Courses Specifications

First Year – First Semester

Year / Semester	Course code	Course Title / Description	Theory Hrs / Week	Practice Hrs/ week	Credit Hours
First Year - First Semester	RCP-510	Introduction to Respiratory Care	3	-	3
	RCP-511	Cardiopulmonary Anatomy and Physiology	3	-	5
	RCP-512	Cardiac Diseases	4	-	4
	RCP-513	Cardiopulmonary diagnostics	3	-	3
	RCP-514	Respiratory Care Pharmacology	2	-	2
	RCP-515	Patient Assessment	2	-	2
	Semester Total				19

Course Title: Cardiopulmonary Anatomy and Physiology

Course Code: RCP-511

Credit hours : 5

Course Description:

This course is designed to help students review their knowledge of structure and function of cardio-respiratory tract in detail. It is also prepared to equip students in understanding the physiology of ventilation, gas exchange and transport in a human body. This course provides an in-depth human study of the cardiac, respiratory, and renal systems. Clinical application of pulmonary anatomy and physiology will also be explored

Course Objective

By the end of this Course, students will be able to apply the cardio-respiratory anatomy and physiology towards the patient care for patients with cardio-respiratory and related illnesses.

Learning Objectives

In order to meet the above Course objective, the student will be expected to:

- Describe rationale for the Innovative Respiratory Therapy curriculum
- Explain the normal function of the respiratory tract
- Describe the developmental events in respiratory system
- Identify and describe the detailed anatomy and physiology of respiratory system
- Describe how the pulmonary and bronchial circulations are organized
- Apply the knowledge of Respiratory system structure during patient care
- Describe the anatomy of the heart and vascular system
- Describe how the cardio-respiratory control mechanism
- Describe how the cardio-pulmonary system coordinates its functions under normal and abnormal conditions
- Describe the physiologic functions provided by ventilation
- Describe how the ventilation and oxygenation in our body works

- Identify the factors that affect alveolar ventilation and work of ventilation
- Describe the factors and how oxygen and carbon dioxide is transported between the atmosphere and the tissues
- Describe how to compute, alveolar ventilation, dead space ratio, arterial oxygen content, etc
- Clearly understand the effects of ventilation and perfusion on gas exchange

Teaching and Learning Methods

- Interactive lecture and discussion
- Small group discussion
- Clinical simulation
- Video show
- Demonstration
- Seminar presentation

Teaching and Learning Materials

- Respiratory Care Anatomy & Physiology, *Foundations for Clinical Practice,* Will Beachey
- Foundations of Respiratory Care, Wyka, Mathews, Clark
- EGAN'S Fundamentals of Respiratory Care, 12th edn, Wilkins, Stoller, Kacmarek

Assessment Methods

Formative Assessment

- Essay exams, quizzes, and practical test (direct observation of skills)
- Structured feedback report
- Global rating of performance
- Assessment on given topics and reflection exercise

Summative Assessment

- Progressive/continuous assessment (Quiz, assignment, seminar) (30%)
- End of Course objectively written exam (70%)

Course outlines
1. APPLIED ANATOMY AND PHYSIOLOGY OF RESPIRATORY SYSTEM
Overview of the course –1 HR
RESPIRATORY SYSTEM 8HR
i. Development of Respiratory system
ii. Postnatal lung development
iii. Respiratory system in the adults
iv. Pulmonary, Vascular, Lymphatic, and nervous systems of respiratory relevance
v. Anatomy of the respiratory Tract
CARDIOVASCULAR SYSTEM 8HR
vi. Functional anatomy of the hart and vascular system
vii. Control of the cardiorespiratory system
viii. Events of the Cardiac cycle
VENTILATION 10HR
ix. Mechanics of Ventilation
x. Static versus Dynamic mechanics of ventilation
xi. Exhalation mechanics
xii. Work of breathing
xiii. Distribution of ventilation
xiv. Efficiency and Effectiveness of Ventilation
GAS EXCHANGE AND TRANSPORT 20HR
xv. Gas diffusion
xvi. Normal variations from Ideal gas exchange

xvii. Oxygen Transport
xviii. Carbon dioxide transport
xix. Abnormalities of gas exchange and Transport

Course Title: Cardiac Diseases

Course Code: RCP-512

Credit Hour: 4

Course Description: This course is designed to equip RT students apply knowledge and skills to the assessment, treatment, and pathophysiology of cardiac diseases, this course focuses on the signs, symptoms, etiology, pathophysiology, diagnosis and treatment of selected cardiac and related diseases.

Course Objective

The student will be able to review and understand the pathophysiology of cardiac diseases and critically apply the knowledge gained from this Course during respiratory care.

Learning Objectives

To meet the above Course objective, the student should be able to the epidemiology, etiology, pathogenesis, clinical manifestation, assessment, investigations and management and prognosis of the cardiac diseases listed in the course outline below.

