University of Szeged
Foundation Year

Curriculum (2016-2017)

SUBJECT: BIOLOGY	
1st semester	
WEEK	**CLASS**
	(6 hrs/week)
1.	Introduction to medical biology. What is life? How to study biology? Small molecules and the chemistry of life. Composition and characteristics of living material. Atoms, small molecules, water.
2.	Macromolecules. Carbohydrates, lipids, proteins.
3.	Structure and function of nucleic acids. Characteristics of pro- and eukaryotic cells. Endomembranes, cell organelles. The cell nucleus.
4.	Cell membrane and membrane dynamics. Cytoplasm, cytoskeleton. Physiology of the cell membranes, specialized membrane structures, membrane transport mechanisms.
5.	Cell signaling and communication. The extracellular matrix.
6.	Consultation, test.
7.	Biological energy transformations. Enzymes and their functions. Biocatalysis. Regulation of enzyme activity.
8.	Biological energy transformations. Aerobic, anaerobic pathways. The citric acid cycle and terminal oxidation. ATP formation. The electon transport chain.
9.	Comparison of energy yields and investments. The electron transport systems. Mitochondrion. The interconnection of metabolic pathways.
10.	The cell cycle. Miotosis and meiosis.
11.	Genotype, phenotype. Mendelian genetics. Genes, alleles. Genes and chromosomes, structure of the chromatin. How do alleles and genes interact?
12.	Non-Mendelian inheritance. Sex-linked inheritance. Pedigree analysis.
13.	Consultation.
14.	Consultation, test.
15.	End-of-semester test.