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| **INSTITUTE** | **FACULTY OF PHYSIOTHERAPY** |
| **PROGRAM** | **MASTER OF PHYSIOTHERAPY** |
| **SEMESTER** | **2** |
| **COURSE TITLE** | **PHYSIOTHERAPY IN CARDIOPULMONARY SCIENCES-I** |
| **COURSE CODE** | **17MP0210** |
| **COURSE CREDITS** | **6** |

**Objective:**

1 To have the detailed Understanding of the structures of cardiac and respiratory functions

2 To learn the advanced skills of assessment of various cardiopulmonary conditions

**Course Outcomes:** After completion of this course, student will be able to:

1 Have a deep understanding of the structure and function of the cardiovascular and respiratory systems, including the heart, lungs, blood vessels, and associated muscles.

2 Enable to assess patients' cardiovascular and respiratory function, including auscultation, respiratory rate, heart rate, blood pressure, oxygen saturation, and spirometry.

3 Have knowledge and use of diagnostic tools such as chest X-rays, electrocardiograms (ECG), and pulmonary function tests to inform clinical decisions.

4 Ability to educate patients and caregivers on disease management, breathing exercises, lifestyle modifications, and self-management strategies for chronic conditions such as COPD and heart disease.

**Pre-requisite of course:**Thorough knowledge of Physiotherapy assessment and management of various Cardiopulmonary conditions

**Teaching and Examination Scheme**

| Theory Hours | Tutorial Hours | Practical Hours | ESE | IA | CSE | Viva | Term Work |
|---|---|---|---|---|---|---|---|
| 2 | 0 | 2 | 50 | 30 | 20 | 50 | 50 |

| Contents : Unit | Topics | Contact Hours |
|---|---|---|
| 1 | **Anatomy Fundamentals in cardio-respiratory conditions** Cardio-Vascular System: Mediastinum: Divisions and contents Pericardium: Thoracic Wall: position, shape and parts of the heart; conducting System; blood Supply and nerve supply of the heart, anatomy of arteries, veins, and capillaries., Respiratory system: Outline of respiratory passages. Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on Bronchopulmonary segments. Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm. Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action. | 10 |

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| Contents : Unit | Topics | Contact Hours |
|---|---|---|
| 2 | **Physiology Cardiac System**<br>Cardiac muscles: Structure. Ionic basis of action potential and pacemaker potential.Properties. ,Conducting system, Cardiac Cycle. Phases of cardiac cycle. ,Heart sounds – causes, character, Cardiac Output, Stroke volume and its regulation. Heart rate and its regulation and their variations, Arterial Blood Pressure,its variations. Determinants.Peripheral resistance. Regulation of BP., Arterial pulse., Shock Regional Circulation: Coronary, Cerebral and Cutaneous circulation, Respiratory System: Function of respiratory system: Pleura, tracheo-bronchial tree, alveolus, respiratory membrane and their nerve supply. Respiratory muscles. ,Mechanics of breathing: Intrapleural and Intrapulmonary pressure changes during respiration. Lung compliance., Surfactant. Dead Space, Spirometry: Lung volumes and capacities. Timed vital capacity and its clinical significance. Maximum ventilation volume. Respiratory minute volume, Pulmonary Circulation. Ventilation-perfusion ratio and its importance, Transport of respiratory gases,Oxygen-haemoglobin dissociation curve., Neural Regulation of Respiration. Hering-breuer's reflex. Voluntary control. Chemical Regulation. Physiology of microcirculation and edema, Hypoxia: Effects of hypoxia. Types of hypoxia. Asphyxia, Cyanosis – types and features, Periodic breathing – definition and types. , Artificial respiration | 15 |
| 3 | **Cardio-Pulmonary Conditions - Assessment and Evaluation**<br>Assessment and Evaluation Medical Chart Review, Patient/Family interview | 5 |
| 4 | **Clinical Monitoring**<br>Heart Rate and heart rate response to exercise, Heart rhythm, ECG monitoring, Pace-maker rhythm, Blood Pressure and Blood pressure response to exercise, Respiratory rate and respiratory response to exercise, ABG analyses, Pulse Oximetry, oxygen saturation monitoring, RPE, Other signs and symptoms of exercise intolerance, Exercise capacity, Body composition and body composition measures | 20 |
| 5 | **Basic interpretation of investigative procedures used in cardio-respiratory conditions**<br>Thoracic imaging , Chest X-ray , CT scan , MRI, Bronchogram | 10 |
| 6 | **Evaluation Of peripheral vascular diseases**<br>Evaluation Of peripheral vascular diseases | 10 |
| 7 | **Diagnosis and clinical decision making**<br>Clinical decision making skills in functional diagnosis in neonate, pediatrics, adults and geriatrics, Differential diagnosis | 10 |
| **Total Hours** | | **80** |

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**Suggested List of Experiments:**

| Contents : Unit | Topics | Contact Hours |
|---|---|---|
| 1 | **Practical/OPD/Case Presentation**<br>Practical/OPD/Case Presentation | 80 |
| **Total Hours** | | **80** |

**Textbook :**

1 Principles and Practice of Cardiopulmonary physical therapy, Donna Frownfelter, Mosby , 1916

2 ACSMS guidelines for exercise testing and prescription, Walter R. Thompson, Wolters kluwer, 2010

3 Cash Textbook of Chest, Heart and Vascular Disorders for Physiotherapists, John . E . Cash, Jaypee Brothers , 1987

**References:**

1 Physical Rehabilitation, Physical Rehabilitation, Susan Sullivan , F.A.DAVIS, 2014

2 Cardio Vascular And Pulmonary Physical Therapy , Cardio Vascular And Pulmonary Physical Therapy , Joanne Watchiee, ELSEVIER, 2010

**Suggested Theory Distribution:**

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

| Distribution of Theory for course delivery and evaluation | | | | | |
|---|---|---|---|---|---|
| **Remember / Knowledge** | **Understand** | **Apply** | **Analyze** | **Evaluate** | **Higher order Thinking / Creative** |
| 0.00 | 0.00 | 35.00 | 35.00 | 30.00 | 0.00 |

**Instructional Method:**

1 THEORY + PTACTICAL

**Supplementary Resources:**

1 NA

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