Teaching and Learning Methods

- Classroom teaching
- Case study
- Simulated practice
- Clinical practice

Teaching and Learning Materials

- Foundations of Respiratory Care, Wyka, Mathews, Clark
- EGAN'S Fundamentals of Respiratory Care, 7th Edn, Willkins, Stoller, Kacmarek
- Respiratory Care, Principles and Practices
- Comprehensive Perinatal and Pediatrics Respiratory Care, Kent Whitaker

Assessment Methods

Formative Assessment

- Practical test
- Structured feedback report
- Cases and scenarios
- Logbook

- Portfolio

Summative Assessment

- Progressive/continuous assessment (seminar, project work) (20%)
- Case presentations (10%)
- Written Exam (70%

Course Schedule

Outlines: These outlines include the etiology, pathophysiology, diagnosis, treatment and prognosis of common cardiac and cardiovascular conditions. Respiratory care management of cardiac and cardiovascular disorders, shock, trauma, renal failure, acute G.I. disturbances, and invasive cardiovascular procedures will be reviewed. Additionally, learners will learn to interpret 12-lead ECGs and obtain their ACLS credentials.	hrs
- Introduction to cardiovascular system and investigation - Cardiac Clinical Assessment and Monitoring	4
- Cardiogenic shock	4
- Cardiac arrhythmias and its managements	4
- Acute coronary syndrome	4
- Heart failure	4
Hypertension and Valvoular diseases	4
Pulmonary disease with Heart disease	4
Midterm Exam	4
Myocardial and pericardial wall diseases	4
Congenital heart diseases	4
Severe Sepsis septic shock	4
Coma	4
Hemorrhagic and Ischemic stroke	4
Renal failure	4
Fluids and Electrolytes disturbance	4
Final exam	4

Course Title: Cardiopulmonary Diagnostics

Course Code: RCP-513

Credit hours: 3

Course Description: This Course is designed to help the students to examines the most common cardio-respiratory function tests modalities, their techniques, and the pathophysiology that may be evaluated by each diagnostic study.

Laboratory practice of performing the tests will be provided to develop skills for testing patients.

Course Objective

By the end of this Course, students will be able to apply the knowledge and skills of the respiratory diagnostic studies and modalities for and during patient care.

Learning Objectives

In order to meet the above Course objective the student will be expected to:

- Analyze and monitor gas exchange and respiratory status from the basic monitoring devices including patient monitors, capnometers, pulse-oximeters, etc
- Perform or conduct Pulmonary function tests (spirometry), arterial blood gas test, exercise tests, and ECG tests.
- Interpret the results from PFT, ABG, ECG, X-ray, laboratory and others of respiratory relevant data and apply for patient management.
- Interpret the assessment data of patient with respiratory illness from the various data sources (K3, S3)
- Establish priorities in relation to respiratory response of patients' problems according to severity of illness (K3, S3)
- React to the respiratory & circulatory systems statuses of patient based on diagnosis (K3, S3)
- Apply developed comprehensive individualized and evidence based plan of care for patient with respiratory system disorders (K3, S3)

Teaching and Learning Methods

- Interactive lecture and discussion
- Small group discussion
- Case study
- Bedside teaching
- Portfolio

- Clinical simulation
- Video show
- Demonstration
- Seminar presentation

Teaching and Learning Materials

- Clinical Application of Blood Gases, 5th edn, by Shapiro, Peruzzi, Templin
- EGAN'S Fundamentals of respiratory Care, 12th edn, Wilkins, Stoller, Kacmarek
- Manual of Pulmonary Function Testing, 7th edn, Gregg L. Ruppel
- Foundations of Respiratory Care, by Wyka, Mathews, Clark

Assessment Methods

Formative Assessment

- Drills, essay exams, quizzes, and practical test (direct observation of skills)
- Structured feedback report
- Global rating of performance
- Logbook
- Portfolio
- Assessment on given topics and reflection exercise

Summative Assessment

- Progressive/continuous assessment (Quiz, assignment, seminar) (20%)
- End of Course objectively written exam (60%)
- OSCE (20%)

Course schedule

1. RESPIRATORY DIAGNOSTIC STUDIES AND MODALITIES
a. Bed side Patient Assessment 4HR
i. Patient history
ii. Physical Examination
b. Interpreting Clinical and Laboratory Data 6HR
i. Interpreting clinical lab tests

ii. Application of the clinical lab data for patient management of respiratory relevance
c. Interpreting the Electrocardiogram 6HR
i. Basic Principles of ECG
ii. ECG procedural summary
d. Analysis and Monitoring of Gas Exchange 18HR
i. Invasive Vs Non-invasive procedures
ii. Measuring FiO2 and Oximetry
iii. Sampling and Analyzing Blood gas
iv. Blood gas monitoring
v. Capnometry and Capnography
e. Pulmonary Function Testing 10HR
i. Pulmonary Function Testing
ii. Principles of Measurement and Significance
iii. Interpretation of the PFT test report
f. Review of thoracic Imaging 4HR
i. Overview of Plain Chest radiograph and interpretation

Course Title: Respiratory Care Pharmacology

Course Code: RCP-514

Credit Hour: 2

Course Description: A comprehensive study of pharmacology principles, receptor theory, clinical applications of medications, and historical analysis of first-generation medications will be covered. Current medication trends and recommendations are also examined.

