collaborator to participate effectively in an interdisciplinary healthcare team, a manager to effectively utilise hospital resources for patient management and a professional by demonstrating commitment towards patients and a lifelong learner through continuous learning.

Course contents:**Unit I: Introduction to Emergency Services****5 hours**

1. Structure and organisation of a hospital, its departments and functioning of an ideal emergency medical department.
2. Concept of Triage, multiple and mass casualties.
3. Ambulance services: A. Preparation:
 - i. Emergency medical equipment- basic supplies, patient transfer equipment, airways, suction equipment, artificial ventilation device, oxygen inhalation device, cardiac compression equipment, basic wound care supplies, basic medications, splints, automated external defibrillator (AED).
 - ii. Non-medical- personal safety equipment, pre-planned routes and street maps.

B. Personnel and techniques:

- i. Responding to a call, patient position, lifting and transfer techniques(up in bed, bed to wheel chair, bed to stretcher).
- ii. Loading patient to an ambulance (wheeled ambulance stretcher, portable ambulance stretcher, scoop stretcher, long spine board), transferring patients.
- iii. Disinfection of ambulance, air ambulance.

Unit II: Basic principles, types and usage of following devices:6 hours

1. Endotracheal Tubes, Tracheostomy tubes, Ambu Bag and Mask, Oxygen Masks, Oropharyngeal and Nasopharyngeal airways, Suction Apparatus, ICD Tubes, bags and jars.
2. Oxygen Pipeline, Medical gas cylinders and pipelines.
3. Nasogastric tube and Foley's catheter.
4. Cervical and Philadelphia collars, other splinting and immobilisation devices.
5. Monitoring devices and ECG.
6. Routine bedside investigations.
7. Mechanical ventilators.

Unit III: Emergency Pharmacology:**3 hours**

1. Indications, contraindications, dosage and routes of administration of common medications given by the following routes: subcutaneous, intramuscular, intravenous, intra-arterial, epidural, intranasal, intra and transdermal.
2. Knowledge of INJ 25% and 50% Dextrose, IVF DNS, IVF NS, IVF RL, IVF 5% Dextrose, Anti-Tetanus immunization, Anti-Snake Venom, Anti-Rabies immunization, Lidocaine, Lidocaine +Adrenaline, Diclofenac, Paracetamol, Fentanyl, Pethidine, Morphine, Tramadol, Atropine, Adrenaline, Nitro glycerine.

Unit IV: Cardiovascular and Pulmonary Emergencies:**8 hours****Cardiovascular Emergencies:**

1. Approach to Chest pain - Differential diagnosis, clinical assessment and point of care investigations in the emergency department.
2. Acute coronary syndrome - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, emergency management, ACLS protocols.
3. Acute decompensated heart failure - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management.

4. Bradyarrhythmia and Tachyarrhythmia - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, ACLS protocols.
5. Deep vein thrombosis- presenting symptoms, clinical assessment and point of care investigations in the emergency department, basic initial management.
6. Pulmonary thromboembolism- presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management.

Pulmonary Emergencies:

Approach to the patient with breathlessness and possible differential diagnosis; presenting symptoms, clinical assessment and point of care investigations in the emergency department of:

1. Respiratory failure
2. Upper airway obstruction
3. Pneumothorax
4. Acute asthma
5. Acute exacerbation of COPD
6. Haemoptysis
7. Pleural effusion and empyema
8. Pneumonia

Unit V: Principles of Cardiopulmonary Resuscitation in adults and neonates: 4 hours

1. Basic and advanced cardiac life support
2. Specific resuscitative procedures- airway management, breathing and ventilatory management, defibrillation and cardioversion, fluid and blood resuscitation, thoracocentesis, ICD tube insertion, insertion of ET and Tracheostomy tube.

Unit VI: Airway Management: 4 hours

1. Review of Airway Anatomy, Ventilation, Oxygenation, Respiration and Pathophysiology of Respiration
2. Patient Assessment: Airway Evaluation, Quantifying Ventilation and Oxygenation
3. Airway Management and Suctioning
4. Airway Adjuncts and Pharmacologic adjuncts to Airway Management and Ventilation
5. Airway Obstructions
6. Supplemental Oxygen Therapy
7. Ventilatory Support

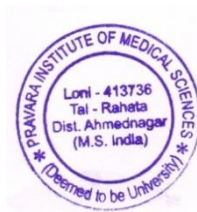
8. Continuous Positive Airway Pressure
9. Special Patient Considerations
10. Advanced Airway Management
11. Alternative Advanced Airway Devices
12. Surgical and Nonsurgical Cricothyrotomy

Practical Topics:**30 hours**

1. Preparation of ambulanc
2. Patient lifting and transfer techniques
3. Basic and advanced life support skills
4. Interpreting patient monitors, ECG
5. Airway management of adults, infants and neonates
6. Application of supplemental oxygen
7. Demonstration of Insertion of artificial airways, ICD tube, Nasogastric tube and Foley's catheter
8. Demonstration of Ventilator and ventilator modes, alarms and care of tracheostomy tubes in ventilated patients
9. Use of Respiratory support devices
10. Interpretation of routine bedside investigations
11. Biomedical waste management
12. Documentation and hospital management systems

Reference Books (latest edition)

1. Handbook of Emergency Care - Suresh David
2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchill
5. Fundamentals of Respiratory Care- Egan's - Craig I. Scanlon




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