



BIOCHEMISTRY II

Enrollment year	2018/2019
Academic year	2020/2021
Regulations	DM270
Academic discipline	BIO/10 (BIOCHEMISTRY)
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	BIOLOGICAL SCIENCES
Curriculum	PERCORSO COMUNE
Year of study	3°
Period	2nd semester (01/03/2021 - 14/06/2021)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	TORTI MAURO (titolare) - 3 ECTS CANOBBIO ILARIA - 3 ECTS
Prerequisites	Detailed knowledge of structural and metabolic biochemistry as learned from the course at the II year.
Learning outcomes	Comprehension of essential concepts of nutritional biochemistry and of the metabolism of nutrients
Course contents	Coordinated regulation of metabolism. Integration of metabolic pathways. Uptake and cellular distribution of glucose and other nutrients. Metabolic profiles of liver, muscle, adipose tissue, brain. Metabolic adaptation under short and prolonged starvation. Metabolism of ethanol. Metabolic syndrome. Obesity. Insulin and diabetes. Molecular mechanisms regulating food intake and body weight. Metabolism of ethanol.

Drug metabolism.

Role of liver in the metabolism of xenobiotics. The cytochrome P450 oxidases. Xenobiotic conjugation. Glutathione. Bilirubin metabolism
Metabolism of Fe.

Cholesterol and diet.

Cholesterol biosynthesis and regulation. Metabolism of cholesterol and its derivatives Lipid transport in the blood: lipoproteins. LDL and atherosclerosis.

Fat soluble vitamins.

Biological roles of vitamin D in calcium homeostasis and of vitamin K in blood coagulation. Retinol and vitamin A in cell differentiation and phototransduction. Anti-oxidant properties of vitamin E.

Water-soluble vitamins.

Natural sources, daily requirements and biological roles

Micronutrients.

The importance and biological role of Iodine, Zinc, Copper, Selenium, Fluoride

Special topics in Nutritional Biochemistry.

Diet and exercise. Diet and pathological conditions, Mediterranean Diet, The ketogenic diet

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Teaching methods

frontal lesson

Recommended or required readings

Nelson DL, Cox MM : I Principi di Biochimica di Lehninger, Zanichelli;
Berg JM, Tymoczko JL, Stryer L: Biochimica, Zanichelli;
Campbell, Farrell: Biochimica, Edises,
Alberts et al: Biologia Molecolare della Cellula, Zanichelli
Murray et al: Harper Biochimica, McGraw

Assessment methods

verbal exam

Further information

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Sustainable development goals - Agenda 2030

[\\$|bl legenda sviluppo sostenibile](#)