Course Objective

The student will be able to study the principles and administration of respiratory drugs with a special emphasis to aerosol drugs.

Learning Objectives

To meet the above Course objective, the student will be able to:

- Describe classes of drugs that are delivered via aerosol
- Compare modes of action, indications, and adverse effects that characterize each major respiratory related drugs
- Compare available aerosol formulations, brand names and dosages for each specific drug class
- Practice and develop skill on how to properly administer the common respiratory drugs available
- Select the appropriate drug class for a specific patient or clinical situation
- Assess the outcomes for each class of aerosol drug therapy
- Demonstrate skill on patient and family education on how to administer respiratory medications (aerosol drugs) that can be taken without HP supervision.

Teaching and Learning Methods

- Case study
- Simulated practice
- Clinical practice
- Portfolio based learning

Teaching and Learning Materials

- Cardiopulmonary Pharmacology for Respiratory care by Jahangir Moini
- Principles of pharmacology for Respiratory Care, 2nd edn, Authors: Bills and Soderberg
- Basic & Clinical pharmacology by Bertram G. Katzung

Assessment Methods

Formative Assessment

- Drills and practical test
- Structured feedback report
- Cases and scenarios
- Logbook

Summative Assessment

- Progressive/continuous assessment (Quiz) (20%)
- Case presentations (10%)
- Structured and Objective Written Exam (70%)

Course Outline

1. RESPIRATORY CARE PHARMACOLOGY
a. Principles of Pharmacology 4H
i. Drug administration phase
ii. Pharmacokinetic phase
iii. Pharmaco-dynamic phase
iv. Airway receptors and Neural control of the lung
b. Adrenergic and Anticholinergic bronchodilators 5H
i. Assessment of bronchodilator therapy
ii. Adrenergic and anticholinergic bronchodilator agents
iii. Indications, mode of actions, effects of adrenergic and anti- cholinergic bronchodilator agents
c. Mucus controlling agents 1H
d. Inhaled corticosteroids 1H
e. Nonsteroidal antiasthma drugs 1H
f. Aerosolized anti-infective agents 1H
g. Inhaled pulmonary vasodilators 1H

h. Medical gas therapy 1H
i. Other commonly used medications for respiratory illnesses 1H

Course Tittle: Patient Assessment

Course Code: RCP-515

Credit hours: 4

Course description :

The course is designed to Fundamentals of respiratory assessment will be covered to include review of existing data in the patient record, patient history, physical examination, oximetry, blood gases, respiratory monitoring, pulmonary function assessment, laboratory studies, chest and upper airway radiographs, ventilation/perfusion scans, bedside EKG interpretation, and cardiovascular monitoring. Use methods of association in measurement data - correlation analysis

OBJECTIVES :

At the completion of the Course, the successful student will be familiar with the general significance of the common diagnostic techniques and physiological tests, which he is likely to perform or encounter as a respiratory therapy technician/ respiratory care practitioner. He will be able to assess cardiopulmonary status by physical inspection and auscultation and describe techniques for interpreting chest radiographs. In addition, he will be aware of the normal ranges for laboratory data, perform simple bedside pulmonary function tests and describe the significance of patient history. These will be incorporated into many of the tasks, which will be performed by the student during the clinical rotations

Contents: This Course comprises 6 Study Units. The syllabus content, covered by the theoretical elements in the Course, is outlined below:

Unit I: Personal History :

Significance of the patient interview and documentation of personal data. Association of certain diseases with family history, personal habits, hobbies, pets, environment and occupation. Previous illness and medical examinations. History of present illness. Other subjective information, (e.g. dyspnea). Consideration of non-pulmonary systems as a source of respiratory disease.

Unit II: Physical Assessment

Primary symptoms of respiratory disease. Constitutional symptoms. Physical signs and patterns of disease - chest inspection, sound transmission, auscultation, percussion and palpation. Topographic lines and surface anatomy. Breathing patterns and associated pathology. Sputum characteristics. Neurological assessment - level of consciousness, Glasgow coma score.

Unit III: Radiological Assessment

Systematic approach to chest radiographs. Review of radiation physics. Standard positions and techniques of chest radiograph. Density, penetration and contrast appearance. Appearance of normal chest radiographs - systematic inspection of anatomical structures. Lobar anatomy of the lungs. Assessment of technical quality of radiographs. Abnormalities seen on chest radiographs and associated diseases - main stem bronchial intubation, pneumothorax, rib fractures, atelectasis, lobar pneumonia, congestive heart failure, adult respiratory distress syndrome, chronic obstructive lung disease, bullae, solitary nodules, tuberculosis, pleural effusion, pulmonary embolism, carcinoma and interstitial lung disease.

