



# UNIVERSITÀ DI PAVIA

Anno Accademico 2018/2019

## BIOCHEMISTRY II

<b>Enrollment year</b>	2016/2017
<b>Academic year</b>	2018/2019
<b>Regulations</b>	DM270
<b>Academic discipline</b>	BIO/10 (BIOCHEMISTRY)
<b>Department</b>	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
<b>Course</b>	BIOLOGICAL SCIENCES
<b>Curriculum</b>	PERCORSO COMUNE
<b>Year of study</b>	3°
<b>Period</b>	2nd semester (01/03/2019 - 14/06/2019)
<b>ECTS</b>	6
<b>Lesson hours</b>	48 lesson hours
<b>Language</b>	Italian
<b>Activity type</b>	ORAL TEST
<b>Teacher</b>	TORTI MAURO (titolare) - 5 ECTS CANOBBIO ILARIA - 1 ECTS
<b>Prerequisites</b>	Detailed knowledge of structural and metabolic biochemistry as learned from the course at the II year.
<b>Learning outcomes</b>	
<b>Course contents</b>	<p>Coordinated regulation of metabolism. Integration of metabolic pathways. Metabolic profiles of liver, muscle, adipose tissue, brain. Metabolic adaption under short and prolonged starvation. Diabetes. Metabolism of ethanol.</p> <p>Drug metabolism. Role of liver in the metabolism of xenobiotics. The cytochrome P450 oxidases. Xenobiotic conjugation. Glutathione. Bilirubin metabolism.</p> <p>Sorting and targeting of proteins. Protein targeting to the nucleus, mitochondria, and peroxisomes. The secretory pathway. Protein</p>

glycosylation: O-linked and N-linked oligosaccharides. Role of mannose-6-phosphate in lysosomal targeting of proteins. Intracellular traffic of vesicles: clatrin, COPI and COPII. Receptor-mediated endocytosis.

Blood biochemistry. Cholesterol and bile acids. Lipoproteins.

Atherosclerosis. Hemostasis and thrombosis: coagulation, fibrinolysis, role of platelets and endothelial cells. Inflammation: macrophages and neutrophils function.

Hormones biochemistry. Thyroid hormones. Steroid hormones.

Hormones in calcium homeostasis. Biosynthesis, secretion, transport.

Hormone signaling: receptors, intracellular effectors, second messengers. Protein phosphorylation in signaling cascades.

#### Teaching methods

#### Reccomended 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

#### Sustainable development goals - Agenda 2030

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