

Subject: <b>CLINICAL BIOCHEMISTRY</b>	Subject type:	<b>compulsory</b>
Study year: <b>5</b>	Content:	<b>2/2 winter term</b>
Study program: <b>General Medicine</b>		

### **Learning outcomes** (*Aim of the course*)

The graduates should understand and be able to explain the principal pathobiochemical mechanisms of selected diseases, understand the relationships between metabolism and the results of laboratory tests and be familiar with routine clinical-biochemical tests. The students will learn on typical case reports, respectively the results of tests of model patients, how to select appropriate laboratory tests and use clinical-biochemical diagnostic algorithms. Correct and targeted indication of laboratory tests related to the expected diagnosis and proper interpretation of test results is an important part of the daily work of a physician.

**Education:** block (lectures/seminars)

**Assessment:** written tests and written exam

### **Syllabus**

Clinical biochemistry as a part of laboratory medicine. Biological material, sampling and manipulation with samples in the preanalytical phase. Preanalytical factors influencing the laboratory results, reference intervals, target values. Interpretation of results – the biological variation, sensitivity, specificity, predictive values of the test.

Water and mineral homeostasis. Regulation of osmolality. Hyper- and dehydration. Hyponatremia, hypernatremia. Hyper- and hypokalemia. Acid-base balance disorders. Metabolic and respiratory acidosis and alkalosis. Liver function tests. Assessment of hepatic functions – hepatocellular integrity, cholestasis, synthetic function. Jaundice – differential diagnosis. Renal function. Biochemical tests for assessment of glomerular and tubular function. Proteinuria. Diabetes mellitus – biochemical background. Biochemical tests for diagnosis and monitoring of diabetes mellitus. Diabetic emergencies. Hypoglycaemia. Cardiac markers. Dyslipidaemias, risk factors of atherogenesis. Calcium and phosphate metabolism disorders, bone markers. Tumour markers, definition, classification, the purpose of clinical use, biochemical consequences of malignant diseases. Ectopic hormone secretion. Markers of inflammation and sepsis. Biochemical diagnostics of selected endocrine disorders. Investigation of iron metabolism, biochemical aspects of anaemias.