Unit IV: Electrocardiograph

What is an ECG? What is the value of an ECG? When should an ECG be obtained? Cardiac anatomy and electrophysiology. Causes and manifestations of dysrhythmias. Basic ECG waveforms, ECG leads, ECG interpretations. Identification of common dysrhythmias, assessing chest pain, cardiac ischemia, injury or infarction. ECG patterns with chronic lung diseases.

Unit V: Laboratory Assessment:

Introduction to the assessment of laboratory test results and data. Microbiological, histological , immunological and biological techniques and their use in the clinical diagnosis of pulmonary disease. Examination of secretions and fluids obtained from sputum induction, thoracentesis and bronchoscopy procedures. Bacteriological examination - differentiation of gram-positive and gram-negative organisms, viral infections, anaerobes, mycobacteria, fungal infections, protozoa and rickettsia. Histological examination - bronchial, lung, lymph node and pleural biopsy. Tests of immune function. Hematological studies. Biochemical studies - sweat chlorides, serum proteins, serumenzymes, serum electrolytes and other biochemical studies. Urine analysis.

Unit VI : Advanced Assessment Techniques
Physical assessment of the critical patient (airway, breathing and circulation). Respiratory monitoring in the ICUventilatory and oxygenation assessment. Cardiac output assessment- cardiac catheterisation, venous, arterial and intra-cardiac pressures, cardiac outputs and venous return. Invasive monitoring hemodynamic pressures- arterial pressure, CVP, PAP and other invasive procedures used for assessment. Nutritional assessments.

References

✓ **STUDENT RESOURCE MATERIALS**

1. Internally prepared and produced Study Units 1, 2, 3, 4 and 5.
2. Corresponding homework and reading assignments for Study Units (1-5), inclusive.

✓ **Textbook(s) and References***

1. Wilkins, Krider & Sheldon. (2000). Clinical Assessment in Respiratory Care. 4th Ed., Mosby-Year book, Inc. ISBN: 0-323-00909-3
2. Kacmarek, R. M. & Pierson, D. J. Foundations of Respiratory Care. ISBN: 0-443-08509-9
3. *. Wilkins, R. L., Stoller, J. K. and Scanlan, C. L. (2021) Egan's Fundamentals of Respiratory Care, 12th Ed., ISBN: 0-323-01813-0

Teaching Methods –common to all Courses

- Brain storming
- Group discussion
- Plenary presentation by participants
- Mini-lecture by facilitators
- Manual and computer based hand on exercises

Summative Assessment

Progressive assessments of group and individual reports and exercises

(40%) Written Examinations (60%)

- Clinical practice
- Portfolio based learning

Teaching and Learning Materials

- EGAN'S Fundamentals of Respiratory Care, 12th Edn, Wilkins, Stoller, Kacmarek
- Workbook EGAN'S Fundamentals of Respiratory Care, 9th edn, Stephen F. Wehrman
- Foundations of Respiratory Care, Wyka, Mathews, Clark
- Respiratory Care, *Principles & Practices*, Dean R. Hess, etal

Assessment Methods

Formative Assessment

- Drills and practical test
- Structured feedback report
- Cases and scenarios
- Logbook
- Portfolio

Summative Assessment

- Progressive assessments of group and individual reports and exercises 30%
- OSCE (20%)
- Structured and Objective Written Exam (50%)

Course Outline

1. BASIC RESPIRATORY CARE 2. History of RC and its development around the world and Arabic and locally .
a. Airway Management
i. Suctioning
ii. Establishing artificial airway
iii. Airway maintenance
iv. Intubation and Tracheostomy
v. Extubating or decannulation

Course Title: Introduction to Respiratory Care

Course Code: RCP-510

Credit **hour: 3**

Course Description:

This course provides an introduction to respiratory care clinical skills, including vital signs, chest assessment, infection control, aerosolized medication delivery, oxygen therapy, hyperinflation therapy, and airway clearance. This course prepares the student for direct patient care to be performed in more advanced courses. Direct patient care is performed under close supervision.

Learning Objectives

To meet the above course objective, the student will be able to:

- Describe the history of respiratory care and its recent developments
- Describe and develop skill on how to perform endotracheal and nasotracheal intubation and suctioning
- Describe the rational and methods of performing tracheostomy
- Describe and develop skill on how to maintain artificial airways
- Describe how to assist a physician in setting up and performing bronchoscopy
- Describe the indications, settings and techniques of doing CPR
- Describe how to perform defibrillation and AEDs
- Describe how to monitor patients before cardiac arrest, during CPR, and after resuscitation
- Identify the indications, reasoning, contraindications and hazards that pertain to humidity and bland aerosol therapy
- Describe how to monitor, manage and troubleshoot problems arising from humidification and aerosol therapy systems
- Describe the indications, techniques, and management of medical gas therapy with a special emphasis on oxygen therapy
- Describe the indications and develop skill on airway clearance and chest expansion therapy techniques
- Discuss legal and ethical issues arising from respiratory Care

