FACULTY OF MEDICINE
TERM I COURSE DESCRIPTIONS

Board I

Introduction to Basic Medical Sciences I (TIP 111) (Theoretical 80 / Practical 3) 10 AKTS

Introduction to Basic Medical Sciences I provides an introduction to basic medical sciences, providing preliminary information on the general characteristics of biochemical processes and the fundamental properties of genetic material. The course covers the definition and content of biophysics, the material structure of living systems, the definition of the cell within the hierarchy of atoms, molecules, and macromolecules, the importance of chemical bonds in molecular formation, the definition of bioenergetics, the thermodynamics of energy flows within the cell, the bioenergetics of cellular respiration, redox potential and its importance in oxidation-reduction reactions within the cell, the concept of pH, and pH measurement. Additionally, students are introduced to the fundamental concepts of patient-physician relationships and public health, as well as the history of medicine. The basic principles and methods of biostatistics are also demonstrated.

Board II

Introduction to Basic Medical Sciences II (TIP 121) (Theoretical 104 / Practical 8) 10 AKTS

Introduction to Basic Medical Sciences II covers the origin of life and cell types, the structure and functions of cell membranes, membrane permeability and membrane transport, the cytoskeleton, cell junctions, the extracellular matrix, and the structural and functional properties and functions of organelles. This course covers the building blocks of life: proteins, amino acids, carbohydrates, lipids, and nucleotides; cell types; the morphological characteristics of animal cells; the structural and functional properties and functions of organelles; and histological methods used to examine cells and their structures. Intracellular protein trafficking and signaling systems are discussed, including the control of cell number and size, as well as apoptosis. The cell cycle, its control, cell division, and the essential life cycle are discussed, and the biological basis of cancer is taught. The course covers the definition of radioactivity, its units and conversions, the uses of radioisotopes in research and medicine, the importance of radiation biophysics and medicine, comparison of the structural and functional properties of macromolecules, the biophysical properties of nucleic acids and proteins, the relationship between the structure and acid-base properties of amino acids and their functions, the interactions of active proteins with their ligands, enzymes, enzyme kinetics, physical principles and importance, and the energetic structure and functions of carbohydrates and lipids. Cell culture and microscopes are introduced within the scope of this course. General information about basic concepts related to drugs is provided. The sources of drugs, routes of administration, and pharmaceutical forms of drugs are discussed. The efficacy and safety of plants used for therapeutic purposes are evaluated. The course also aims to teach the application of biostatistics in medicine. In Basic First Aid, triage definition and first aid interventions are explained.

Board III

Introduction to Basic Medical Sciences III (TIP 132) (Theoretical 107 / Practical 21) 10 AKTS

Within the scope of Introduction to Basic Medical Sciences III course, topics move from the cell to the organ level. The synthesis of biomolecules, carbohydrate, lipid, and nitrogen metabolisms, mitosis and meiosis, the structure of the hereditary material DNA, gene structure, genome organization, extrachromosomal genetic systems, DNA and RNA synthesis, mutation and mutagenic agents, DNA repair, recombination, gametogenesis, fertilization, implantation, the developmental process in the

embryonic and fetal periods, placenta and fetal membranes, assisted reproductive techniques, the basic mechanisms and properties of Mendelian genetics, chromosomal abnormalities, gene expression, regulation of gene expression, and epigenetic mechanisms, the medical applications of stem cell biology and genetic engineering, and gene therapy and the body's control mechanisms are taught. On the other hand, as the intersection of all this information, an introduction to physiology is provided with topics on ion and substance distribution in body fluid compartments, the transport of molecules in the cell membrane, the generation of action potentials, and action potentials in different tissues. To complement physiology, the basic terminology of anatomy is followed by the anatomy of bones, joints, muscles, and the nervous systems. The course covers the principles of bioenergetics, the mechanisms of molecular conduction across membranes, biological processes and their classification, osmotic work and membrane structure, the biophysical basis of membrane potential formation, the generation of action potentials and their measurement methods, mechanical work and its importance, the mechanism of muscle contraction, its molecular basis, chemical work and its importance, molecular biophysics and its importance in medicine, the energetics of DNA synthesis and protein synthesis, and the principles and applications of protein electrophoresis. Furthermore, basic concepts regarding microorganisms and their relationships with humans, as well as general information on medically important microorganisms, are taught. Fundamental principles of medical ethics, the concept of physician and patient rights, and the ethics of inter-physician relationships are taught. Using a student-centered, problem-based teaching method, the biological, biochemical, psychological, and professional approaches to a genetic disease are taught through the diagnosis and treatment of a case.

Board IV

Introduction to Basic Medical Sciences IV (TIP 142) (Theoretical 88/ Practical 18) 10 AKTS

In the Introduction to Basic Medical Sciences IV course, students are taught basic tissues, tissue biochemistry, bone and muscle anatomy, and muscle physiology. Information theory and its importance, the binary system and its applications in medicine, the principles of cybernetics and their applications in medicine, the fundamentals of genetic engineering and its research fields and methods, the applications of genetic engineering in medicine, the mechanisms of transition from cells to higher organisms, the mechanisms of cancer formation, the applications of biomechanics, their importance in medicine, psychophysics and its applications in medicine, molecular biophysical methods, and the principles of imaging methods used in medicine are also discussed. The principles of epidemiological studies and the rules and methods of general health research are defined. The importance of patient communication in the transition to the clinic is emphasized, with a focus on the definition of communication, and the nuances of communication, particularly with patients with critical diagnoses and their families, are discussed. Ethical principles in human research are discussed within the framework of medical ethics.