



GENERAL BIOCHEMISTRY	
Enrollment year	2016/2017
Academic year	2017/2018
Regulations	DM270
Academic discipline	BIO/10 (BIOCHEMISTRY)
Department	DEPARTMENT OF DRUGS SCIENCES
Course	MEDICINAL CHEMISTRY AND PHARMACEUTICAL TECHNOLOGY
Curriculum	PERCORSO COMUNE
Year of study	2°
Period	2nd semester (01/03/2018 - 19/06/2018)
ECTS	12
Lesson hours	96 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	GIORGETTI SOFIA (titolare) - 8 ECTS RAIMONDI SARA - 4 ECTS
Prerequisites	=
Learning outcomes	Define the relation between protein structure and function; present the chemical, physical and biological environment in which proteins act and where the different metabolic pathways take place. Acquisition of general knowledge regarding structure and function of nucleic acids and gene expression.
Course contents	Structural organization of proteins. Protein denaturation and folding. Examples of fibrous and globular proteins: collagen, alpha cheratin, myoglobin and haemoglobin. Enzymes: classification and properties. Water-soluble vitamins and corresponding co-enzymes. Regulation of enzymatic activity. Blood coagulation. Structure and functions of biological membranes, role of membrane proteins. Hormones and main

	<p>processes of signal transduction.</p> <p>Glucidic metabolism: digestion and absorption of carbohydrates, glycoysis, pentose phosphate pathway, gluconeogenesis, glycogen synthesis and breakdown. Citric acid cycle. Oxidative phosphorylation.</p> <p>Lipid metabolism: digestion and absorption of lipids, degradation and synthesis of fatty acids, ketone bodies, cholesterol and lipoproteins. Fat-soluble vitamins. Vitamin A in the process of vision.</p> <p>Metabolism of biological nitrogen compounds: digestion of proteins and absorption of amino acids, general reactions of amino acids, urea cycle, activated methyl cycle and metabolic reactions of tyrosine and phenylalanine, biosynthesis of catecholamines and thyroid hormones. Biosynthesis and degradation of nucleotides. Mechanisms for the degradation of proteins focusing on the ubiquitin system.</p> <p>DNA and RNA structure. DNA super coiling and role of topoisomerase. Structure of chromosomes. DNA replication and repair. Functional and structural characteristics of telomerase. Synthesis and maturation of RNA. Genetic code. Protein synthesis and post-translational modifications. Protein intracellular trafficking. Regulation of gene expression in bacteria: lac-operon and trp-operon. Regulation of gene expression in eukaryotes.</p>
Teaching methods	=
Reccomended or required readings	<p>J. Berg, J. Tymoczko, L. Stryer "Biochemistry", 7th Edition</p> <p>D. Nelson, M. Cox "Lehninger Principles of Biochemistry", 6th Edition</p> <p>M. Campbell, S. Farrel "Biochemistry", 8th Edition</p> <p>T.M. Devlin "Textbook of Biochemistry with Clinical Correlations", 6th Edition</p>
Assessment methods	<p>Two tests during the course.</p> <p>Conditions for the accreditation of the module</p> <p>Positive results in the in itinere tests or in the final exam which is composed of a written and oral examination.</p>
Further information	<p>Two tests during the course.</p> <p>Conditions for the accreditation of the module</p> <p>Positive results in the in itinere tests or in the final exam which is composed of a written and oral examination.</p>
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