Teaching and Learning Methods

- Case study
- Simulated practice

vi. Bronchoscopy
b. Emergency Cardiovascular life support:
i. Basic Life support
ii. Advanced Emergency cardiovascular life support
c. Humidity and Bland Aerosol Therapy
d. Storage and Delivery of Medical gases
e. Chest Physiotherapy
i. Lung expansion therapy
ii. Airway clearance therapy
f. Legal and Ethical Issues in Respiratory Care

First Year - Second Semester

Year / Semester	Course code	Course Title / Description	Theory Hrs / Week	Practice Hrs/ week	Credit Hours
First Year - 2nd Semester	RCP-516	Respiratory Care Equipment & Techniques	3	0	3
	RCP-517	Pulmonary Diseases	4	-	4
	RCP-518	Respiratory Critical Care	4	0	4
	MSC -502	Epidemiology	2	-	2
	RCP-519	Mechanical Ventilation	4	-	4
	RCP- 520	Clinical Practice I	-	18	6
	Semester Total		17	18	23

Course Title: Respiratory Care Equipment & Techniques

Course Code: RCP-516

Credit hour: 3

Course Description:

This course provides students with the opportunity to gain hands-on experience with respiratory care equipment. Students select, assemble, and check equipment for proper function, operation and cleanliness. Equipment malfunctions and actions to correct malfunctions will also be covered. Equipment will include oxygen delivery devices, humidifiers, aerosol generators, pressure ventilators, gas delivery, metering and analyzing devices, percussors, vibrators, environmental devices, manometers, gauges, and vacuum systems. Maintenance of artificial airways, fiberoptic bronchoscopy, thoracentesis, chest tube maintenance, and arterial blood gas sampling will also be discussed. Basic and advanced life support will be covered to include cardiopulmonary resuscitation, artificial ventilation and circulation, endotracheal intubation, airway care, recognition and treatment of arrhythmias, and cardiovascular pharmacology. Related equipment will also be reviewed to include manual resuscitators, artificial airways, defibrillators and cardiac monitors.

Learning Objectives:

To meet the above Course objective, the student will be able to:

- Identify medical devices and instruments a respiratory therapist operates
- Describe the indications, initiations, and the follow-up parameters of each of the respiratory therapy instrumentations
- Describe and understand the basic operating principles of the common respiratory medical devices including mechanical ventilators
- Describe the applications of each of the RC instrumentations
- Know how to follow-up the patient parameters on the instrumentations including describing the normal and abnormal values and link with the patient conditions for a deviating parameter of a given RC medical device
- Know how to troubleshoot the commonly used RC instruments and devices

Prerequisite: GRT201 & GRTN203

Teaching and Learning Methods

- Case study
- Simulated practice
- Clinical practice
- Portfolio based learning

Teaching and Learning Materials

- Instruments Manufacturers' User/operators Manuals
- EGAN's Fundamentals of Respiratory Care, 9th Edn., Wilkins, Stoller, Kacmarek
- Clinical Application of Blood gases, Shapiro, etal
- Pulmonary Function Testing, Gregg L. Ruppel
- Foundations of Respiratory Care, Wyka, Mathews, Clark

Assessment Methods

Formative Assessment

- Drills and practical test
- Structured feedback report
- Cases and scenarios
- Logbook
- Portfolio

Summative

Assessment

Summative

Assessment

- Progressive assessments, quiz, group and individual reports and exercises (10%)
- OSCE (20%)
- Exam on Simulators and Instruments (30%)
- Structured and Objective Written Exam (40%)

Course Outline

RESPIRATORY CARE INSTRUMENTATION

1) Concepts of design, function, and operation of basic respiratory care equipment: 48 HR
o Oxygen cylinders,
o Gas regulators and flowmeters
o Oxygen analyzers,
o Oximeters,
o Oxygen adjuncts,

o Humidifiers,
o Nebulizers,
o Airways,
o Capnometers,
o Defibrillators,
o CPAP and BiPAP machines
o Anesthesia machines and
o Pressure cycled ventilators

2) Basic principles of Mechanical Ventilation
a. Respiratory Failure and the need for ventilatory support
b. Mechanical Ventilation
c. Ventilatory Parameters
d. Physiology of ventilatory Support
e. Non-Invasive Mechanical Ventilation: CPAP &BiPAP
i. Indications
ii. Initiation of NIV
iii. Follow-up of pts on NIV
iv. Weaning of pts from NIV
f. Invasive Mechanical ventilation
i. Indications
ii. Initiation of MV
iii. Follow-up of Patients on MV
iv. Weaning of pts from MV

Course Title: Pulmonary Diseases

Course Code: RCP-517

Credit Hour: 4

Course Description: This course is designed to equip RT students apply knowledge and skills to the assessment, treatment, and pathophysiology of respiratory diseases, this course focuses on the signs, symptoms, etiology, pathophysiology, diagnosis and treatment of selected respiratory and related diseases.

Course Objective

The student will be able to review and understand the pathophysiology of cardiopulmonary diseases and critically apply the knowledge gained from this module during respiratory care.

