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| **Course title** | **Code** | **Semester** | **Type of course** | **Course volume (Contact hours)** | **ECTS** |
| **Cardiovascular and Respiratory System** | **MED**  **1007** | **I** | **Mandatory** | 127 | **7** |
| **Faculty, the educational program and level of education** | * School of Medicine and Health Sciences * Higher Medical Educational Program “Medicine” * One cycle 6-year | | | | |

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| **Learning Course Content** |
| * **Embryology** Early Development of Heart and Blood Vessels. Development of Veins Associated with Embryonic Heart. Fate of Vitelline and Umbilical Arteries * **Histology** Histology of Blood; Histology of bone marrow and hematopoiesis; * **Anatomy** Introduction to cardiovascular system, Outer surface of heart, Location and projections of heart; Types of vessels * **Physiology** Body fluids, composition and function of blood; Structure and functions of blood cells; Hemostasis and Coagulation; Lab: Measurement of blood coagulation; time; Making a blood smear and detect white blood cells. * **Biochemistry** Cardiac Ion Channels. Control of Cardiac Pumping. * **Med. Microbiology** Microbiological Medium Preparation * **Biophysics** Solubility of Gases in Blood and Blood Fluids. Blood Circulation as a hydrodynamical system. Measurement of blood Pressure and Flow. * **PBL** * **Embryology** Later Development of Heart. Circulation through Primordial Heart. Birth Defects of Heart and Great Vessels; * **Histology** Histology of heart and blood vessels * **Anatomy** Inner surface of the Heart, cardiac skeleton, valves and locations of auscultation points; Pericardium,Layers of the heart. Vessels of the heart (coronary circulation), and Cardiac conductive system; * **Cadaver LAB** Heart and lung * **Radiologic Anatomy** Images of The Heart and The Mediastinum; * **Physiology** Heart muscle, signal transduction in heart muscle; Heart cycle and heart sounds; Rhythmical excitation of the heart. Electrocardiography; Lab: Electrocardiography: Observe the electrical activity of the cardiac (heart) cycle at rest and during exercise, record and analyse datas. * **Biochemistry** Heart as a Secretory Organ. Smooth Muscle Contraction * **Clinical visits** collect clinical case from the hospital * **Clinical skills** Measuring of pulls rate and breathing rate. Subcutaneous drug administration * **Embryology** Derivatives of Pharyngeal Arch Arteries. Fetal and Neonatal Circulation; * **Histology** Histology of lymphoid organs; Development of Lymphatic organs * **Anatomy** Great vessels of the heart: Arch of aorta, sections of aorta and its branches; common Carotid arteries(external and internal) - blood supply of head; subclavian , axillary, brachial, ulnar, radial arteries).Thoracic aorta, its topography and its branches(parietal and visceral branches); Abdominal aorta, its topography and its branches(parietal and visceral branches); Common illiac artery:external and internal illiac arteries; Femoral artery, tibial and fibular arteries. * **Cadaver LAB** Heart and lung * **Physiology** Smooth muscles, vessels and the regulation of blood flow; Cardiac output, regulation of the cardiac functions; * **Biochemistry** Intermediary Metabolism of the Lung . Introduction to Gas Transport. * **Med. Microbiology** Soving in Sterile Condition * **Biophysics** Blood-oxygen-level-dependent imaging * **Embryology** Development of Lymphatic System; Development of Bronchi and Lungs. * **Histology** Histology of Upper Respiratory system; * **Anatomy** Venous system; Structure of veins; Superior and inferior vena cava system; Venous sinuses; Azygos venous system; Portal venous system; Superfacial veins. Lymphatic system. * **Cadaver LAB** Heart and lung * **Radiologic Anatomy** Circulatory System Imaging . Respiratory System Imaging * **Physiology** Capillary fluid exchange, lymphatic circulation, edema; Short- and long-term regulation of blood pressure; Lab: Spirometry: measurement of lung volumes and capacities; record and analyse datas. * **Biochemistry** Lung Surfactant. * **PBL** * **Clinical visits** collect clinical case from the hospital * **Embryology** Clinically Oriented Problems. * **Histology** Histology of Lower Respiratory system * **Anatomy** Introduction to Respiratory System and Components of the System; Nasal cavity, paranasal sinuses, pharynx; Structure, Components and functions of Larynx; Trachea and Lungs * **Cadaver** LAB Heart and lung * **Physiology** Respiratory mechanics; lung volume and capacities; Regulation of respiration; Gas Exchange and Gas Transport. * **Biochemistry** Metabolism and bioactivation of toxicants in the lung. |
| **Textbooks and Materials** |
| * Human Anatomy-Elaine N. Marieb; Pearson; 8th ed.; 2017; * Sobotta Atlas of Human Anatomy.Tables of Muscles, Joints,and Nerves-F.Paulsen;J.Waschke; Urban & Fischer; 16st. edition; 2018. * Rad. Anatomy * Learning Radiology: Recognizing the Basics -William Herring. Elsevier Mosby; 2nd ed. 2012; * Biochemistry * Biochemistry : Lippincott illustrated reviews - Ferrier, Denise R; Wolters Kluwer; 7 th. ed. 2017; * Marks' basic medical biochemistry: a clinical approach- Lieberman, Michael; Wolters Kluwer Health; 4th.ed. 2018 * Cytology * Histology and cell biology: an introduction to pathology- Elsevier Saunders; 5rd.ed; 2020; * Embryology * The Developing Human: Clinically Oriented Embryology - Keith Moore L; Persaud T.V.N;Mark G Torchia; Elsevier Saunders. 11th ed. 2020; * Microbiology * Microbiology: lippincott's illustrated reviews; Wolters Kluwer Health; 4 th.ed. 2020 * Review of Medical Microbiology and Immunology-Levinson, Warren; Mc- Graw Hill education Medical; 17th ed. 2022. * Biophysics * Biological and Medical Physics- Tamar Sanikidze; West Pomeranian University of Technology ; V-1/ V-2. 2016 * MOLECULAR BIOLOGY/GENETICS * Molecular Biology of the Cell - Bruce Alberts, Alexander Johnson; Garland Science; 7th ed. 2022;; * Evidence Based Medicine-EBM * The Philosophy of Evidence-Based Medicine- Jeremy, Howick; Wiley –Blackwell; 2011; * Histology * Junqueira's Basic Histology : Text and Atlas- Anthony L. Mescher; McGraw Hill Education; 16th Ed. 2021; * Physiology * Guyton and Hall textbook of medical physiology- Hall, John E; Elsevier; 14th.ed. 2021; * Elsevier's Integrated Physiology- Robert G. Carroll; Mosby Elsevier; 2007; * Lehninger principles of biochemistry-David L.Nelson ;Michael M.Cox W.H. Freeman and Company; 6h.ed. 2013; * Textbook of Biochemistry with Clinical Correlations- Thomas M. Devlin; John Wiley & Sons, Inc. 7th.ed. 2011; * Harper's Illustrated Biochemistry- Robert Murray;David A.Bender; Mc Graw Hill education Medical; 29th.ed. 2012; * Problem-Based Physiology- Robert G. Carroll; Elsevier Sounders; 1st.ed. 2010; * Physics in Biology and Medicine-Pual Davidovits; Elsevier; 40th.ed. 2013; Elsevier, 2013 |