|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Course title** | **Code** | **Semester** | **Type of course** | **Course volume (Contact hours)** | **ECTS** |
| **Cell, Tissue and Organ Systems** | **MED**  **1003** | **I** | **Mandatory** | **76** | **5** |
| **Faculty, the educational program and level of education** | * School of Medicine and Health Sciences * Higher Medical Educational Program “Medicine” * One cycle 6-year | | | | |

|  |
| --- |
| **Learning Course Content** |
| * **Medical Biology/Medical Genetics -** Cellular cycle and celluar division (rivew of mitosis and meiosis, crossingover) Stem cells; Mesenchimal and hematopoetic stem cells. stem cell technologies and its significance in medicine Molecular biology Lab-I (introduction to basic mol biol lab and overview of teqniques and basic lab skills) * Embryology - selectivity in ion channels. Equivalent circuit model for the cell membrane. Action potential. Different types of action potential. * Anatomy - Introduction to anatomy. Basic concepts, descriptions and nomenclature (terminology), general information about bones, Joints, muscles and tendons, fascias and aponeurosis. * Physiology - Membrane Physiology; Lab: Orientation: Laboratory safety rules, Basic regulation during the practical * Med. Microbiology - General overview of Bacterial Cell Structure * Biochemistry - An Overview of Fuel Metabolism. Oxidative Phosphorylation. Mitochondrial Function and Oxygen Radicals. * Clinical skills - Hand washing; Measuring a body temperature * PBL * Medical Biology/Medical Genetics - Molecular biology Lab -II (introduction to DNA extraction and spectrophotometry techniques) Molecular biology Lab-III (introduction to PCR techniques) * Histology - Histology of connective tissue- bone and cartilage * Physiology - Membrane Physiology; Lab: preparation of physiologic solutions: Salt Solution, Ringer’s solution, Locke-Ringer solution * Med. Microbiology - General overview of Viral structure and life cycle. * Biochemistry - Vitamins, Minerals * Biophysics - Separation of biomolecules: Chromatography, electrophoresis, centrifugation-sedimentation. Free radicals and oxidative stress * Medical Biology/Medical Genetics - Molecular biology Lab -IV (introduction to electrophoresis techniques) * Embryology - Extraembryonic structures; Induction mechanisms of embryology. Formation of Bilaminar and trilaminar germ discs, Extraembryonic structures; Notochordal Process and Notochord. * Histology - Histology of Linning and Glandular Epithelium, Epithelium and Surface Differentiations * Physiology - Membrane Potentials; Lab:Frog dissection, nerve-muscle preparation; Observe exitation of frog's sciatic nerve and contraction of gastrocnemius muscle. Excitable Tissues and Action Potential * Med. Microbiology - General overview of Fungal Cell Structure. General overview of Protozoan Cell Structure. * Biochemistry - Nucleic acids,Signal Transduction Mechanisms * Biophysics - UV and light spectroscopy. Infrared spectroscopy. Raman Spectroscopy. Electron spin resonance. Nuclear magnetic resonance spectroscopy. * Clinical skills - Put on and off sterile and nonstertile disposable gloves, Medical waste management * PBL * Cadaver LAB - Techniques in Cadaver Dissection * Clinical visits * Review Hs |
| **Textbooks and Materials** |
| **Anatomy**   * **Elsevier's Integrated Anatomy and Embryology-** Bogart Bruce Ian; Ort Victoria; Mosby Elsevier; 2007; * **Human Anatomy**-Elaine N. Marieb; Pearson; 12th ed.; 2023; * **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   **MED BIOLOGY/ MED GENETICS/CYTOLOGY**   * **Molecular Biology of the Cell -** Bruce Alberts, Alexander Johnson; Garland Science; 7th ed. 2022;; * Biochemistry: Lippincott's illustrated Reviews- Ferrier Denice R; Wolters Kluwer; 7th ed. 2017. * Color Atlas of Biochemistry-Jan Koolman; Klaus-Heinrich Roehm; Thieme; 3rd.ed. 2013; * Radiology * Grainger & Allison's diagnostic radiology: A textbook of medical imaging-AndyAdam;Churchill Livingstone; 6th ed; 2015 * Introduction to Radiologic imaging sciences &patient care-Arlene M.Adler;Richard R.Carlton; Elsevier Saunders; 6th ed; 2016; * **Principle of Cell Biology -** George Plopper ; Jones & Bartlett Learning; 2013   **Evidence Based Medicine-EBM**  **12.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; 14th Ed. 2016;   **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; * **genetics in medicine-**Nussbaum, Robert L;Roderick R. McInnes; Elsevier; 8th .ed.2016 * **Biology** - Neil A. Campbell / Jane B. Reece / Robin Heyden. 7th ed. – 2005. |