Learning Objectives

To meet the above module objective, the student should be able to the epidemiology, etiology, pathogenesis, clinical manifestation, assessment, investigations and management and prognosis of the cardiopulmonary diseases listed in the course outline below.

Teaching and Learning Methods

- Classroom teaching
- Case study
- Simulated practice
- Clinical practice

Teaching and Learning Materials

- Foundations of Respiratory Care, Wyka, Mathews, Clark
- EGAN'S Fundamentals of Respiratory Care, 7th Edn, Willkins, Stoller, Kacmarek
- Respiratory Care, Principles and Practices
- Comprehensive Perinatal and Pediatrics Respiratory Care, Kent Whitaker

Assessment Methods

Formative Assessment

- Practical test
- Structured feedback report
- Cases and scenarios
- Logbook

- Portfolio

Summative Assessment

- Progressive/continuous assessment (seminar, project work) (20%)
- Case presentations (10%)
- Written Exam (70%

Module Schedule

1. REVIEW OF PULMONARY DISEASES
a. Respiratory Clinical Assessment and Monitoring 4HR
b. Respiratory Failure in General 2HR
c. COMMON PATHOLOGIES OF RESPIRATORY SYSTEM -36HR
i. Pulmonary Infections
ii. Tracheobronchial tree and Lung Injury
iii. Neuromuscular Diseases and Chest Injury
iv. Drug overdose
v. Obstructive Lung diseases (COPD, Asthma)
vi. Lung Parenchymal diseases
vii. Acute Lung Injury, Pulmonary edema, and multiple organ failure, ARDS
viii. Interstitial lung diseases
ix. Pulmonary Vascular diseases
x. Pleural Diseases
xi. Lung Cancer
xii. Sleep related respiratory diseases
xiii. Neonatal and Pediatrics respiratory disorders
d. Occupation and Environment – Respiratory Care perspective 2HR

Course Title: Respiratory Critical Care

Course Code: RCP-518

Credit Hour: 4

Course Description: This course is designed to equip RT students apply knowledge and skills to the diagnostic and therapeutic procedures in the field of Respiratory Care. The emphasis is placed on the management of mechanical ventilation and critical respiratory conditions.

Course Objective

The student will be able to :

1.Describe how to manage airway and cardiac arrest patients
2. Describe type of shock and how to manage it
3. Know recent MV techniques ex. ECMO, ILV and liquid ventilation.
4.Discuss how to rapid interfere with patient in massive hemoptysis
5.Interpret the concept of NIPPV
6. Demonstrate about fever and antibiotics in ICU

Learning Objectives

To meet the above module objective, the student should be able to the epidemiology, etiology, pathogenesis, clinical manifestation, assessment, investigations and management and prognosis of the cardiopulmonary diseases listed in the course outline below.

Teaching and Learning Methods

- Classroom teaching
- Case study
- Simulated practice
- Clinical practice

Teaching and Learning Materials

- Respiratory Critical Care, 1st edition David W. Chang , 2021.
- EGAN'S Fundamentals of Respiratory Care, 12th Edn, Willkins, Stoller, Kacmarek
- Respiratory Care In Non Invasive Mechanical Ventilatory Support (Principles And Practice) Antonio M. Esquinas, MD ,Mohammed Alahmari, 2021.

Assessment Methods

Formative Assessment

- Practical test.
- Structured feedback report.

- Cases and scenarios
- Logbook
- Portfolio

Summative Assessment

- Progressive/continuous assessment (seminar, project work) (20%)
- Case presentations (10%)
- Written Exam (70%

Module Schedule

1. Respiratory Critical Care:	
a. Introduction Respiratory Critical Care	4HRs
b. Basic concept of NIV	8HRs
c. Cardiac arrest	2HRs
d. Fever in ICU	2HRs
e. Antibiotics in ICU	6HRs
f. Shock	6HRs
g. Hemoptysis	2HRs
h. Airway maintenance	6HRs
i. Difficult intubation	2 HRs
j. ECMO	2 HRs
k. ILV	2HRS
l. Liquid ventilation	2HR
m. Pharmacotherapy in Critical Care	2 hrs
n. Medical Critical Care Issues	6hrs
o. Traumatic Critical Care Issues	6hrs
p. Critical Care Guidelines and Bundles	6hrs

Mechanical Ventilation

Course Title: Epidemiology

Course Code: RCP-517

Credit hours - 2

Course Description: Epidemiology provides students with a range of research tools, which can be used to obtain the information required for prevention, service provision, and the evaluation of health care. It is the basic tool of public health for controlling and prevention of diseases. It provides practical guidance and skills in approaches for understanding the health of population. This course provides the approach, concepts and perspectives of epidemiology for participants in a broad range of public health and related disciplines. The course is designed for master in public health

Course Objectives

Up on Complication of this course, the students should be able to:

- Describe the scope, purposes and achievements of epidemiology in health services ;
- Discuss, apply, and interpret basic epidemiology concepts and measures of disease occurrence and its effect in population;
- Identify, discuss and illustrate the basic principles, objectives, and elements of public health surveillance;
- Assess the relevance and understand the limitations of various epidemiological research designs for studying diseases causation, association between risk factors or exposure in populations and rates of diseases occurrence and death;
- Describe standard approaches to investigations of disease outbreak
- Identify the major sources of errors in epidemiological studies and suggest strategies to reduce these errors;
- Evaluate epidemiological evidence by applying criteria for causal inference to information about an association between a population exposure and health outcome.
- Describe their role in screening program for disease control and prevention
- Use epidemiological methods in evaluating the effectiveness of public health intervention programs;
- Appreciate some of the complexities in applying scientific evidence on health and disease to the making of public policy.

