
Course title: ANIMAL BIOCHEMISTRY WITH ELEMENTS OF BIOORGANIC CHEMISTRY II

ECTS credit allocation (and other scores): 6

Semester: autumn

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Agricultural sciences

Language: English

Number of hours per semester: 75

Course coordinator/ Department and e-mail: Dr Aleksandra Orzolek/Department of Animal Biochemistry and Biotechnology: aleksandra.deszczka@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Sugar-specific reactions. Determination of reducing sugars in blood serum. Properties of lipids and their components, chemical composition of lecithins, properties of unsaturated fatty acids. Determination of total cholesterol. Properties of bile acids. Determination of calcium and inorganic phosphorus content in blood serum. Blood buffer properties. Determination of chloride content in the blood. Determination of glucose consumption rate during rumen fluid incubation. Chemical components and some physicochemical properties of milk. Activity determination and identification animal semen phosphatase.

LECTURES: Mitochondrial respiration chain, oxidative phosphorylation. Krebs cycle. Glycolysis, pyruvic acid metabolism, gluconeogenesis, glycogenesis, pentose phosphate pathway, regulation of carbohydrate metabolism. Lipolysis, glycerol metabolism, degradation and synthesis of fatty acids, triacylglycerols and phospholipids. HMG cycle. Steroid metabolism. Protein and amino acid metabolism. Carbohydrate, lipid and protein metabolism in the rumen. General characteristics of the biochemical processes in the mammary gland, the impact of physiological and zootechnical factors on milk quality, biosynthesis of basic milk components, changes in milk caused by environmental factors.

Learning purpose: Indication of links between metabolic processes and animal productivity.

On completion of the study programme the graduate will gain:

Knowledge: describes the biochemical basis and course of the most important life processes in a living organism

Skills: uses basic laboratory methods and techniques in qualitative and quantitative analysis.

Social Competencies: is aware of the need for lifelong learning and compliance with hygiene and safety rules.

Basic literature: Murray R., Granner D., Rodwell V., "Harper's illustrated biochemistry"

Supplementary literature: Berg J.M, Tymoczko J., Gatto G., Stryer L. "Biochemistry"

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 47

Student's independent work: 115