**Subject**: Respiratory Physiology of medical students

**Hours:** 12 hours -6 sessions

**Session 1**: Pulmonary ventilation 2 hours

**General purpose of the course:**

- Understand how lung ventilation is performed

**Specific objectives:**

- The student be able to explain the mechanism of entry and exit of air into the lungs:

- Describe the volume and pressure relationship in the respiratory tract.

- Interpretation of plural pressure variations

- Analyzes the effects of age on pulmonary volume

- Definition of respiratory function.

- Analyzes the effect of pleural pressure on the breathing.

-Analyzes the trans-pulmonary pressure.

-Expression of events occurring in normal breathing.

-Interpret lung compliance

- Interpretation of elasticity of the lung, surface tension, and the relationship between them

- Definition of surfactant and its role in breathing.

- Interprets the chest reactivity and its role in breathing.

- Defines the factors affecting the lung and chest elastic recoil

**Session 2**: Resistance to airways and pulmonary volume and capacities 2 hours

**General purpose of the course:**

-Recognition pulmonary volumes and capacities

**Specific objectives:**

- Students will be able to express pulmonary volumes and capacities, respiratory function and the effect of pulmonary diseases on respiratory work.

- Defines the resistance of the airway and its role in breathing.

- Identify effective factors on airway resistance.

- Defines pulmonary volume and capacity.

-express factors affecting the volume of lungs.

- Analyzes the effects of age on pulmonary volume.

-Analyzes the differential diagnosis of pulmonary disease.

- How to measure the functional residual capacity

- How to measure residual volume

**Session 3: Pulmonary circulation 2 hours**

**General purpose of the course:**

**-**learn about variety of blood types in the lungs

**Specific objectives:**

-acquaintance with the bronchial circulation and its characteristics

-acquaintance with the pulmonary circulation and its characteristics

- Comparison of pulmonary circulation with systemic circulation

-Definition of pulmonary circulation pressure.

- To interpret pulmonary vascular resistance.

- Define passive and active factors that affect pulmonary vascular resistance.

- Defines the effect of hypoxia on pulmonary arteries.

- Interpretation of the regional distribution of pulmonary blood flow.

- Describe the dynamics of pulmonary capillaries.

- Identify effective factors in the development of pulmonary edema

**Session Four: Gas Transfer Principles 2 hours General purpose of the course:**

**General purpose of the course:**

Understanding how to transfer gas from lung to circulation and transfer to tissues

**Specific objectives:**

-reminder of the basis for the diffusion of gases

- Interpretation of the diffusion of gases from the lungs into the bloodstream

- acquaintance of concentration and partial pressure of oxygen in the alveoli

- acquaintance of concentration and partial pressure of co2 in the alveoli

- Interpretation of alveolar gas composition

-Explain the diffuse of gases from the respiratory membrane

- Explain the factors affecting the amount diffusion of gases from the respiratory membrane

-interprets the respiratory membrane diffusion capacity

- Defines the regional distribution of alveoli ventilation.

- Interprets the relationship between ventilation and perfusion and its effect on respiratory gases pressure.

-Interprets V./Q regional differences.

- expressThe effect of gravitation on ventilation and perfusion and blood pH and respiratory gas pressure.

**Session 5: Carrying gases in the blood 2 hours**

**General purpose of the course:**

Getting to know with the ways carry gaseous breathing in the blood

**Specific objectives:**

- Defines ways to carry oxygen in the blood

- Interprets the hemoglobin saturation curve.

- Analyzes the effect buffer of hemoglobin

- Defines the factors affecting the oxyhemoglobin dissociation curve.

- Defines the ways CO2 is transmitted in the blood.

-Interpret carbon dioxide decomposition curve.

- Defines the *Haldane effect* and the Bohr effect

**Session Six: Regulation of Respiration for 2 hours**

**General purpose of the course:**

Getting to know how to regulate breathing

**Specific objectives:**

- Analyzes respiration regulation.

- Describe the respiratory control.

- Definition of respiratory control generator

- expresses the role of the cerebral cortex in breathing.

- Interpretation of chemical control and control of reflexes, in breathing.

- Define the role of central and Peripheral chemoreceptors.

- Defines the role of oxygen in controlling respiration.

**- Teaching method**: Interactive lecture with power point and question and answer

-**Student Evaluation Method**: Quiz (Multiple Choice) Class Questions

-Reference Used: Guyton Medical Physiology, New Articles