Course Contents

Unit I: Introduction to epidemiology

Unit II: Communication diseases

epidemiology Unit III: Overview of
epidemiology studies Unit IV: Measurement
in epidemiology
Unit V: Epidemiologic design
strategies Unit VI: Evaluation of
Evidence
Unit VII: Presentation of epidemiologic
information Unit VIII: Outbreak investigation &
management Unit IX: PTO Epidemiological
surveillance
Unit X Screening
Unit XI: Ethics of epidemiologic Research

Assessment

Progressive assessments of group and individual reports and exercises
40% Written Examinations 60%

Course Title: Mechanical Ventilation

Course Code: RCP-519

Credit hour: 5

Course Description:

A comprehensive study of advanced equipment and technology especially mechanical ventilators utilized in the critical care, homecare, pulmonary rehabilitation and blood gas lab-settings.
Lectures and class activities will detail hardware for hemodynamic monitoring, supplemental oxygen administration, noninvasive monitoring, blood gas measurement, quality control and assurance and mechanical ventilator concepts.

Course Objective

The student will be able to study the principles, approaches and applications of mechanical ventilators and other advanced medical devices used in critical care units.

Learning Objectives

To meet the above Course objective, the student will be able to:

- Define and describe respiratory failure and the need for ventilatory support
- Critically understand how ventilators work, the waveforms and the operator interface
- Describe the physiology of mechanical ventilator support
- Describe the approaches and reasoning of critical patient evaluation for and on mechanical ventilatory support
- Describe and demonstrate ventilator initiation, adjustment, monitoring, and discontinuation of ventilatory support
- Describe and demonstrate the proper patient family information for a patient on mechanical ventilation
- Develop hospital contextual protocols on ventilator support and related issues in a given hospital ICU
- Discuss ventilator support modes and maneuvers for specific critical patient conditions

Teaching and Learning Methods

- Case study
- Simulated practice
- Clinical practice
- Portfolio based learning
- Seminar

- Journal review

Teaching and Learning Materials

- EGAN'S Fundamentals of Respiratory Care, 12th Edn, Wilkins, Stoller, Kacmarek
- Workbook, EGAN'S Fundamentals of Respiratory Care, 12th Edn, Stephen F.Wehrman
- Guide to Mechanical Ventilation and Intensive Respiratory Care, Lynelle N.B. Pierce
- Mechanical Ventilation, *Physiological & Clinical Applications*, 7th Ed, Susan P. Pilbeam
- Perinatal & Pediatrics respiratory Care, 5th Edn, Walsh, etal

Assessment Methods

Formative Assessment

- Drills and practical test
- Structured feedback report
- Cases and scenarios
- Logbook
- Portfolio

Summative Assessment

- Progressive/continuous assessment (seminar, Quiz, practice observation) (20%)
- OSCE (20%)
- Objective Structured Written Exam (40%)
- Rating of guided clinical practice (360 global rating, logbook, portfolio) (20%)

Course Outline

1) ACUTE AND CRITICAL RESPIRATORY CARE --- 80 Hrs Total
a. Respiratory Failure and the Need for respiratory Support 14H
i. Hypoxemic and Hypercapnic respiratory Failures
ii. Chronic and Acute Respiratory Failure
iii. Assessment of Respiratory Failure
iv. C1hoosing a support strategy
b. Mechanical ventilators 14HR
i. How ventilator s work

ii. Waveforms
iii. Operator Interface
c. Physiology of ventilator support 14HR
i. Pressure and Pressure gradients
ii. Effects of mechanical ventilation on ventilation and oxygenation
iii. Effects of positive pressure and ventilators mode on lung mechanics and other body systems
d. Initiation and adjusting invasive and non-invasive ventilation 10HR
e. Monitoring of a patient in ICU: Principles, respiratory, CVS, renal, global monitoring indices, troubleshooting 14HR
f. Discontinuing ventilator support 8HR
g. Disease specific Ventilator management approaches 6HR

Course title: Clinical Practicum I

Course Code: RCP-520

Credit Hours: 4

Duration: 16 weeks

Description: Clinical Practicum I includes clinical practicum in medicine, pulmonary and critical care, under the direct supervision of a practicing supervising, pulmonologist, or other physician pre-approved, with emphases on both in-patient and outpatient assessment, diagnosis, management, practice, and procedures. Pre-requisite-prior approval of the program director and an approved signed preceptor agreement on file.

Students will observe and achieve competencies related to respiratory procedures in general medical/surgical floors and adult intensive care units. Introduces students to clinical respiratory care procedures. Topics include: introduction to the clinical affiliate, patient assessment, medical gas therapy, aerosol therapy, incentive spirometry, positive pressure breathing, chest physiotherapy, and airway care.

Prerequisites: Satisfactory completion of first semester of course work.

Teaching and learning methods

- Clinical Attachment
- Demonstration
- Guided practice
- Group discussion
- Seminar
- Individual/group tutorial
- Case study
- Skill lab
- Bedside teaching
- Self-study
- Portfolio
- Clinical simulation
- Video show
- Inter-professional learning experience in the clinic practice

Teaching and learning materials

- EGAN's Fundamentals of Respiratory Care, 12th Edition x 10 pieces------ Text Book

- Wilkins Clinical Assessment in Respiratory Care, 7h Edition x 10 copies ----- Text Book
- Mechanical Ventilation: Physiological and Clinical Applications, 7th ed, Susan P. Pilbeam
- Foundations of Respiratory Care, Wyka, Mathews, Clark
- Comprehensive Perinatal and Pediatrics Respiratory Care, Kent Whitaker
- Clinical Application of Blood Gases, 5th Edn, Shapiro, etal
- Guide to Mechanical Ventilation and intensive Respiratory Care, Lynelle N.B. Pierce
- Principles of pharmacology for respiratory Care, 3rd Ed, Bills & Soderberg
- Rau's Respiratory Care pharmacology , 10th Ed, Douglas S. Gardenhire
- Cardiopulmonary Pharmacology for Respiratory Care, Jahangir Moini
- Respiratory Care Principles and Practice, Dean R. Hess, etal
- Ruppel's Manual of pulmonary Function Testing, 11th edition , Carl D. Mottram
- Respiratory Care Clinical Competency Lab Manual by Sandra T. Hinsiki, 1st Edition
- Respiratory Care Anatomy and Physiology, *Foundations for Clinical Practice*, Will Beachey

Methods of

assessment Formative

- Direct observation of performance
- Oral questioning
- Case study /Seminar
- 360 degree evaluation
- Review of portfolio, log book
- Journal review

Summative

- Direct observation of performance
- Review of content of portfolio
- 360-degree evaluation
- Objectively written exam
- Project/seminar report

Master the following clinical experiences but not limited to:

1. **Procedures to be performed**

- Advanced life support system
- Endotracheal intubation
- Positive Pressure Ventilation / Mechanical ventilation
- Arterial Blood gas sampling and interpretation
- ECG recording
- Spirometry/ PFT
- Sleep medicine/lab
- Use of defibrillator CPR

2. **Assist health care team during procedures**

- Bronchoscopy
- Chest tube insertion
- Tracheostomy

3. **Routine Activities during Clinical Attachments**

- Work as a respiratory therapist in general
- Specific bed side teaching related to respiratory tract illnesses
- Preparation of supplies and instruments
- Measures and interprets Pulse-oximetry, ETCo2, NIBP, IBP, etc
- Venous access, ABG collection monitoring
- Oxygen administration, suctioning respiratory therapy,
- Airway management
  - Application of oropharyngeal airway
  - Oxygen therapy
  - CPAP
  - Care of Tracheostomy
  - Endotracheal Intubation
  - Extubation, decannulation
- Care of chest drainage and nebulization
- Chest physiotherapy
- Monitoring of critically ill patients from a cardio-respiratory point of view

- Setting and follow up of patients on ventilators
- Thermoregulation management and control using hypothermic machines
- Pulmonary Rehabilitation
- Advanced life-saving activities (resuscitation, defibrillation, transport, etc)

4. **Students Assignments**

- Case Studies
- Case Presentations
- Observation reports
- Patient education demonstrations
- Project on a respiratory disease
- Drug Study

5. **Instructor Assignments**

- Prepare clinical rotation plan
- Prepare teaching plan for students
- Perform clinical evaluation of students/staff
- Management plan-designing
- Supervision techniques-writing unit report, performance appraisal, guidance, staff management, material management
- Maintenance of records and reports
- Student assignment evaluation and report

Total Hours Schedule for Practicum Courses (12 hrs per week x 16 weeks' x 1 semesters)

Learning Activity	Total HRs expected
ICUs (Adult, Pediatrics, Neonatal), CCUs, Recovery units, Emergency, Ambulances/transport	**151 hours**
Respiratory units/clinics, Operation Theaters, Endoscopy units, dialysis unit, general wards, etc	**41 hours**

N.B.:

- Clinical preceptors and senior instructors will accompany students in the practice area all the time
- Early in the morning there should be clinical round in ICU and in-patient wards
- Every day in the afternoon there will be debriefing session

- Every Friday afternoon: whole group discussion for case studies and presentation. Eg. Discussion of unusual cases, interesting cases…)